Abstracts Submitted for the 69th Annual Scientific Meeting of the American College of Gastroenterology

October 29–November 3, 2004, Orlando, Florida

ESOPHAGUS

1 “GASTROSCOPE-PUSH” METHOD TO HELP ENSURE SAFETY OF “BLIND” ESOPHAGEAL BOUGIENAGE


Purpose: To describe an adjunctive endoscopic maneuver which assists in selecting patients in whom a “guided” method of esophageal bougienage will be potentially beneficial.

Methods: In general, wire-guided dilation is recommended when performing bougienage of complex, high-grade and eccentric esophageal strictures. Often, dilation of even wide-caliber, symmetrical esophageal strictures may benefit from the use of a “guided” dilation technique, as when a large hiatal hernia is present, or the entrance to the stomach is somewhat angulated. When there is any question as to whether a “guided” esophageal dilation method may be beneficial, after the upper endoscopic examination has been completed, the gastroscope is withdrawn into the mid esophagus with the tip of the insertion tube straightened and the control locks are positioned in the “off” position. The gastroscope is then gently advanced through the distal esophagus and into the gastric body region. If there is any “hang-up” or resistance to passage of the gastroscope (due to the esophageal stenosis, a hiatal hernia, angulation or other impediment), I assume that performing “blind” bougienage may subject the patient to an increased risk of a complication, and then choose a wire-guided or direct (with a balloon) dilation method.

Results: Utilizing this “gastroscope-push” technique for over 12 years to aid in selection of esophageal dilation technique, a major complication related to the “push” maneuver or the performance of “blind” esophageal dilation (excluding perforation related to pneumatic dilation in achalasia or mucosal tear in ringed esophagus) has not occurred.

Conclusions: The “gastroscope-push” maneuver is a useful adjunctive technique which may be employed when the method of esophageal dilation is being selected, by aiding the endoscopist in determining whether a “guided” method of esophageal bougienage will be potentially necessary to minimize the risk of dilation-related complications.

2 DOES THE PROXIMAL PROBE OF 24-HOUR ESOPHAGEAL PH STUDIES ADD VALUABLE CLINICAL INFORMATION?

Larry E. Clark, M.D., David A. Peura, M.D., F.A.C.G.*. University of South Alabama, Mobile, Alabama and University of Virginia Health System, Charlottesville, Virginia.

Purpose: Ambulatory 24-hour esophageal pH studies are often performed with dual proximal and distal pH catheter probes. The dual probe has been considered clinically valuable, especially for reflux patients with cough, asthma, hoarseness and chest pain. By using the new wireless pH monitor system (Bra vo, Medtronics, Shoreview, MN), clinicians will lose the information gathered by the proximal probe. The purpose of this investigation was to evaluate in various groups of patients with gastroesophageal reflux, the additional clinical value of the information obtained from the proximal probe of dual probe pH monitoring.

Methods: A review was conducted of consecutive patients who received 24-hour dual probe esophageal pH monitoring at the University of Virginia during a two year period. The indications for the procedure and the frequency and findings of proximal and distal pH probe monitoring were examined.

Results: Two hundred sixty-nine patients had a pH study during the investigation period. Two hundred thirty were not taking proton pump inhibitors or H2 receptor antagonists at the time of the study and these patients formed the study group. The indications for the study were divided into four categories: a) extra-esophageal symptoms such as cough, asthma or hoarseness (31), b) chest pain (29), c) pre-operative confirmation of reflux before fundoplication (93), and d) symptoms refractory to medical management (77). More abnormal reflux scores were seen in the pre-operative group compared to the chest pain group (proximal probe p = 0.004, distal probe p < 0.001) and to the refractory medicine group (proximal probe p = 0.0005, distal probe p < 0.0001). No further comparisons between reflux groups revealed significant differences. By using McNemar’s test to compare the frequency of positive reflux results for the proximal and distal probes, no significant differences were seen between the proximal and distal probe scores for the extra-esophageal and chest pain groups (p = 1.0) and for the total groups of study subjects (p = 0.43).

Conclusions: No significant differences were found between proximal and distal esophageal reflux monitoring, even for patients with extra-esophageal symptoms and chest pain. The proximal probe data added no additional valuable clinical information.

3 PRIMARY ESOPHAGEAL LYMPHOMA: EXPERIENCE AT ROSWELL PARK CANCER INSTITUTE

Krishdeep S. Chadha, M.D., Milind M. Javle, M.D.*, Francisco H. Ilizaliturri, M.D. State University of New York and Roswell Park Cancer Institute, Buffalo, New York.

Purpose: Esophageal involvement by lymphoma is uncommon and observed in < 1% of lymphoma patients. Primary esophageal non-Hodgkin’s lymphoma (PE-NHL) is extremely rare with no specific treatment guidelines and variable reported clinical outcome.

Methods: We conducted a retrospective study of patients with PE-NHL treated at Roswell Park Cancer Institute from 1993 to 2004. A total of six patients were identified from tumor registry data. The collected data was analyzed for patient demographics, HIV status, endoscopic features, Ann-Arbor stage, pathological features, treatment received and survival.

Results: The median age at diagnosis was 44 years (range: 32–76 years); most were males (n = 5). Two patients had concomitant HIV infection. The commonest symptom was dysphagia (n = 6), followed by weight loss (n = 4). On esophagoscopy, the lymphoma presented as a polyloid mass in the lower esophagus in 5 cases. The pathological features, staging, treatment and survival data is summarized in table 1.

Conclusions: Despite the small number of patients, the present study represents the largest number of PE-NHL patients reported in literature. Diffuse large B cell type is the commonest histological form of PE-NHL. Prognosis is guarded at all stages and Ann Arbor staging is a suboptimal predictor of outcome. HIV positive status, esophageal perforation and T cell phenotype predict poor prognosis. The combination of rituximab with CHOP chemotherapy may be considered for B cell PE-NHL.
Pathological diagnosis, pre-treatment staging, treatment and survival data of patients with PE-NHL.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Histology</th>
<th>Ann Arbor Stage</th>
<th>Therapy</th>
<th>Complications</th>
<th>Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>B cell DLCL</td>
<td>1E</td>
<td>nd-YAG laser- &gt; m-BACOD</td>
<td>Sepsis, pneumonia</td>
<td>3 months</td>
</tr>
<tr>
<td>002</td>
<td>T cell DLCL</td>
<td>1E</td>
<td>Radiotherapy- &gt; HADAP regimen</td>
<td>Sepsis, pneumonia</td>
<td>14 months</td>
</tr>
<tr>
<td>003</td>
<td>Immuneoblastic</td>
<td>2E</td>
<td>Surgery- &gt; CHOP</td>
<td>Mediastinal abscess, perforation, hemoptysis</td>
<td>1 month</td>
</tr>
<tr>
<td>004</td>
<td>T cell DLCL</td>
<td>2E</td>
<td>CHOP</td>
<td>Sepsis, perforation</td>
<td>7 months</td>
</tr>
<tr>
<td>005</td>
<td>B cell DLCL</td>
<td>1E</td>
<td>Radiotherapy</td>
<td>Upper airway obstruction</td>
<td>1 month</td>
</tr>
<tr>
<td>006</td>
<td>B cell DLCL</td>
<td>3E</td>
<td>Rituximab- &gt; CHOP</td>
<td>No complications</td>
<td>Alive</td>
</tr>
</tbody>
</table>

**FAMOTIDINE/APTACID COMBINATION TABLETS ARE MORE EFFECTIVE FOR THE TREATMENT OF HEARTBURN THAN EITHER COMPONENT ALONE**

**Purpose:** To compare heartburn relief provided by famotidine/antacid combination tablet (FACT) to its components and placebo. Objectives were to demonstrate that FACT has faster onset than famotidine (FAM) 10 mg and longer duration than antacid.

**Methods:** Randomized, double-blind, placebo-controlled, parallel group study at 32 primary care centers in the US. A total of 1,640 adults (mean age 46 yr.) with food-induced heartburn at least 3 times per wk. (mean: 6 episodes/wk.) were randomly assigned to treat 4 episodes of heartburn with FACT (FAM 10 mg + antacid 21 mEq calcium-carbonate-magnesium hydroxide tablet) (n = 410), FAM 10 mg (n = 411), antacid 21 mEq calcium-carbonate-magnesium hydroxide (n = 414) or placebo (n = 405). Patients rated heartburn relief (adequate relief. Y or N) at 15- min. intervals for the first hour postdose and then hourly through 8 hr. postdose, use of rescue antacid, and global evaluation of treatment.

**Results:** 1640 randomized patients treated a total of 6290 episodes, 20% of which were rated as mild, 56% moderate, 24% severe. The onset of symptom relief was significantly faster with FACT than with FAM 10 mg (p = 0.001), or placebo (p < 0.001). The odds ratios indicate that heartburn episodes treated with FACT were 1.42 or 1.59 times more likely to achieve adequate relief at an earlier time point compared to episodes treated with FAM 10 mg or placebo, respectively. The proportion of episodes relieved at 15 min. was greater with FACT (33.7%) compared to FAM 10 mg (27.3%) or placebo (25.4%). Duration of effect was significantly longer with FACT than with antacid or placebo (p < 0.001). The odds-ratios indicate that heartburn episodes for FACT patients were 1.60 or 2.15 times more likely to maintain adequate relief at a later time point than episodes for antacid or placebo patients, respectively. The proportion of episodes relieved for at least 7 hr. was greater with FACT (70.0%) than antacid (58.5%) or placebo (51.4%). FACT-treated patients reported better global efficacy than the other 3 treatment groups (p < 0.001) and had a lower percentage of episodes that required the use of rescue medication. Comparisons of FACT with FAM 10 mg, antacid, and placebo were statistically significant for the analysis of time to rescue antacid (p < 0.001). All 4 treatments were generally well-tolerated.

**Conclusions:** FACT provides more rapid relief of heartburn than FAM 10 mg, and longer lasting relief than antacid alone.

**NIZATIDINE CONTROLLED RELEASE (N) IS A GASTRIC PROKINETIC AGENT: RESULTS OF A STUDY IN GASTROESOPHAGEAL REFUX DISEASE (GERD)**

**Purpose:** Up to 40% of GERD patients have an accompanying delay in gastric emptying. Hence, an optimal therapy would combine gastric acid inhibition and prokinetic properties. Our goal was to investigate the prokinetic effects of single doses of 150 mg and 300 mg nizatidine controlled release using a double-blind placebo controlled crossover design.

**Methods:** Adult patients with a > 3 month history of typical GERD symptoms and endoscopic criteria were screened for delayed gastric emptying (DGE). A baseline assessment of gastric emptying (GE) was performed after dosing with single-blind placebo. One hour after dosing, patients consumed a standardized 250 calorie (2% fat) egg beater meal with Tc99m. Gamma camera images were obtained at meal completion and 1, 2, 3 and 4-hours. Patients with DGE, defined as > 6.3% gastric retention 4-hour post-meal at placebo baseline, were then randomized to oral dosing with double-blind medications and GE testing similarly performed. Study medication dosing was separated by intervals of two to five days.

**Results:** Primary endpoint was change from placebo baseline (CFB) for % gastric retention at 4 hours. Of 84 patients studied, 39 (46%) had DGE at baseline. CFB 4-hour post-meal with N150 mg and 300 mg (means: −2.2% and −4.9%, respectively) were each statistically significant (p < 0.05). CFB was also significant with N300 mg at 3 hours (p = 0.03). A subgroup analysis of all diabetic patients (n = 10) showed the CFB with N300 mg was significant (p < 0.05) at 3 hours and 4 hours post-meal (−10.1% and −5.4%, respectively).

**Conclusions:** 1) Single, oral doses of 150 mg and 300 mg of the H2 blocker nizatidine delivered via a unique pulsatile controlled-release system, significantly enhanced gastric emptying in GERD patients with DGE. 2) N300 mg was an effective prokinetic agent in a cohort of diabetic patients with GERD. 3) These new observations suggest a novel pharmacologic approach.
of gastric acid inhibition and promotility that has implications for treating GERD as well as upper GI functional disorders.

Mean % Gastric Retention Post-meal

<table>
<thead>
<tr>
<th>Cohort: Hrs post-meal</th>
<th>Placebo</th>
<th>N150 mg</th>
<th>N300 MG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastroparesis (n = 39): 3 hrs</td>
<td>27.6</td>
<td>25.7</td>
<td>22.4*</td>
</tr>
<tr>
<td>Diabetics (n = 10): 3 hrs</td>
<td>26.2</td>
<td>35.2</td>
<td>16.0*+</td>
</tr>
<tr>
<td>4 hrs</td>
<td>13.7</td>
<td>11.4*</td>
<td>8.8*</td>
</tr>
<tr>
<td>4 hrs</td>
<td>14.8</td>
<td>19.5</td>
<td>9.5*</td>
</tr>
</tbody>
</table>

\* = P < 0.05 vs. placebo; + = p < 0.05 vs. N150 mg.

7

ASSESSMENT OF SYMPTOMS AND GASTRIC EMPTYING IN GASTROESOPHAGEAL REFLUX DISEASE (GERD) PATIENTS BEFORE AND AFTER NISSEN FUNDOPLICATION

Richard W. McCallum, M.D.*, Dustin Weimers, Michael Moncare, M.D., Irene Sarosiek, M.D., University of Kansas Medical Center, Kansas City, Kansas.

Purpose: The aim of this study were to: 1) evaluate the effect of nissen fundoplication by comparing pre- and post-operative symptoms, and 2) in-

Methods: 21 patients (M = 6, F = 16, average age 50.8 years) who had un-
dergone Nissen Fundoplication at KUMC by a single surgeon (M.M.) were included and the average time of follow up since surgery was 25.6+/−22.5. All patients had pre and post-operative gastric emptying times using the standard-
zated scrambled egg radionucleide meal (2% fat and 250 cals.) with hourly imaging for 4 hours. They also completed a survey which which consisted of rating the severity of 13 symptoms: heartburn, regurgitation, dysphagia, nausea, abdominal bloating, epigastric pain, fullness, early satiety, weight loss, diarrhea, constipation, vocal cord pathology, atypical chest pain (no symptoms = 0, mild = 1, moderate = 2, severe = 3).

Results: The severity of all the symptoms decreased post-operatively ex-
cept for early satiety, for which the severity increased in 76% of pa-
tients. Weight loss post-operatively occurred in 12 patients and 9 pa-
tients lost the ability to vomit. Pre-operative gastric emptying showed 9/21 (42.8%) were slow (>6.5% isotope retention at 4 hours) before surgery compared to 6/21 (28.6%) after surgery. Mean retention of iso-
toпе at 4 hours was similar pre- and post-operatively, 12% and 16%, re-
spectively.

Conclusions: 1) Nissen fundoplication is effective for the treatment of GERD symptoms; 2) Post operative satiety is the major complaint (the gasbloat syndrome); 3) Gastric emptying of a solid meal is delayed in a substantial subset of GERD patients, both pre- and post-operatively; 4) Upper GI symptom assessment could not accurately predict the subset with delayed emptying; 5) Surgery does not accelerate delayed gastric emptying present in GERD patients.

8

NEW SINGLE-USE DISPOSABLE ESOPHAGEAL MANOMETRY CATHETERS: COMPARISON WITH SOLID-STATE CATHETERS

Radu Tutuian, M.D., Amit Agrawal, M.D., Inder Mainie, Janice Freeman, R.N., Donald O. Castell, M.D., M.A.C.P.*. Medical University of South Carolina, Charleston, South Carolina.

Purpose: Current esophageal manometry systems use either water-perfused or solid-state pressure transducers. These systems have high equip-
ment and/or maintenance costs. Recently developed single-use disposable catheters use small balloons pre-filled with air that transmit the pressure of esophageal contractions to transducers offering the same ease of operation as solid-state system without the need of a constant water perfusion pump. The aim of our study was to compare data obtained from single-use dispos-
able catheters to that from solid-state systems.

Methods: Studies were performed in 5 healthy volunteers, 5 patients with ineffective esophageal motility and 3 patients with nutcracker esophagus. A single-use disposable catheter was placed parallel to a solid-state catheter with pressure transducers at 5, 10, 15 and 20 cm above the manometric located lower esophageal sphincter (LES). A set of 10 liquid and 10 vis-
cous swallows were given at 30 seconds intervals. Correlations between the contraction amplitude measured by each system were calculated.

Results: Overall the average pressure measured by the single-use disposable system (106.89 mmHg) was almost identical (paired T-test; p = 0.98) com-
pared to the solid-state system (106.91 mmHg) with a very good correlation (r = 0.75) between individual measurements. When separated by site the best correlations were noticed in the distal esophagus at 5 cm (r = 0.84) and 10 cm (r = 0.91) above the LES compared to the transition zone 15 cm above LES (r = 0.58) and the proximal esophagus 20 cm above the LES (r = 0.62).

Conclusions: Single-use disposable esophageal manometry catheters are a promising alternative to solid-state manometry systems in measuring intrae-
osophageal pressures, especially in the distal esophagus.

9

M2® ESOPHAGEAL CAPSULE ENDOSCOPY (ECE) IS COMPARABLE TO TRADITIONAL UPPER ENDOSCOPY (EGD) IN DETECTION OF ESOPHAGITIS AND BARRETT’S ESOPHAGUS IN PATIENTS WITH GERD SYMPTOMS

R. Eliakim, M.D.*, V. K. Sharma, M.D., K. Yassin, M.D., S. N. Adler, M.D., F.A.C.G., H. Jacob, M.D., D. R. Cove, M.D., Ph.D., F.A.C.G., R. Sachdev, M.D., R. D. Mitty, M.D., D. Hartmann, M.D., D. Schilling, M.D., J. F. Riemann, M.D., S. Bar-Meir, M.D., E. Bardon, M.D., B. Fennerty, M.D., G. Eisen, M.D., M.P.H., D. O. Faiigel, M.D., B. S. Lewis, M.D., F.A.C.G., D. E. Fleischer, M.D., Rambam Medical Center, Haifa, Israel; Mayo Clinic Scottsdale, Arizona; Bikur Holim Medical Center, Jerusalem, Israel; St. Elizabeth’s Medical Center of Boston, Massachusetts; Klinikum Ludwigshafen, Germany; Tel Hashomer Medical Center, Israel; Oregon Health Sciences University and Mount Sinai Medical Center, New York.

Purpose: Severe Gastroesophageal reflux disease (GERD) is characterized by erosive esophagitis, ulcers and Barrett’s metaplasia (BM). BM is a pre-
cancerous condition which is found in up to 13% of GERD patients. Patients with BM are at an increased risk of developing esophageal adenocarcinoma at a 0.5% risk per patient year. Screening for BM is cost-effective after the age of 50 years. However, lower screening costs and increased patient compliance remain unmet needs in this field. The newly developed M2® Esophageal Capsule (Given Imaging) offers an alternative approach to visualize the esophagus and to screen for BM.

Aim: To compare the accuracy parameters of ECE with EGD in evaluating patients for esophagitis and Barrett’s esophagus.

Methods: A multi-center pivotal trial was conducted in seven sites. The M2® esophageal capsule is identical in shape and dimensions to the standard M2® Capsule. It acquires video images from both ends of the device at 2 frames per second endcaps. Capsules were ingested in the supine position by 73 GERD patients and 9 patients undergoing Barrett’s surveil-
ance. Subsequently, patients were placed under conscious sedation and an EGD was performed. The investigators interpreting the ECE videos were blinded to the EGD results and vice versa. All discrepancies between ECE and EGD were reviewed by a blinded adjudication committee.

Results: 55 of 82 patients had positive esophageal findings. ECE identified esophageal abnormalities in 51 patients of the 55. The sensitivity, specificity, PPV and NPV of ECE for Barrett’s esophagus were 97%, 100%, 100% and 98% respectively and for esophagitis - 90%, 100%, 100% and 95% respectively. There were no side effects or ingestion difficulties in all 82 patients.

Conclusions: ECE is a convenient, safe and sensitive method for visualization of esophageal disorders and may provide an effective method to screen patients for Barrett’s esophagus.
10

IMPEDANCE MONITORING (IMP) FINDINGS IN SYMPTOMATIC DES, ACHALASIA, AND SCLERODERMA, AND COMPARISON WITH SIMULTANEOUS BARIUM ESOPHAGRAM (BA) AND MANOMETRY (MAN)

Aman Ali, M.D., Hala Imam, M.D., Steven S. Shay, M.D., F.A.C.G.*.
Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: Imp and Ba had excellent (97%) correlation in detecting bolus transit patterns in 74 swallows in normal subjects (GE A638,2004). Aim: Characterize bolus transit patterns by Imp in patients with diffuse esophageal spasm (n = 6), achalasia (Ach; n = 10) and scleroderma (ScI; n = 4), and to compare these patterns to the gold standard, Ba.

Methods: A catheter with both an Imp electrode pair and a pressure transducer at 4 sites (5,10,15,20 cm above LES) was passed, and boluses of 10 cc (45% barium mixed with 0.9% NaCl) were swallowed at ≥20 sec intervals for 2–2.5 min

Results: No swallows had normal bolus transit by Imp or Ba in patients with Ach and ScI. In Ach, Imp baseline was very low (<300 ohms; normal >1500 ohms) in entire study 10&15 cm above LES, and though the site 5 cm above LES was also very low during most of the study, there were intermittent, transient Imp increases to >500 ohms (9/10) or >1000 ohms (6/10). Ba confirmed these findings were from severe bolus stasis at 10 &15 cm and less stasis at 5 cm above LES. ScI patients also had a constant low baseline at sites 10&15 cm above LES, but had 2 findings discriminating them from Ach: 1) constant low Imp <300 ohms 5 cm above LES, and 2) gas retention in the proximal esophagus (15 and/or 20 cm above LES). Ba confirmed stasis throughout the esophagus and air pockets proximal. DES patients had some swallows with normal bolus transit by Imp and Ba, and normal esophageal peristalsis by Man. However, other swallows with simultaneous contractions by Man had normal bolus transit in the distal esophagus (5,10 cm above LES), but retrograde escape in the proximal esophagus (15,20 cm above LES). Ba found this was due to “bolus splitting,” with part of the bolus clearing rapidly from the distal esophagus, and the rest escaping retrograde to the proximal esophagus.

Conclusions: Patients with achalasia, DES, and scleroderma have characteristic and different bolus transit patterns by impedance monitoring confirmed by concurrent videoesophagogram.

Impedance findings distinguishing three patient groups

<table>
<thead>
<tr>
<th>Achalasia (n = 10)</th>
<th>DES (n = 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL Sites 2.3</td>
<td></td>
</tr>
<tr>
<td>Stable, very low</td>
<td>Yes</td>
</tr>
<tr>
<td>(10–1500 ohms)**</td>
<td></td>
</tr>
<tr>
<td>BL Site 4</td>
<td>Variants</td>
</tr>
<tr>
<td>(200–1500 ohms)</td>
<td>No</td>
</tr>
<tr>
<td>BL Site 1: Gas present</td>
<td>No (&lt;300)</td>
</tr>
<tr>
<td>(7000 ohms)</td>
<td>No</td>
</tr>
<tr>
<td>Occasional</td>
<td>No</td>
</tr>
<tr>
<td>Normal</td>
<td>No</td>
</tr>
<tr>
<td>Transit</td>
<td>No</td>
</tr>
<tr>
<td>Bulus splitting</td>
<td>No</td>
</tr>
</tbody>
</table>

*BL: Baseline impedance. **Normal Impedance Baseline >1500 ohms

11

ESOMEPRAZOLE 40 MG VERSUS LANSOPRAZOLE 30 MG IN HEALING AND SYMPTOM RELIEF IN PATIENTS WITH MODERATE TO SEVERE EROSION ESOPHAGITIS (LOS ANGELES GRADES C OR D)


Purpose: A previous large study showed that esomeprazole more effectively healed erosive esophagitis (EE) across all Los Angeles (LA) grades than lansoprazole; the largest difference was seen for LA grades C and D.1 The purpose of this study was to compare oral esomeprazole 40 mg once daily with lansoprazole 30 mg once daily for healing moderate to severe EE and to confirm the results in the subgroup of patients with moderate or severe EE from the previous trial.

Methods: Patients with moderate or severe EE (LA grades C or D) confirmed by endoscopy were enrolled into a multicenter, randomized, double-blind, double-dummy, parallel-group study (D99612L00046; Study 322) that was part of a total patient management program. Patients received esomeprazole 40 mg or lansoprazole 30 mg once daily for up to 8 weeks. Endoscopy was performed at week 4; patients without complete healing continued treatment for an additional 4 weeks when a final endoscopy was performed. The primary efficacy variable was the healing status of EE, healed or unhealed, during the 8-week study period. The percentage of healed patients was calculated using the Kaplan-Meier method. A log-rank test was used to compare treatments for the EE healing rate. The investigator evaluated heartburn severity at each clinical visit; “resolution” of heartburn was defined as symptom severity of “none” on a 4-point scale. A Cochran-Mantel-Haenszel test, stratified by baseline symptom severity, was used to compare the difference in heartburn resolution between treatment groups.

Results: The estimated healing rates are shown in the Table. More patients achieved resolution of heartburn at week 4 with esomeprazole than with lansoprazole (72% vs 64%; P = .005).

Conclusions: Esomeprazole 40 mg once daily was more effective than lansoprazole 30 mg once daily in healing moderate to severe EE through 8 weeks of therapy and in resolving heartburn through 4 weeks of therapy.

Reference:

Estimated Healing Rates

<table>
<thead>
<tr>
<th>Time</th>
<th>% Healed (95% Confidence Interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 4</td>
<td>58.6 (54.1–63.0) 77.5 (73.7–81.2)</td>
</tr>
<tr>
<td>Week 8</td>
<td>82.4 (78.9–85.9) 94.9 (44.9–53.8)</td>
</tr>
</tbody>
</table>

*P = .007 log-rank test, esomeprazole versus lansoprazole.

12

IS THE PREVALENCE OF MODERATE TO SEVERE EROSIve ESOPHAGITIS MORE COMMON THAN WE THINK? A DESCRIPTION OF PATIENTS WITH EROSIve ESOPHAGITIS OF LOS ANGELES GRADES C OR D


Purpose: The purpose of this study was to assess patient characteristics collected at enrollment as part of a multicenter, randomized, double-blind, double-dummy, parallel-group study (D9612L00046, Study 322) comparing esomeprazole with lansoprazole in patients with moderate or severe EE (Los Angeles [LA] grades C or D).

Methods: From Jan–Jul 2003, radio and newspaper advertisements were used to recruit patients with frequent heartburn (≥3 times/week). The presence of moderate or severe esophagitis was confirmed by endoscopy at baseline.

Results: Of the 4015 patients screened for this study, 1035 (25.8%) had LA grades C or D EE; 1189 (29.6%) had LA grades A or B EE, and 1066 (26.6%) did not have EE. Of the 1035 patients with LA grades C or D EE, 1001 were entered into the study; the characteristics of this group are shown in the Table. A total of 5.5% of patients reported previous complications of GERD. Approximately one third (32.4%) of patients reported a history of EE, with the mean time of first diagnosis of EE 4.8 years before study entry (range, 0–35 years).

Conclusions: In this large, controlled clinical study, patients with moderate or severe EE tended to be men younger than 65 years with a history of GERD symptoms for more than 5 years. Approximately one quarter of screened
patients had moderate or severe EE, a rate substantially higher than that previously reported.  

References:  

Characteristics of Patients Entered Into the Study (n = 1001)  

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age, y (range)</td>
<td>47.2</td>
<td>(19–78)</td>
</tr>
<tr>
<td>&lt;65 y,%</td>
<td>88.8</td>
<td></td>
</tr>
<tr>
<td>% Men</td>
<td>66.1</td>
<td></td>
</tr>
<tr>
<td>Race (white, black, Asian),%</td>
<td>82.3, 4.7, 0.5</td>
<td></td>
</tr>
<tr>
<td>GERD history &gt;1 y,%</td>
<td>93.5</td>
<td></td>
</tr>
<tr>
<td>Baseline LA grade (C, D),%</td>
<td>79, 21</td>
<td></td>
</tr>
<tr>
<td>Mean height, in (range)</td>
<td>68 (51–77)</td>
<td></td>
</tr>
<tr>
<td>Mean body weight, lb (range)</td>
<td>199.5 (96–430)</td>
<td></td>
</tr>
</tbody>
</table>

**13**  

**THE STRETTA PROCEDURE RESULTS IN SUSTAINED IMPROVEMENT OF ANTI-SECRETORY DRUG USE AND GERD SYMPTOMS AT 3 YEARS FOLLOW-UP, WHILE NORMALIZING GASTRIC EMPTYING FUNCTION IN THE MAJORITY OF IMPAIRED SUBJECTS**  


**Purpose:** To evaluate the long-term (up to 3 year) effect of the Stretta Procedure on anti-secretory drug utilization, GERD symptoms, and patient satisfaction. Further, gastric emptying studies were used to assess whether Stretta improves gastric emptying function in those subjects with baseline impairment.  

**Methods:** Between August 2000 and April 2004, 214 subjects with GERD and inadequate symptom control despite PPI bid underwent the Stretta procedure. All procedures were performed by a single physician, (MN), on an outpatient basis using conscious sedation. Baseline and follow-up (6, 12, 24 and 36 month) GERD-HRQL scores (0–50), heartburn (0–5), satisfaction (0–5) and medication-use were collected. Gastric emptying studies were performed on a subset of patients at baseline and 8 months.

**Results:** The total treated pool includes 214 subjects (128 females, 59.8%). There were no significant adverse events. Complete follow-up was available for subjects at each follow-up interval as follows: 6 months (n = 174), 1 year (n = 146), 2 years (n = 90), and 3 years (n = 57). GERD-HRQL, heartburn, satisfaction, and medication use were significantly improved at all follow-up intervals (6, 12, 24, 36 months, all p < 0.001) and scores at each interval were superior to those achieved on baseline drug therapy. Further, there was no significant diminution of effect with increasing time of follow-up. Baseline and follow-up gastric emptying studies were available for 73 patients. The % emptied at 90 minutes improved from 60 ± 22% to 81 ± 23% (p < 0.001). At baseline, 29 (40%) of subjects had delayed gastric emptying, while at follow-up only 12 (16%) had delayed gastric emptying. This represents normalization in 67% of those with abnormal baseline studies.

**Conclusions:** The Stretta procedure has a significant positive and sustained effect on anti-secretory medication use and GERD symptoms, with durability of response demonstrated at 3 years. The observed improvement was superior to that achieved with escalated baseline anti-secretory therapy. Gastric emptying was improved overall, with normalization in 67% of those with baseline impairment.

**14**  

**HIATUS HERNIA AND OBESITY IN DIFFERENT ETHNIC GROUPS**  


African Americans (A) have lower incidence of Barrett’s esophagus and esophageal adenocarcinoma than whites (W). The reason is unclear. Competence of the phrenico-esophageal system and presence of hiatus hernia (HH) may be related to obesity.

**Methods:** In 486 sequentially endoscoped male patients, 234 W, age 69.3 (11.5–1 SD), 212 A, 65.5 (11.7) and 40 Hispanics (H), 62.5 (13) we determined 1) the horizontal size of sliding HH on retroversion gastroscopy, using the diameter of the endoscope as a scale and, 2) the body mass index (BMI, kg/m²).

**Results:** HH in cm: 1.46 (1.51) in W, 1.05 (1.30) in A, 1.23 (1.74) in H (W:A < 0.001, W: H = 0.02). HH 4 cm or larger: 11% W, 4% A, 8% H. BMI: 27.2 (5.3) in W, 26.3 (5.3) in A, 27.4 (5.5) in H (differences NS). Regression analysis in all 486 patients between HH and BMI showed no correlation (r = 0.04). Patients stratified by BMI < 25 or = > 25 showed HH sizes: W 1.48 (1.38) vs 1.45 (1.58), A 0.91 (1.11) vs 1.15 (1.42) and H 1.14 (1.45) vs 1.46 (2.40) (NS except a trend at P = 0.06 in A). Reproducibility of measurements was tested in 40 patients endoscoped twice at an interval of 163 (288) days: HH₁ vs HH₂ and BMI₁ vs BMI₂ were all NS in a paired t test.

**Conclusion:** W have significantly larger HH than A or H. Predisposition of W to HH is not related to BMI. There is no correlation between HH and BMI in all patients pooled together and no clear relation of HH to BMI in individual ethnic groups. Larger HH in W corresponds with their higher incidence of Barrett’s and esophageal adenocarcinoma.

**15**  

**COMPARISON OF THE 48 HOUR BRAVO CAPSULE VERSUS THE TRADITIONAL 24 HOUR DUAL CHANNEL pH PROBE IN THE EVALUATION OF EXTRAESOPHAGEAL GERD**  

Chris A. Demetriou, M.D., Kavita Kongara, M.D., James Grennell, M.D., Maureen Stampe, R.N. Winthrop University Hospital, Mineola, New York.

**Purpose:** Before the development of the endoscopically placed 48 hour Bravo pH capsule, the evaluation of patients with presumed GERD was performed by a 24 hour intranasal pH probe. Focusing on those patients being evaluated solely for extraesophageal manifestations of GERD, the dual channel 24 hour pH probe seemed physiologically important because of its capability of measuring acid exposure at the proximal and distal esophagus. The theory behind this was that this specific patient population physiologically has gastric acid refluxing past the upper esophageal sphincter and the dual channel probe is capable of directly evaluating the pH in the proximal esophagus.

This study was performed to retrospectively evaluate both 24 hour dual channel pH studies and 48 hour Bravo capsule pH studies in patients complaining of predominately extraesophageal manifestations of GERD. The aim of the study was to determine if the Bravo capsule could be utilized in this specific patient population and prompt prospective studies in the future.

**Methods:** In this study we evaluated patients predominantly complaining of possible extraesophageal manifestations of GERD, defined by chronic cough, regurgitation, pharyngitis, hoarseness, and water brash. We evaluated our first 17 patients who received the Bravo capsule and compared the results to those of our last 17 patients who received the dual channel 24 hour pH probe who were being tested in the evaluation of extraesophageal GERD.
Results: The Bravo group revealed 7 out of 17 patients (41%) with a positive 48 hour pH study described as a pH less than 4 for greater than 5.5% of the time on either day one or day two. A subset analysis evaluated 10 of the patients who were on proton pump inhibitors (PPI) and only one had a positive pH study (10%). The 24 hour dual channel pH probe group resulted in 3 out of 17 (17%) with a positive study. A subset analysis evaluated 11 out of 17 patients who were on PPI during this study with none of them (0%) having a positive result.

Conclusions: The 48 hour Bravo capsule appears to be a reasonable alternative to the dual channel 24 hour pH probe in the evaluation of patients with predominantly extra-esophageal manifestations of GERD. Our results demonstrate the need for future randomized prospective studies evaluating the effectiveness and cost benefit ratio for 48 hour Bravo capsule pH monitoring in this specific patient population.

16 DOES DIFFUSE ESOPHAGEAL SPASM (DES) PROGRESS TO ACHALASIA? A PROSPECTIVE COHORT STUDY OVER 10 YEARS
Sayed S. Khatami, M.D., Farah Khandwala, M.Sc., Stevens Shay, M.D., Michael F. Vaezi, M.D., Ph.D.*. Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: Isolated case reports suggest that DES may progress to achalasia and suggesting that DES may be the predecessor of achalasia along the continuum of motility disorders. However, to date no prospective studies have assessed this contention. Therefore, we performed a prospective cohort study of DES patients assessing incidence of DES progression to achalasia.

Methods: We identified all patients diagnosed with DES between 1993 and 2003 from the Cleveland Clinic esophageal manometry database. The manometry tracings of all subjects were re-evaluated to ensure proper diagnosis. The diagnosis of DES was confirmed based on accepted criteria (repetitive simultaneous, non-peristaltic contractions with amplitude > 30mmHg involving >10% of swallows in the distal esophagus). Inclusion into the study was based on agreement between independent verification of the DES diagnosis by two esophageal experts. Patients were then contacted to undergo a repeat esophageal manometry from 4 up to 127 month after the original diagnosis. Questionnaire determined symptoms of dysphagia, chest pain, heartburn, and regurgitation.

Results: 32 patients with confirmed diagnosis of DES identified. 20 patients were excluded: death (n = 5), inaccessible (n = 6), refused to participate (n = 14). Thus, twelve patients constituted this study cohort. There was no difference between the excluded and the 12 study cohorts with respect to age, symptoms, or manometric findings. Mean follow up the study cohort was 48 months (Figure). One (8.3%) patient developed achalasia; 7 (58.3%) patients still had DES, 3 (25%) had normal manometry, and one (8.3%) nutcracker esophagus. Demographic or prior manometric parameters did not predict later progression to achalasia.

Conclusions: 1) Progression of DES to achalasia may be a time dependent phenomenon in a small subgroup of patients. 2) Manometric diagnosis of DES is not stable on follow-up with a substantial minority (25%) showing normal manometry on follow-up. 3) Our data does not support a continuum of motility disorder theory.

17 EOSINOPHILIC ESOPHAGITIS – DISTINGUISHING ENDOSCOPIC FEATURES AND RESPONSE TO LEUKOTRIENE RECEPTOR ANTAGONIST (LRA)
Manoj Shah, M.D.*, Evelyn Choo, M.D., Finese Childs, R.N, Sally Rajcevich, R.N, Khiet Ngo, D.O. Loma Linda University School of Medicine, Loma Linda, California.

Purpose: There is lack of consensus on the endoscopic and histologic features that distinguish Eosinophilic Esophagitis (EE) from other diseases with esophageal eosinophils. We describe the clinical, endoscopic, and histological findings in patients with EE and our therapeutic experience with a LRA (Singulair®).

Methods: The medical charts, endoscopic images/reports and biopsies of patients diagnosed with EE over 4 year were retrospectively reviewed. Response to therapy was assessed by chart review and/or telephone follow up.

Results: Four females and 6 males ages 4 to 15 years were identified with EE. Presenting symptoms included nausea/vomiting (7), abdominal pain (6), poor oral intake (3), dysphagia (2), weight loss (1), hematemesis (1), and abdominal distension (1), with associated asthma/eczema (2) and chronic cough (1).

All patients had abnormal findings in the proximal/mid esophagus while seven had distal esophageal abnormalities. Endoscopic findings included: streaky esophagitis (7), white plaques (3), nodularity (3) and streaky erythema (1). These findings were more predominant in the proximal/mid esophagus than the distal esophagus. In the distal esophagus eosinophils were present at a density of >20/hpf in 6 patients, 10–20/hpf in 1, and <10/hpf in 1 patient. The mid to proximal esophagus eosinophils were present at a density of >20/hpf in 5 patients, 10–20/hpf in 2, <10/hpf in 3 patients. Initially, all patients were given acid suppression treatment with an H2 blocker and/or proton pump inhibitor; only one patient had some response. One patient with a history of allergies was treated with prednisone. Six patients were prescribed Singular for 8 weeks. Two patients reported complete resolution of symptoms. One child refused to take the medication. Two patients reported no clinical response. One who had endoscopic/histologic evidence of EE but no significant clinical symptoms showed no response on repeat endoscopy/biopsy.

Conclusions: 1. Patients with EE are more likely to have abnormal endoscopic and microscopic findings in the proximal to mid esophagus compared to the distal esophagus in contrast to patients with reflux esophagitis. EE patients have a gradient of decreasing severity from the proximal to distal esophagus which may aid in distinguishing EE from other diseases with the presence of eosinophils in the esophagus. 2. Larger controlled trials are needed to further define the subset of patients with EE who may benefit from LRA.

18 ESOMEPRAZOLE 20 MG VERSUS LANSOPRAZOLE 15 MG FOR MAINTENANCE OF HEALING OF EROSIIVE ESOPHAGITIS
Kenneth R. DeVault, M.D., F.A.C.G., Sherry Liu, Ph.D., Paul Hoyle, Ph.D., Mark Sostek, M.D.*. Mayo Clinic, Jacksonville, Florida and AstraZeneca LP, Wilmington, Delaware.

Purpose: Maintenance-dose esomeprazole (20 mg) provides better intragastric acid control than maintenance-dose lansoprazole (15 mg).1 Higher remission rates through 6 months of therapy were achieved with esomeprazole in a previous study conducted in 1000 patients.2 This study compares the efficacy of the FDA-approved doses of esomeprazole (20 mg once daily) and lansoprazole (15 mg once daily) for maintenance of healing of erosive esophagitis (EE).
Methods: Patients with a history of heartburn and EE confirmed by endoscopy (Los Angeles [LA] grades A–D) were included in this multicenter (143 centers), randomized, double-blind, double-dummy, parallel-group study (D9612L00048/Study 325). Patients with healed EE on endoscopy after 4 to 8 weeks of treatment with once daily oral esomeprazole 40 mg or lansoprazole 30 mg who did not have heartburn or acid regurgitation during the last 7 days (by investigator assessment) were randomized to receive double-blind maintenance treatment with once daily oral esomeprazole 20 mg or lansoprazole 15 mg for 6 months. Proportions of patients in remission (no EE [LA grade A–D] detected by endoscopy repeated at months 3 and 6 or discontinuance of treatment due to reflux symptoms) and number needed to treat (NNT) were calculated. Investigators assessed symptoms of heartburn, acid regurgitation, dysphagia, and epigastric pain (none, mild, moderate, severe) at months 1, 3, and 6.

Results: The intention-to-treat analyses included 501 and 500 patients in the esomeprazole and lansoprazole groups, respectively. The proportion of patients at baseline with LA grade A, B, C, or D EE were 37%, 38%, 21%, and 5%, respectively. A significantly greater proportion of patients who received esomeprazole than those who received lansoprazole maintained healing of EE and had no symptoms through 6 months of treatment (86.2% vs 77.6%, respectively; P < .0001). One relapse was prevented for every 12 patients (NNT = 12) treated with esomeprazole versus lansoprazole. Both treatments were well tolerated during the 6-month study period.

Conclusions: Esomeprazole 20 mg once daily is more effective than lansoprazole 15 mg once daily in maintaining remission in patients with healed EE through 6 months of therapy. The results of the present study confirm those of the previous Metropole trial.

References:

19

EFFECT OF PANTOPRAZOLE ON TYPICAL AND ATYPICAL REFLUX SYMPTOMS IN A PROSPECTIVE COHORT OF PATIENTS WITH OBSTRUCTIVE SLEEP DISORDERED BREATHING


Purpose: To determine the effectiveness of Pantoprazole for typical and atypical (extraesophageal) reflux symptoms in patients with obstructive sleep disordered breathing

Methods: Prospective interventional cohort study of 27 subjects with symptoms of acid reflux and mild to moderate obstructive sleep disordered breathing (apnea/hypopnea index (AHI) < 30) treated with Pantoprazole 40mg QAM for three months. Outcome measures included mean change from pretreatment baseline in 1) severity of total and component reflux symptoms using a previously validated reflux questionnaire modified to include laryngopharyngeal symptoms, 2) daytime somnolence (Epworth Sleepiness Score (ESS)), and 3) AHI using home polysomnography. All hypotheses tested with two-tailed paired t-test, p ≤ 0.05 significant.

Results: At baseline, patients were typically middle-aged, obese men with mild to moderate sleep apnea (mean AHI = 15) and excessive daytime somnolence (mean ESS = 13). Following three months therapy with Pantoprazole 15mg significant improvement was seen in severity of total reflux symptoms (p < 0.0001), typical symptoms (acid reflux and heartburn; p = 0.0001), pharyngeal symptoms (glous, phlegm, sore throat; p = 0.02), and laryngeal symptoms (hoarseness, cough, throat clearing; p = 0.02). Daytime sleepiness and typical symptoms awakening subject from sleep were also significantly improved (p = 0.002 and p < 0.0001). No significant change was noted in AHI. When typical and atypical reflux symptom improvements were compared, typical symptoms improved to a significantly greater degree than pharyngeal (p = 0.004) or laryngeal (p = 0.003) symptoms. No significant difference was noted between improvement in typical symptoms and daytime sleepiness (p = 0.63). No significant change was noted in AHI.

Conclusions: Pantoprazole therapy significantly improved daytime somnolence and reflux symptoms, including reflux awakening from sleep, in this cohort of subjects with mild to moderate obstructive sleep disordered breathing. A differential effect was noted with significantly greater improvement for typical than for laryngopharyngeal symptoms. Improvement in daytime sleepiness was comparable to typical reflux symptoms and may have resulted from reduction in reflux awakening from sleep, as no significant improvement was noted in polysomnographic parameters.

20

ALTERATION OF LOWER ESOPHAGEAL SPHINCTER PRESSURE FOLLOWING ENDOSCOPIC VARICEAL LIGATION (PRELIMINARY REPORT)


Purpose: Endoscopic variceal ligation (EVL) and Endoscopic sclerotherapy (EV) are the two first line therapy for bleeding esophageal varices. In addition EVL may also be used as primary prophylaxis for variceal bleeding. Both sclerotherapy and EVL are reported to be associated with altered esophageal motility. Lower esophageal pressure changes following endoscopic sclerotherapy in the available data are heterogeneous. Altered esophageal motility may be due to esophageal inflammation at the early stage or due to subsequent fibrosis. Data regarding pressure changes of LES following EVL are relatively inadequate in literature. Previous studies shows, there is no early changes (<24 hrs) of LES pressure following EVL as well as Endoscopic sclerotherapy.

Aim of the Study: To see the late effect of EVL on the change of pressure of LES.

Methods: Sixteen patients of portal hypertension underwent esophageal manometry one hour prior to EVL and 4 weeks after. Manometry was performed using a continuous water perfusion system with external transducer and analysed using software Albyn Medical System. EVL was done using Omniview 6 shooter variceal ligator.

Results: The study was completed in 8 pts. of which EVL done for secondary prophylaxis in 5 and for primary prophylaxis in 3 pts. Basal mid expiratory LES pressure ranged from 7 mm of Hg to 27 mm of Hg. Four weeks post EVL, LES pressure ranged from 5 mm to 45 mm of Hg. The mean LES pressure increased in 5 pts (62.5%), decreased in 2 (25%) and remained normal in 1pt.(12.5%). The mean amplitude of contraction as well as duration of contraction remained almost same before and after EVL.

Conclusions: EVL causes rise of LES pressure in majority of the cases, however their effect in long term follow up needs to be defined and the rise of LES pressure does not produce symptoms by interfering passage of food in those sub group of patients.

21

POSITRON EMISSION TOMOGRAPHY (PET SCAN) IN LOCALLY ADVANCED ESOPHAGEAL CANCER (EC)

Javier Parra, M.D., Marc Hickson, M.D., Bach Ardalan, M.D., Afonso Ribeiro, M.D.*, Alan Livingstone, M.D., Mayra Lima, M.D., Dido Franceschi, M.D. University of Miami and Sylvester Cancer Center, Miami, Florida.

Purpose: CT scan and endoscopic ultrasound (EUS) are the most frequently used modalities for preoperative staging and follow-up of EC. PET scan is now also being used for staging EC. However the cost-effectiveness of this approach in all stages of EC is controversial. In patients at higher risk for metastatic disease as determined by EUS staging, detection of distant metastases by PET scan may have a significant impact on patient’s management.

AIM: To evaluate the yield of PET scan in the detection of metastatic disease in locally advanced EC.
Methods: Retrospective review of cases of EC staged and followed with PET scan at the University of Miami from 1999 to 2004 and compared PET scan findings against those of CT and clinical follow-up for EC and metastases. PET scan was performed using 50 μCi/Kg of the glucose analogue 18F18-fluorodeoxyglucose intravenously after an overnight fasting. A standardized uptake value of 3.5 or more was considered positive for metastases. Six months of follow-up were required for negative scans to be considered truly negative.

Results: A total of 22 patients that underwent 34 PET scans were included. The mean age was 63.2 (range: 47 to 80) with 7 females and 15 males. Staging by EUS demonstrated: 18 patients stage III and 2 pts stage II, EUS was not done in two patients. PET scan was performed preoperatively in five patients with stage III and all had positive uptake by primary tumor but were negative for metastases with one patient developing metastases within four months of follow-up (negative predictive value 80%) (mean follow-up after first PET of 50 weeks). Fourteen out of 22 patients (63%) developed metastases during follow-up and PET scan detected 11 pts out of 14 (78%). PET scan was performed in 10 patients with a highly suspicious lesion already seen on CT. In two patients PET scan showed additional lesions not seen on CT. Overall, the results of PET scan alone for the detection of metastases in post-surgical follow-up were: sensitivity of 84% (CI: 64–92%), specificity 87% (CI: 54–99%), PPV 92% (CI: 70–99%), NPV 78% (CI: 48–88%).

Conclusions: In a subset of patients with locally advanced esophageal cancer and higher pre-test probability of metastatic disease, PET scan is generally more accurate in confirming metastases, obviating in some cases the need for histological confirmation (PPV = 92%). Studies are needed to determine the best timing of PET scan in the follow-up of patients with esophageal cancer.

AZD0865, A POTASSIUM-COMPETITIVE ACID BLOCKER (P-CAB), HAS A LONG DURATION OF EFFECT IN THE RAT

Björn Holstein, Ph.D., Malin Florentzon, B.Sc., Magdalena Andersson, M.Sc., Kjell Andersson, Ph.D.*. AstraZeneca, Pepparedsleden 1, Mõndal, Sweden.

Purpose: AZD0865 is a potassium-competitive acid blocker (P-CAB) in development for the treatment of acid-related diseases. This study investigated the duration of effect of AZD0865 in the rat.

Methods: Stimulated (pentagastrin + carbachol) acid secretion was measured in 4 groups of 8 chronic fistula rats after single oral doses of AZD0865 at 0, 1, 10 and 50 μmol/kg (≥6 days washout between doses), with various intervals between dosing and a 2-h period of stimulation and collection of gastric juice. In addition, responses were also recorded 24 h after a 5-day period of repeated dosing at 1 and 10 μmol/kg/day. In follow-up experiments, secretory responses were assessed 24 h after a single dose and 5 days repeated administration of AZD0865 at 0, 1 and 5 μmol/kg/day, and AZD0865 concentration was determined using reversed-phase liquid chromatography and fluorescence detection both in plasma collected after the secretory tests and in titrated samples of gastric juice (limit of quantification [LOQ] 20 and 2 nmol/L, respectively).

Results: Inhibition of acid output 24 h following single doses of AZD0865 (1, 10 and 50 μmol/kg) was 47%, 95% and 100%, respectively. Acid secretion returned to control levels by 36, 48 and 96 h, respectively, post-dose. The inhibition 24 h following 5 days’ repeated doses of AZD0865 (1, 10 μmol/kg/day) was 49% and 93%, respectively. In follow-up studies, inhibition 24 h after single and repeated doses was 37% and 21% at 1 μmol/kg and 78% and 82% at 5 μmol/kg. Single and repeated doses resulted in similar AZD0865 concentrations in plasma 24 h post-dose: <20 nmol/L (i.e. < LOQ in 7 of 8 rats) at 1 μmol/kg; and (mean ± SEM) 59 ± 7 and 71 ± 4 nmol/L, respectively, at 5 μmol/kg. The concentration of AZD0865 in gastric juice 23–25 h after single and repeated doses was: 29 ± 8 and 35 ± 8 nmol/L at 1 μmol/kg; and 199 ± 36 and 184 ± 22 nmol/L at 5 μmol/kg, respectively.

Conclusions: AZD0865 provides dose-dependent inhibition of acid secretion over the 24-h period. There is no accumulation of 24-h antisecretory effect and no increase in the concentration of AZD0865 in plasma or gastric juice during repeated administration. The level of AZD0865 in gastric juice is higher than in plasma reflecting concentration of AZD0865 in the acidic canalculus of the parietal cell. Consequently, the duration of effect of AZD0865 in the rat outlasts the time when AZD0865 is detectable in plasma.

23

COMPARISON OF GASTRIC ACID PH WITH OMEPRAZOLE MAGNESIUM 20.6 MG (PRILOSEC OTC®) q.d., FAMOTIDINE 10 MG b.i.d (PEPCID AC®) AND FAMOTIDINE 20 MG b.i.d. OVER 14-DAYS OF TREATMENT

Philip P. Miner, Jr., M.D., E.A.C.G.*, Mandy R. Graves, Julie M. Grender, Ph.D., Roy M. Kulick, M.D. Oklahoma Foundation for Digestive Research, Oklahoma City, Oklahoma and Mason, Ohio.

Purpose: General consensus postulates H2RAs are superior to PPIs for acid suppression on the first day of therapy despite little data directly comparing them on day 1. In addition, the durability of their effect over 14 days has not been systematically compared. The aim of this study was to evaluate and compare the effect of Prilosec OTC® q.d. (POTC) and famotidine (FAM) b.i.d. on intragastric pH on day 1 through day 14.

Methods: This was a randomized, double-blind, 3-treatment, 3-period crossover study. Treatments were Prilosec OTC® q.d., Pepcid AC® b.i.d. and FAM 20 mg b.i.d. Generally healthy subjects with frequent heartburn (> 2 days/wk), ages 18–70, underwent continuous 24-hr gastric pH monitoring on days 0 (baseline), 1, 3, 7 and 14 of each period. Subjects were dosed at the study site 15–60 min. before breakfast and dinner and ate standardized meals on pH monitoring days. There was a minimum 13-day washout. Analyses were based on difference from baseline from crossover ANOVA.

Results: Thirty-two subjects were randomized and 30 were included in the analyses. The mean % time pH > 4 (pH4%) is summarized in the figure. On day 1, pH4% was higher for POTC, 39.6%, than for Pepcid AC®33.7% (p = 0.024), and not statistically different from FAM 20 mg, 40.1% (p = 0.587). The pH4% was higher on POTC than on both FAM regimens on days 3, 7 and 14 (p < 0.001). After day 1, POTC showed an increasing and sustained effect on gastric pH compared to a decreasing effect over time for FAM. The mean % time pH > 3 mirrored pH4%.

Conclusions: Prilosec OTC®, administered once-daily for 14 days, significantly increased gastric pH on day 1 and demonstrated increasing and durable gastric acid control over the treatment period. On day 1, the % time pH > 4 on Prilosec OTC® was higher than Pepcid AC® and comparable to FAM 20 mg administered b.i.d. On subsequent treatment days, the % time pH > 4 on Prilosec OTC® was consistently higher than both FAM regimens [figure]
PANTOPRAZOLE 40 MG MAINTAINS HEALING OF EROSI
VE ESOPHAGITIS IN MORE PATIENTS THAN RANITIDINE 150 MG
OVER 3 YEARS
David C. Metz, M.D., Michael E. Mack, Ph.D., Elaine Soffer, B.A., Joel E.
Richter, M.D., F.A.C.G.*. University of Pennsylvania Health System,
Philadelphia; Wyeth Research, Collegeville, Pennsylvania and The
Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: This post hoc pooled analysis of data from 2 identical clinical
trials compares the safety and effectiveness of pantoprazole 40 mg once
daily vs. ranitidine 150 mg twice daily (the approved US dose levels)
on long-term maintenance of healing of erosive esophagitis over 3 years
of treatment.

Methods: GERD patients with endoscopically documented healed erosive
esophagitis (grade 0 or 1 Hetzel-Dent score) were enrolled in 2 trials
(over 3-year, double-blind, comparator- controlled clinical studies) that compared the ef
ficacy and safety of pantoprazole 40 mg once daily (n = 179) and ranitidine
150 mg twice daily (n = 183) in the maintenance of healing. Upper
endoscopy was performed at months 1, 3, 6, 12, 24, and 36, or when
GERD symptoms recurred. Relapse was defined as the reappearance of ero
sive esophagitis with endoscopic grade ≥ 2. Patients who relapsed during
year 1 were withdrawn. Patients who relapsed at the end of year 1 or later
could receive open-label treatment with pantoprazole 40 mg; if healed, they
could then return to their randomized treatment. Time to first relapse was
analyzed.

Results: Pantoprazole 40 mg once daily was more effective than ranitidine
150 mg twice daily in maintaining healed erosive esophagitis through 36
months of treatment. In study A, 77% of 85 pantoprazole patients maintained
healing vs 25% of 88 ranitidine patients; in study B, 74% of 94 pantoprazole
patients maintained healing vs 26% of 95 ranitidine patients (both studies
p < 0.001; Wilcoxon test). Overall, 75% of patients remained healed on
pantoprazole compared with 26% on ranitidine. The incidence of adverse
events was similar (pantoprazole 6.7%; ranitidine 6.5%). Significantly more
discontinuations occurred in the ranitidine groups than in the pantoprazole
groups (79.5% vs 46.9%, p < 0.001, any reason; 56.2% vs 13.4% lack of
efficacy, p < 0.001, ranitidine vs pantoprazole).

Conclusions: Pantoprazole 40 mg once per day safely and effectively main
tains healing of erosive esophagitis with significantly fewer relapses than
ranitidine 150 mg twice daily over 3 years of treatment.

A NEW THERAPEUTIC MODALITY FOR SYMPTOMATIC
SCHATZKI RINGS: DISRUPTING THE RING USING ONLY THE
RETROFLEXED UPPER ENDOSCOPE
Felice R. Zwas, M.D.*, Nicholas W Cirillo, D.O., Dang-Quang Tran, M.D.
Greenwich Hospital/Yale University Medical Center, Greenwich,
Connecticut and Wilkes Regional Medical Center, Wilkesboro, North
Carolina.

Purpose: Schatzki ring is a common cause of solid food dysphagia.
The current treatment modalities, Maloney and balloon dilation, and needle
knife disruption, have been shown to be safe and effective. A new treat
ment modality involving only the endoscope in the retroflexed position
has been developed with the potential of saving both cost and time.
The purpose of this study is to evaluate the efficacy and safety of this new
treatment.

Methods: A new endoscopic technique has been developed by Zwas and
Cirillo using only the endoscope to disrupt the ring. First, the ring is viewed
while retroflexed. Air is insufflated to maximally distend the hiatal hernia.
The retroflexed scope is then withdrawn into the esophagus above the edge of
the Schatzki ring. The endoscope, while retroflexed, is advanced back
down into the stomach by pulling the scope back with steady pressure. This
causes the tip of the gastroscope to deflect downward, across the ring, thereby
shearing the Schatzki ring. This process usually takes seconds to accomplish.
A retrospective chart and computer database review of upper endoscopy
procedure reports from 9/01 to 1/04 identified all patients with dysphagia
and Schatzki rings who were treated with this new technique. Patients with
esophagitis, strictures or documented motility disorders were excluded. Tele
phone interview and/or chart review were conducted from 12/03 to 5/04 to
determine symptom-free interval and complications of this new method.

Results: One hundred patients (25 males and 75 females; mean age 61.3,
range 25–89) were identified to have symptomatic Schatzki rings who under
went endoscopic disruption. Ninety-one (91%) reported immediate relief of
symptoms. Seventy (70%) patients were asymptomatic at time of follow-up
(mean follow-up 12.7 months, range 1–32 months). There were no long-term
or serious complications.

Conclusions: A new technique using only the endoscope, in retroflexion,
to disrupt Schatzki rings is described. Results from this study show this
modality to be safe and effective in the treatment of symptomatic rings.
Given that no additional equipment is required and disruption of the ring
takes minimal time to achieve, there would appear to be a cost and time
savings when compared to current available treatments. Further prospective
studies addressing these issues, as well as comparing long-term efficacy of
these modalities are needed.

IS GERD A RISK FACTOR FOR LARYNGEAL CANCER? A
META-ANALYSIS
Mohammed A. Qadeer, M.D., Natalie Colabianchi, Ph.D., Michael F.
Vaez, M.D., F.A.C.G.*. Cleveland Clinic Foundation and Case Western
Reserve University, Cleveland, Ohio.

Purpose: The risk of GERD in the causation of laryngeal cancer has been
controversial due to disparate studies. We performed a meta-analysis of the
published original studies to examine the strength of association.

Methods: All the studies cited on Medline database from 1966 to 2003
describing GERD and laryngeal cancer were eligible for inclusion. The in
clusion criteria for the study included an original study design with controls,
and a clear documentation of the reflux prevalence in cases and controls.
Pooled odds ratio was calculated by both fixed-effects and random-effects
model.

Results: 14 published studies were identified. 8 studies did not have control
groups and 2 studies did not document GERD prevalence in controls. Thus,
4 studies qualified for inclusion for the meta-analysis. The calculated odds
ratios for GERD in laryngeal cancer in individual studies are depicted in
Table 1. The pooled odds ratio on the basis of fixed-effects model was 2.86
(95% CI 2.73–2.99) and on the basis of random-effects model was 2.37 (95%
CI 1.38 – 4.07). These studies were markedly heterogeneous differing not
only in evaluation of risk factors such as smoking and alcohol, but also in
mode of GERD diagnosis.

Conclusions: 1) Our meta-analysis suggests that GERD may be a signif
icant risk factor for laryngeal cancer; however, the results are heavily in
fluenced by a single study where GERD diagnosis was made by admin
istrative codes. 2) The true effect of GERD can only be assessed once the
confounding effect of alcohol and smoking in laryngeal cancer patients are
considered.

Summary of the included studies along with variables evaluated

<table>
<thead>
<tr>
<th>GERD</th>
<th>Diagnosis</th>
<th>Number of cases</th>
<th>Number of controls</th>
<th>GERD in cases</th>
<th>GERD in controls</th>
<th>Smoking (cases vs. controls)</th>
<th>Alcohol (cases vs. controls)</th>
<th>Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD - 9°</td>
<td>17520</td>
<td>17600</td>
<td>3634 (21%)</td>
<td>3655 (8%)</td>
<td>(++)</td>
<td>(++)</td>
<td>2.87 (2.74–3.00)</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>31</td>
<td>151</td>
<td>22 (14%)</td>
<td>106 (10%)</td>
<td>(++)</td>
<td>(++)</td>
<td>1.59 (1.50–3.38)</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>63</td>
<td>735</td>
<td>34 (5%)</td>
<td>365 (50%)</td>
<td>(++)</td>
<td>(++)</td>
<td>1.18 (0.70–2.00)</td>
<td></td>
</tr>
<tr>
<td>EGD</td>
<td>92</td>
<td>636</td>
<td>20 (25%)</td>
<td>32 (5%)</td>
<td>NS/NS</td>
<td>(--)</td>
<td>5.24 (2.81–9.59)</td>
<td></td>
</tr>
</tbody>
</table>

Pooled odds ratio (Fixed-effects model) 2.86 (2.73–2.99); Random-effects model 2.37 (1.38 – 4.07)
GERD SYMPTOMS AND OBJECTIVE REFUX: HIGHLY PREVALENT IN MORBID OBESITY


Purpose: The risk of esophageal adenocarcinoma is increased among obese pts, yet the reported prevalence of GERD symptoms (21–54%) is similar to that in the general population. Therefore, we examined a consecutive series of morbidly obese (MO) pts for the prevalence of GERD symptoms, objective acid reflux, and endoscopic esophagitis (EE).

Methods: We used a detailed, validated reflux questionnaire (RQ) (permission of Mayo Clinic) to compare our MO pts’ GERD symptoms with those of the population of Olmsted Cty, MN (Locke, Gastro 1997; 112:1448). Ambulatory esophageal pH (AePH) data (BRAVO system, Medtronic) were compared with asymptomatic volunteers (AsVol) (Fass, Dig Dis Sci 1993). EE data (LA esophagitis scale) were also compared with AsVol (Stal, Scand J Gastro 1999). From 10/03–4/04, 71 pts enrolled in the Stony Brook bariatric surgery program; 8 were excluded (narcotic analgesic use or had EGD elsewhere) and 7 chose not to participate. Of 56 pts studied, 42 (MO-Gp 1) had RQ, EGD and AePH; 14 (MO-Gp 2) declined AePH. The groups had similar demographics and mean BMI (49.1+/-7.5). More MO-Gp 1 pts used anti-reflux medications (p = 0.049).

Results:

Conclusions: HB and/or AR (75%), dysphagia (23%) and asthma (34%) are more prevalent in a consecutive series of morbidly obese pts than in the general population. Similarly, objective acid reflux is more prevalent in morbidly obese pts (64%) than in asymptomatic volunteers (30%). Thus, a high prevalence of GERD may explain the increased risk of esophageal adenocarcinoma in obese pts.

Supported by the Gen Clin Res Ctr, Univ Hosp at Stony Brook (NIH#R-10710).

Prevalence of GERD Symptoms: Frequency (%)

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>MO-Gp 1</th>
<th>MO-Gp 2</th>
<th>Olmsted Cty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heartburn (Hb)</td>
<td>27/42 (64)</td>
<td>5/14 (36)</td>
<td>p = 0.06</td>
</tr>
<tr>
<td>Acid Regurg (AR)</td>
<td>27/42 (64)</td>
<td>8/14 (57)</td>
<td>p = 0.63</td>
</tr>
<tr>
<td>HB and/or AR</td>
<td>34/81 (41)</td>
<td>8/14 (57)</td>
<td>p = 0.09</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>9/42 (21)</td>
<td>4/14 (29)</td>
<td>p = 0.72</td>
</tr>
<tr>
<td>Asthma</td>
<td>15/42 (36)</td>
<td>14/14 (29)</td>
<td>p = 0.75</td>
</tr>
</tbody>
</table>

p value = 0.00 (Chi square test or Fisher’s exact test)

AePH testing was positive in 27/42 (64%) of MO-Gp 1 pts, significantly different (SD) from 9/30 (30%) of AsVol (p = 0.004). EE was present in 9/56 (16%) of our MO pts, not SD from 3/57 (5%) of AsVol (p = 0.06).

BARIETT’S ESOPHAGUS: HOW MUCH ACID SUPPRESSION IS ENOUGH? PREDICTORS OF RESPONSE TO HIGH DOSE PROTON PUMP INHIBITORS

Sabba Maqbool, M.D., Yasser M. Bhat, M.D., Farah Khandvala, Michael F. Vaezi, M.D., Ph.D.*. Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: Some suggest normalizing esophageal acid/bile exposure in patients with Barrett’s esophagus (BE) to prevent potential future complications such as dysplasia or adenocarcinoma. However, this is controversial. The purpose of this study was to investigate the role of high dose acid suppression in patients with BE and determine potential pre-therapy predictors of response.

Methods: We prospectively identified 30 patients with BE (80% males, mean age 58.6, mean HH length 3.5cm). All patients had baseline evaluation with manometry, 24-hour pH and bilirubin monitoring off therapy. They were then treated with rabeprazole 20 mg BID for 4 weeks after which they had repeat pH and bilirubin monitoring to assess response to therapy. Sociodemographic and esophageal parameters were uni-variately assessed for predictors of response (normalization of acid/bile reflux). The non-responders at 4-weeks were then treated with 40mg BID of rabeprazole and reassessed with pH/bilirubin monitoring after 4 weeks.

Results: Esophageal acid and bile normalization was obtained in 23/30 (77%) patients on 20mg BID and the remaining 7 patients on 40mg BID of rabeprazole. Alcohol use was more common in patients with continued acid/bile reflux at 4 weeks (p = 0.06). Four out of the six non-responder (67%), consumed alcohol on a regular basis, compared to only five out of the twenty three (22%) of responders. Patients with more than 4-cm Barrett’s esophagus were more likely to respond to therapy (p = 0.03). However, overall no predictor of response (Table).

Conclusions: 1) Normalization of acid and bile reflux is possible but at high doses of PPIs which may not be practical given high cost utility. 2) Alcohol intake in patients on therapy may result in continued esophageal exposure to abnormal acid/bile reflux. 3) Future studies are needed to determine the clinical relevance of continued esophageal acid/bile exposure in patients on therapy.

Variables | Responder | Non-Responder | P value
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Median (25th, 75th%)</td>
<td>Median (25th, 75th%)</td>
<td></td>
</tr>
<tr>
<td>BE length</td>
<td>58.0 (51.0, 71.0)</td>
<td>57.0 (54.0, 60.0)</td>
<td>0.69</td>
</tr>
<tr>
<td>Herina length</td>
<td>6.0 (5.0, 8.0)</td>
<td>4.0 (3.0, 4.0)</td>
<td>0.03</td>
</tr>
<tr>
<td>BMI</td>
<td>4.0 (3.0, 5.0)</td>
<td>3.5 (1.0, 4.0)</td>
<td>0.41</td>
</tr>
<tr>
<td>LESP</td>
<td>29.4 (27.0, 32.1)</td>
<td>27.6 (25.0, 31.0)</td>
<td>0.63</td>
</tr>
<tr>
<td>% total time pH &lt; 4</td>
<td>8.6 (4.2, 14.8)</td>
<td>11.8 (6.9, 19.3)</td>
<td>0.39</td>
</tr>
<tr>
<td>% total time bili &gt; 0.14</td>
<td>18.4 (8.5, 25.3)</td>
<td>18.2 (11.7, 19.9)</td>
<td>0.85</td>
</tr>
<tr>
<td>% total time pH &lt; 4</td>
<td>7.8 (5.0, 30.8)</td>
<td>22.8 (14.7, 43.0)</td>
<td>0.23</td>
</tr>
</tbody>
</table>

29

INTRA VENOUS (IV) PANTOPRAZOLE DECREASES HEARTBURN AND ANTACID USE IN PATIENTS WITH GASTROESOPHAGEAL REFLUX DISEASE (GERD)


Purpose: To assess the effect of IV pantoprazole on GERD symptoms and antacid usage in patients with GERD who are not currently on acid suppressive therapy.

Methods: In a multicenter, randomized, double blind, placebo-controlled, double dummy study, eligible patients were randomized to receive either IV pantoprazole 40 mg, oral pantoprazole tablets 40 mg, or placebo once daily for 7 days. Patients had to have a history of erosive esophagitis and must have discontinued all acid suppressing medications (PPIs or H2RAs) for 10 days prior to the first day of dosing. Frequency and severity of heartburn and Gelusil usage were assessed twice daily by a telephone entry system. Severity was scored as none = 0, mild = 1, moderate = 2, or severe = 3. The mean values for the last 3 days before treatment (baseline) were compared with the mean for the last 3 days on treatment. As these were secondary endpoints in an acid output study no hypothesis testing was done and only descriptive statistics were conducted.

Results: 74 patients were included in the intent-to-treat analysis for symptoms. Patients reported a mean of 3 episodes of heartburn per 24-hour period at baseline. The mean ± SE change in heartburn and antacid use are shown in table 1.

In this study, IV pantoprazole was well tolerated with a safety profile comparable to those of oral pantoprazole and placebo.

Conclusions: When used as initial therapy, IV pantoprazole, as well as oral pantoprazole reduced the frequency and severity of heartburn and antacid use. This study suggests that patients with a history of erosive GERD can
be treated with IV pantoprazole to reduce GERD symptoms when the use of oral pantoprazole is not indicated.

Table 1.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>n</th>
<th>Change in HB Frequency (Episodes/24 h)</th>
<th>Change in HB Severity</th>
<th>Change in Gelusil Use (Tablets/24h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV Pantozole 40 mg</td>
<td>23</td>
<td>−1.5 ± 0.6</td>
<td>−1.2 ± 0.2</td>
<td>−2.0 ± 0.4</td>
</tr>
<tr>
<td>Oral Pantozole 40 mg</td>
<td>26</td>
<td>−1.7 ± 0.5</td>
<td>−0.8 ± 0.1</td>
<td>−2.4 ± 0.5</td>
</tr>
<tr>
<td>Placebo</td>
<td>25</td>
<td>−0.5 ± 0.2</td>
<td>−0.3 ± 0.1</td>
<td>−0.7 ± 0.4</td>
</tr>
</tbody>
</table>

HB = Heartburn

30

MAINTENANCE OF HEARTBURN CONTROL IN ELDERLY PATIENTS WITH HEALED EROSIve ESOPHAGITIS TREATED WITH PANTOPRAZOLE 40 MG


Purpose: Elderly patients have more frequent complications of GERD than younger adults, such as erosive esophagitis (EE) and Barrett’s esophagus (Am J Gastro 1995, 90:1053–7). However, we have recently reported that healing rates of erosive esophagitis was similar in elderly (≥65 years) compared with younger adults (<65 years) when treated with pantoprazole 40 mg once daily (Am J Gastro 2003, 98:S53). There is little information in the literature about the responsiveness of elderly patients to therapy for GERD symptoms. The aim of this sub-analysis was to compare the control of heartburn in elderly and non-elderly patients treated with a proton pump inhibitor, pantoprazole, in maintenance of EE healing studies.

Methods: This sub-analysis was based on combined data from two identical double-blind, randomized, comparator controlled, multi-center trials of patients with endoscopically demonstrated healing of erosive esophagitis at entry. Patients were randomized to pantoprazole 10, 20, or 40 mg once daily or ranitidine 150 mg twice daily for 12 months. Symptoms were assessed with diary cards that were completed daily by the patients.

Results: A total of 175 patients received 40 mg pantoprazole QD, the recommended regimen for EE maintenance. There were 24 elderly patients in this analysis and the percentage of days without heartburn for daytime and nighttime are presented in table 1. The safety profile of pantoprazole in the elderly and nonelderly were similar.

Conclusions: Elderly and younger adult patients have similar control of their daytime and nighttime heartburn when treated once daily with pantoprazole 40 mg during maintenance therapy after healing of EE.

Table 1. Mean Percentage of Heartburn Free Days

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Elderly (≥65 years; n = 24)</th>
<th>Nonelderly (&lt;65 years; n = 151)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of days with no daytime heartburn (mean ± SD)</td>
<td>91.1 ± 19.3</td>
<td>91.0 ± 17.7</td>
</tr>
<tr>
<td>Percentage of days with no nighttime heartburn (mean ± SD)</td>
<td>92.9 ± 10.8</td>
<td>91.8 ± 14.4</td>
</tr>
</tbody>
</table>

31

BARRETT’S ESOPHAGUS (BE) WITH HIGH-GRADE DYSPLASIA (HGD) OR ADENOCARCINOMA (AC) DETECTED DURING BE SURVEILLANCE OR AT INITIAL ENDOSCOPY


Purpose: The ACG Guidelines recommend endoscopic surveillance in BE. However, the value of BE surveillance to detect HGD and AC at an early curative stage has been questioned. We wished to determine in a referral practice if patients were diagnosed with HGD or AC during endoscopic surveillance or at initial endoscopy.

Methods: A database of all patients with BE referred for management (to CIL) from 1998–2003 was analyzed. Charts were reviewed of patients identified to have HGD or AC at the time of referral. The number of surveillance endoscopies and the time intervals were determined. The symptoms prompting initial endoscopy were noted. The tumor stage of disease detected by surveillance and initial endoscopy was compared. If the information was not stated in the chart, contact with referring physicians was made by telephone and fax to acquire the data. Clinical staging and surgical pathology was reviewed for all cases. Chi-squared analysis was used to compare categorical variables and percentages were analyzed by Student’s t test.

Results: A total of 161 patients referred with BE and HGD or AC were identified, and 138 (86%) had sufficient data to analyze, including 98 with HGD and 40 with AC. There was no significant difference between the groups referred after surveillance (n = 80) or after initial endoscopy (n = 58) in mean age (74/72 years), males (82%/76%) or mean BE length (4.9/5.4 cm). In the 98 patients with HGD, 70 (71%) were detected during surveillance and 28 (29%) at initial endoscopy (p < 0.0001, see Table below). In the 40 patients with AC, 10 (25%) were detected during surveillance and 30 (75%) at initial endoscopy (p < 0.0001). In the surveillance patients, the mean time from a diagnosis of BE with no dysplasia to HGD was 48 months (range 12–120 months), with a mean 16.5-month interval between a mean 3.1 endoscopies. The most common symptoms in the 58 patients in the initial endoscopy group were heartburn and regurgitation (45%), GI bleeding (24%), and dysphagia (24%). In the patients with AC, all the surveillance patients had early cancer Stage I or II, while in the initial endoscopy group 7/30 (23%) had advanced cancer Stage III or IV.

Conclusions: These data support the value of endoscopic surveillance in patients with BE to detect HGD and early stage AC compared to symptomatic patients diagnosed at initial endoscopy.

Endoscopy | HGD | AC  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveillance</td>
<td>70</td>
<td>10</td>
</tr>
<tr>
<td>Initial</td>
<td>28</td>
<td>30</td>
</tr>
</tbody>
</table>

p < 0.0001

32

CORRECT AND INCORRECT DOSING OF PROTON PUMP INHIBITORS AND ITS IMPACT ON GERD SYMPTOMS

Jonathan P. Pezanoski, M.D., Naresh T. Gunaratnam, M.D.*, Roberto Gamarra, M.D., Mark E. Cowen, M.D. Providence Hospital, Southfield and St. Joseph Mercy Hospital, Ann Arbor, Michigan.

Purpose: Proton pump inhibitors (PPIs) are most effective in inhibiting acid secretion when dosed up to an hour before a meal. We have previously observed that PPIs are incorrectly dosed in over 50% of patients in a referral setting (Gastroenterology 2001:120: A2205). We aim to assess the dosing habits of patients in the primary care setting newly started on a PPI and the effect of their PPI dosing on GERD symptoms.

Methods: 638 patients from a local HMO newly prescribed a PPI for GERD were identified using pharmacy claims data. Utilizing focused study questions as well as the validated Quality of Life in Reflux Associated Disease questionnaire (QOLRAD), participants were surveyed on their dosing habits and GERD symptoms. Participants were considered optimal dosers if they took their PPI within 15–60 minutes of the first meal of the day, correct dosers took their PPIs with meals to up to 60 minutes before any meal. Incorrect dosers took their PPIs greater than 60 minutes before meals.
after meals, as needed, or at bedtime. The QOLRAD was scored from 1–7 and symptom severity were defined as severe (<5) and moderate to no symptoms (>5).

**Results:** 625 subjects were contacted and 173 subjects participated in the study. No differences were identified between participants and non-participants based on age, gender, or formulation of PPI prescribed. At baseline 27.1% of participants dosed their PPI correctly and only 9.7% dosed their PPI optimally. Mean scores for correct and incorrect dosers were 5.51 and 5.82 respectively (p = 0.18). Symptom scores based on emotional distress, sleep disturbance, problems associated with food/drink, daily function and vitality were likewise examined. Patients with severe GERD were more likely to be incorrect dosers, however, these results were not statistically significant.

**Conclusions:** Only 27% of those newly prescribed a PPI for GERD dosed correctly and 9.7% dosed optimally. GERD symptoms were not affected by PPI dosing behavior. This phenomenon may reflect either a lack of true GERD symptoms in this population or demonstrate that correct dosing of a PPI is not important to achieve a clinical benefit. Patients reporting severe symptoms, however, were more likely to report incorrect dosing suggesting that in this subset of patients, uncontrolled GERD may be attributable to dosing habits. Studies assessing the clinical impact of PPI dosing on a population with severe GERD are underway.

33

**ESOMEPRAZOLE 40 MG ADMINISTERED INTRAVENOUSLY (I.V.) PROVIDES BETTER CONTROL OF BASAL AND STIMULATED GASTRIC ACID SECRETION THAN OMEPRAZOLE 40 MG ADMINISTERED I.V.**


**Purpose:** This study compared the effect on basal and pentagastrin stimulated acid output (BAO and PAO) of single-dose i.v. administration of esomeprazole 40 mg and omeprazole 40 mg.

**Methods:** This was an open, randomized, two-way cross-over study in 23 *Helicobacter pylori*-negative healthy male and female subjects (18 males; mean age: 26 years; mean body mass index: 22.8 kg/m²). Both drugs were administered as single 30-minute i.v. infusions with a washout period of at least 6 days. BAO (1 h) and PAO (1.5 hrs) were determined at baseline, between 3–5.5 h and finally between 23–25.5 h after drug administration on each study day. Blood samples, taken during the first 12 hours, were used to determine the area under the plasma concentration-time curve (AUC) and maximum observed plasma concentration (Cmax) for both drugs. The PAO and BAO values were analyzed using a mixed model ANOVA. The mean for each treatment and the mean treatment difference were estimated with 95% confidence intervals.

**Results:** At baseline the mean BAO and PAO were 4.4 mmol/h (95% CI: 3.0 to 5.8) and 34.0 mmol/h (95% CI: 30.2 to 37.2), respectively. Intravenous administration of esomeprazole 40 mg resulted in a more pronounced reduction in BAO and PAO both measured 3–5.5 h and 23–25.5 h after dose compared with omeprazole 40 mg (Table). The geometric mean AUC and Cmax values were 36% and 18% higher, respectively, for esomeprazole 40 mg i.v. compared with omeprazole 40 mg i.v. There were no serious adverse events and both drugs were well tolerated.

**Conclusions:** Esomeprazole 40 mg i.v. provides faster and more complete control of basal and stimulated gastric acid secretion throughout the 24-hour period than omeprazole 40 mg i.v.

34

**CHRONIC BOERHAAVE’S SYNDROME PRESENTING AS MULTIPLE DISTAL ESOPHAGEAL FISTULAS: PALLIATION WITH POLYFLEX® STENT**

John L. Gossenard, M.D., Vikas Khurana, M.D., F.A.C.G.*. Louisiana State University-Shreveport, Overton Brooks VA Medical Center, Shreveport, Louisiana.

**Introduction:** Esophageal strictures and fistulas are known complications of esophageal cancer or mucosal damage. Spontaneous esophageal rupture or Boerhaave’s syndrome [BS], rarely causes strictureting and fistulization, but presents more often as acute events requiring emergent surgical intervention. Conservative management is rarely successful.

**Case Description:** A 60-year-old man presented with long standing history of dysphagia and regurgitation. EGD revealed multiple fistulae and a fibrous linear tear at the distal end of the esophagus (A,B). Twelve years ago, he had severe retching and chest pain, for which a cardiac event was ruled out. The episodes of retching and reflux continued periodically until recently when the dysphagia became predominant. He had 3 EGDs recently with similar findings. Biopsies done to rule out Crohn’s disease and cancer were negative. Barium swallow showed multiple diverticulum and fistulous tracts. CT scan showed a lobular soft tissue mass with multiple tracts at the distal esophagus. A diagnosis of chronic Boerhaave’s syndrome was made. The patient refused surgery, and palliation with stenting was considered. The Polyflex® removable stent was considered. In preparation, the patient was initiated on liquid diet for a week. A 15 cm × 2.1 cm Polyflex® stent was deployed, extending from 2 cm cephalad to the opening of proximal fistula to roughly approximately 2 cm below the GE junction (C,D). Compression of these fistulous tracts will allow for the rec epithelization of the native esophagus. The stent will be removed in 3 months and follow up results will be available at the time of presentation.

**Conclusion:** Boerhaave’s syndrome is a surgical emergency, with most patients developing mediastinitis and empyema. We report a case of mucosal...
bridging and multiple fistulae formations due to unintentional conservative management of Boerhaave’s syndrome. Polyflex® stenting offered palliation, a means of sealing the existing fistulas, and the option of removing the stent in the future.[figure1]

35

WIRELESS pH-METERY COMBINED WITH SURVEILLANCE ENDOSCOPY IN BARRETT’S ESOPHAGUS

Purpose: Recent evidence indicates that normalization of esophageal acid exposure in Barrett’s esophagus (BE) may reduce the risk of neoplasia. The aims of this study were (1) assess the adequacy of PPI therapy on esophageal acid exposure in patients with BE, and (2) evaluate the safety and patient tolerance of wireless pH-metery performed in conjunction with surveillance endoscopy and biopsy.

Methods: We enrolled 30 patients with BE presenting for surveillance endoscopy. Subjects maintained their usual dose of PPI. The EGD and biopsies were completed according to protocol. A wireless pH capsule (Bravo pH System) was placed immediately following EGD. All pts completed an 8-question satisfaction survey using a 6-point scale for each response (6 = best).

Results: The combined procedures were successful in all 30 cases. Sixteen patients (53%) were on once daily (QD) PPI and 14 (47%) were on twice daily (BID) PPI. Fourteen patients had reflux symptoms on therapy. The mean length for BE was 3.3 cm and the mean disease duration 4.8 yrs. An average of 6.4 biopsies was performed per EGD. The % time pH < 4 [median(interquartile range)] was 8.4% (11.5), 6.9% (9.4), and 13.2% (18.5) for total, upright and supine time. Esophageal acid exposure was similar in patients with and without GERD symptoms. Normalization of esophageal acid exposure is reported in Table. Ratings from the post-procedural survey demonstrated: satisfaction with the procedure (5.8), ability to carry on usual activities during pH-metery (5.6), and overall assessment of the experience (4.9).

Conclusions: In pts with BE (1) PPI therapy fails to control esophageal acid exposure in 44–57% of patients, (2) the absence of GERD symptoms during PPI therapy does not predict normalization of esophageal acid exposure, and (3) wireless pH-metery is safe and well-tolerated when performed in conjunction with surveillance EGD.

Citation for “Normal”  
PPI-QD (n = 16)  
PPI-BID (n = 14)  
P-value
Total < 4.2%* 10 (56) 6 (43)  
Total < 1.6%* 7 (44) 4 (29)  
Upright < 6.3%* 10 (63) 7 (50)  
Supine < 1.2%* 8 (57) 7 (44)

*expressed as mean (%).

36

ESOPHAGEAL pH MONITORING USING A WIRELESS SYSTEM: A SINGLE CENTER’S EXPERIENCE
Sammy Ho, M.D., Chris Demetron, M.D., James Grendell, M.D., Maureen Stampa, R.N., Kavita Kongara, M.D.∗. Winthrop University Hospital, Mineola, New York.

Purpose: Traditional catheter-based esophageal pH testing is limited by patient discomfort, inconvenience, and interference with normal activity during the study. A catheter-free Medtronic (Shoreview, MN) Bravo pH monitoring system has recently become available. The aim of this study was to report our initial experience with this new wireless pH monitoring device.

Methods: Medical records of consecutive patients undergoing Bravo pH monitoring at our institution were reviewed. The squamo-columnar junction was located endoscopically and the pH capsule was placed 6 cm above this junction. Patients were re-endoscoped to ensure mucosal attachment. All patients had pH monitoring for 48 hours. Data from a recording device worn by the patient were subsequently downloaded to our system computer for analysis.

Results: 42 patients (18M/24F, mean age 48) underwent Bravo pH monitoring between 7/2003 and 4/2004. Indications for the study were heartburn (38%), chest pain (21%), regurgitation (12%), and atypical symptoms (29%). In one patient (2%), the probe did not attach properly. A replacement probe was subsequently placed without difficulty. In 2 cases (5%), data were not retrievable from the recorder secondary to device or computer malfunction. Adequate diagnostic data were obtained in the remaining 40 patients (95%). Of these patients, 53% (21/40) were found to have abnormal esophageal acid exposure, defined as a pH < 4 greater than 5% of the time. 38% (16/42) were on proton pump inhibitor during the study. Of these, 13% (2/16) had abnormal acid exposure. On follow-up, 10% (4/42) reported a foreign body sensation or other discomfort in the chest. Subsequent chest x-rays confirmed persistent capsule adherence in 2 of the 4 patients. Symptoms were self-limited in all but one patient, who required endoscopic removal of the capsule at day 5.

Conclusions: 1. The technical difficulties associated with Bravo were minimal, and the capsule was well tolerated. 2. Interpretable pH recordings were obtained in 95% of patients. 3. The Bravo pH monitoring system is an effective method of quantifying esophageal acid exposure and can serve as a viable option for patients unwilling or unable to undergo the conventional transnasal pH monitoring system. 4. Future studies are needed to evaluate the cost-effectiveness of this new technology.

37

INTRAVENOUS LANSOPRAZOLE IS EQUIVALENT TO ORAL CAPSULE IN SUPPRESSING PENTAGASTRIN-STIMULATED ACID OUTPUT

Purpose: Patients with erosive esophagitis (EE) may require short-term intravenous therapy due to their inability to receive medication orally. The purpose of this multicenter, open-label study was to compare the pharmacodynamics of 30 mg intravenous lansoprazole (IV LAN) to 30 mg oral lansoprazole (PO LAN) capsules in patients with EE.

Methods: H. pylori-negative patients with ≥ Grade 2 EE confirmed by endoscopy received 30 mg PO LAN for 7 consecutive days followed by 30 mg IV LAN infused over 30 min for 7 consecutive days without a washout. In both periods, LAN was administered 1 hr prior to the morning meal. Pentagastrin-stimulated acid output (MAO) and basal acid output (BAO) were assessed 22 hrs and 21 hrs, respectively following the last dose of PO LAN (Day 8), first dose of IV LAN (Day 9) and last dose of IV LAN (Post-Treatment Day 1). The primary endpoint was MAO after the last dose of IV LAN as compared to that after the last dose of PO LAN. Secondary endpoints included BAO after the last dose of IV LAN as compared to that after the last dose of PO LAN. Therapeutic equivalence of the two formulations was established if the population average for IV LAN minus 120% of PO LAN was negative. To test the null hypothesis of IV-1.2 PO=0, one-sided Wilcoxon signed-rank tests were performed at a significance level of 0.05. Equivalence would be established by rejection of the null hypothesis. Safety was monitored by adverse events, vital signs, physical examinations, routine ophthalmic examinations, laboratory evaluations, electrocardiograms and IV infusion site assessments.

Results: 68 subjects 19 to 72 yrs of age enrolled, including 51 males and 17 females; among them 57 received 7 doses of IV LAN as well as at least 7 doses of PO LAN. The median MAO (mEq/hr) was 7.72 on Day 8 and 7.25 on Post-Treatment Day 1. The median BAO (mEq/hr) was 0.73 on Day 8
and 0.45 on Post-Treatment Day 1. Equivalence of the two formulations was established for both MAO (p = 0.001, N = 56) and BAO (p = 0.011, N = 57). All adverse events were mild or moderate in severity. Both formulations were safe and well tolerated.

Conclusions: This study confirms previous findings that IV lansoprazole is as effective at suppressing pentagastrin-stimulated acid output and as safe as the oral formulation in treating patients with EE. The IV formulation is an alternative for the short-term treatment in patients who are unable to take oral medication.

38

GASTRO-ESOPHAGEAL REFLUX IN PATIENTS WITH HABITUAL CONSTIPATION

Purpose: Symptoms of gastro-esophageal reflux (GER) are common in patients with chronic constipation. However, there is paucity of data regarding pH studies and mechanism of GER in these patients. We conducted a study to evaluate ambulatory 24 hour pH, gastric emptying and endoscopic gastro-duodenoscopy (EGD) in patients with chronic constipation and symptoms of GER

Methods: 19 patients (5 males, 14 females, mean age 30.1years) with severe chronic constipation (stool frequency <3/week, hard stools, and x-ray evidence of stool in right colon) were enrolled in the study. 10 patients with GERD were included as controls. All patients were evaluated using GER symptoms score, esophageal manometry, ambulatory pH recording, gastric emptying (ultrasound method) and EGD. GER symptoms evaluation and the investigations were repeated after 6 weeks treatment of constipation with osmotic laxatives. Fecal clearing of colon was documented by repeat x-rays.

Results: 11/19 (58%) patients had evidence of GER on ambulatory pH recording (pH < 4 for > 4% of time). Mean symptoms score was higher in patients with abnormal pH study than with normal pH parameters. All patients with constipation had prolonged gastric emptying time compared to control GERD patients (231 ± 18.2 min Vs. 216.5 ± 13.9 min, p < 0.05).

Conclusions: Patients with chronic constipation and reflux symptoms have delayed gastric emptying. A subgroup of patients(42%) with constipation and reflux symptoms have normal pH and these patients may be called functional refluxers. Treatment of constipation in these patients’ results in a significant improvement in gastric emptying time and symptoms of GER. Patients with constipation and abnormal pH study do not show improvement in symptoms, pH score or in gastric emptying with relief of constipation. This group of patients has organic reflux.

39

SYMPTOMS ON PPI THERAPY ASSOCIATED WITH NON-ACID, ACID OR NO REFLUX
Inder Mainie, M.D., Radu Tutuian, M.D., Amit Agrawal, M.D., Amine Hila, M.D., Janice Freeman, R.N., Shirley Jamison, Donald O. Castell, M.D., M.A.C.G.*. Medical University South Carolina, Charleston, South Carolina.

Purpose: Refluxate with a pH > 4 (“non-acid” reflux, NAR) cannot be detected on standard esophageal pH monitoring. However this can be overcome by the use of Multichannel Intraluminal Impedance (MII-pH), a technique that detects gastroesophageal reflux (GER) at multiple levels of the esophagus independent of pH.

Aim: To detect total number of abnormal reflux episodes (acid and NAR) and their relation to symptoms.

Methods: 100 patients (Female: 67; mean age 45; range 6 months to 84 years); 82 with symptoms during test day had typical GERD symptoms (n = 44), atypical symptoms (n = 38), pH at 5 cm above the LES and impedance (3.5,7,9.15 and 17 cm above the LES) were recorded simultaneously for 24 hrs. While taking PPI therapy symptom index was positive (+SI if > 50). Typical GERD symptoms were heartburn, regurgitation or chest pain. Atypical symptoms were cough, hoarseness, abdominal discomfort, belch, catarrh, dysphagia, choking, globus, wheeze and acid taste.

Results: 82 patients recorded symptoms during the study. The table below shows the SI for the primary symptom recorded by the patient (Chi² = 11.0, df = 2, p < 0.01).

Conclusions: MII-pH monitoring separates types of reflux causing symptoms. Typical GERD symptoms on PPI therapy are more likely to be associated with non-acid reflux where as atypical symptoms are more likely to have a negative symptom index.

Symptom (# Patients) +SI for Non-Acid +SI for Acid Negative SI
Typical (44) 20 (46%) 5 (11%) 19 (43%)
Atypical (38) 7 (18%) 1 (3%) 30 (79%)
Total (82) 27 (33%) 6 (7%) 49 (60%)

40

SYMPTOM INDEX DURING pH MONITORING FOR 24, 16, 12 HOURS AND POST-PRANDIAL
Inder Mainie, M.D., Amine Hila, M.D., Radu Tutuian, M.D., Amit Agrawal, M.D., Janice Freeman, R.N., Shirley Jamison, Donald O. Castell, M.D., M.A.C.G.*. Medical University South Carolina, Charleston, South Carolina.

Purpose: Symptom index (ratio of times the symptom occurs when the pH is less than 4 to the total # symptoms) documents the relationship between patient’s symptoms and actual reflux episodes during the study. A positive symptom index can define an abnormal study even with normal esophageal acid exposure.

Aim: To assess the accuracy of the symptom index for a total of 16 and 12 hours, and for 4,3 and 2-hrs post-prandially compared to 24-hrs.

Methods: 400 consecutive pH studies (272 female; mean age 53 years; range 11–88) from July 2002 and May 2004 performed in our laboratory were analyzed for symptom index (Positive symptom correlation with reflux is defined as positive > 50%). We analyzed the data for typical GERD symptoms (heartburn, regurgitation and chest pain). Symptom index was calculated for 24 hours, 16 hours (4pm to 8pm), 12 hours (4pm to 4 am) and post-prandial (PP) periods (2.3 and 4 hours after the evening meal).

Results: The mean duration for the 24-hour pH study was 22 hours and 34 minutes. Based on the 24 hr symptom index, positive and negative predictive

Results 24-hrs 16-hrs 12-hrs 4-hrs PP 3-hrs PP 2-hrs PP
Positive Predictive Value 100% 95% 93% 93% 92% 91%
Negative Predictive Value 100% 92% 87% 74% 71% 68%
Sensitivity 100% 93% 88% 72% 67% 61%
Specificity 100% 95% 93% 94% 93% 94%

AIC - Vol. 99, No. 10, Suppl.,
values and sensitivity and specificity were calculated for 16-hours, 12-hours and the post-prandial periods.

**Conclusions:** Symptom index analyzed over shorter time intervals provides similar information compared to the standard 24-hour pH study.

41

**PREVALENCE OF BARRETT’S ESOPHAGUS IN AFRICAN AMERICANS WITH GERD**

Ghadehan Emmanuel, M.D., Balar Bhatnua, M.D., Clarke Rohan, M.D., Khan Ahmed, M.D., Ozick Lisa, M.D.*. Harlem Hospital Center, New York City, New York.

**Purpose:** Barrett’s Esophagus is a condition that occurs when the normal esophageal squamous mucosa changes to specialized intestinal columnar epithelium. The prevalence of Barrett’s esophagus in patients with GERD is 6% and Barrett’s esophagus is recognized as a premalignant condition. The incidence of esophageal adenocarcinoma is about 1% in patients with Barrett’s esophagus. The prevalence of Barrett’s esophagus has been reported to be about 14 times higher in the Caucasian population than in the African American population, although there are not many studies in the literature confirming this fact. The primary objective of this study was to identify the prevalence of Barrett’s esophagus in African Americans with GERD.

**Methods:** We did a retrospective chart review of 148 patients that were endoscoped for Gastroesophageal Reflux (GERD) from January 1999-December 2001. There were 91 women and 57 men. Ninety-one (61.5%) were African American, 47 (31.8%) were Latino and the remainder were identified as other. The age ranged from 22–85 with a median age of 49.5 years old. Forty-four patients had a history of cigarette smoking and 41 had a history of alcohol use.

**Results:** A total of seven (4.7%) patients were diagnosed with Barrett’s Esophagus and one patient had adenocarcinoma (0.6%). All eight of the patients were African Americans. Six out of the seven patients with Barrett’s (85.7%) were female and the one patient with adenocarcinoma was also a woman.

**Conclusions:** The prevalence of Barrett’s esophagus in the African American community, although not as high as in the Caucasian community, was much higher than previously expected. In addition, the majority of the patients in this study with Barrett’s esophagus were African American women. Based upon this study, Barrett’s esophagus appears to be rising in the African American population, especially in African American women, and physicians should not be complacent about looking for Barrett’s esophagus in this population.

42

**PERFORMANCE, TOLERABILITY AND SYMPTOMS RELATED TO PROLONGED pH MONITORING USING THE BRAVO SYSTEM IN MEXICO**

Jose M. Remes-Troche, M.D., Jorge Ibarra-Palomino, M.D., Ramón I. Carmona Sanchez, M.D., Miguel A. Valdivinos, M.D.*. Instituto Nacional de Ciencias Medicas y Nutricion Salvador Zubiran, Mexico, DF, Mexico.

**Purpose:** Esophageal 24-hr pH monitoring (24-pH) is the most useful test to diagnose and treat patients with gastroesophageal reflux disease (GERD). The traditional system for 24-pH requires transnasal introduction of a catheter with pH sensors. This technique produces discomfort, inconvenience and interference with daily activity. Recently, the Bravo pH system has been proposed as an alternative and promising method for 24-pH. In this study, the initial experience in Mexico with this system is reported.

**Methods:** Consecutive patients with GERD symptoms with an indication for 24-pH were evaluated. The pH Bravo capsule was placed 6 cm above the squamocolumnar junction (SCJ) using endoscopic measurement. Number of reflux episodes, % of time pH < 4 (% pH < 4), Johnson-DeMeester score (JDS), symptom index (SI), and quality and duration of the pH tracings were analyzed. Capsule detachment was assessed by chest X-ray on day 10. Symptoms associated with the procedure were evaluated.

**Results:** Sixty five patients, 34 F (52%), mean age 44 (range, 19–73 years) were studied. 35 (54%) had non erosive (NERD) and 30 (46%) erosive GERD Indications for pH monitoring were: preoperative evaluation for anti-reflux surgery in 30 (46%), non response to PPI in 28 (43%), previous failed trans-nasal pH test in 4 (6%) and extra-esophageal manifestations of GERD in 3 (5%). The capsule was successfully attached in 59/65 (91%) patients. Capsule detachment occurred spontaneously in all patients on the day 10. Recording mean time was 46 ± 3 hr. There were no differences in pH parameters between day 1 and day 2. 36/59 (61%) had abnormal acid exposure on day 1. 6/23 (26%) with normal 24-pH on day 1, had abnormal acid exposure on day 2. Complains during the pH monitoring were mild chest pain 28 (43%), foreign body sensation 17 (26%), retrosternal discomfort 2 (3%) and 1 (%) had mild epigastric pain. Women had more symptoms related to the procedure than men (73% vs 48%, p = 0.04). Duration of these symptoms was longer in female patients (40 ± 5 hr vs 24 ± 3 hr, p = 0.03).

**Conclusions:** Esophageal pH monitoring with Bravo capsule is a safe, reliable and tolerable method in patients with GERD. Extended pH recordings increases abnormal esophageal acid exposure detection in patients with this disease.

43

**ESOPHAGEAL AND INTRAESOPHAGAL pH MONITORING USING A WIRELESS SYSTEM**

Ayaka Seza, M.D., Taketo Yamaguchi, M.D.*, Takeo Odaka, M.D., Michiko Kobayashi, M.D., Takuto Suzuki, M.D., Syunn Genn, M.D., Masato Ai, M.D., Hiromitsu Saisho, M.D. Graduate school of Medicine, Chiba University, Chiba, Japan.

**Purpose:** Esophageal and gastric pH monitoring has been performed using a catheter passed through the nose. Recently, a telemetric catheter-free (Bravo) system was developed. Bravo pH monitoring system allows the performance of 48-hour pH monitoring with less discomfort and with a more physiological pattern of activity. Bravo system had only been used for esophagus. But we placed the Bravo pH capsule on the gastric and esophageal mucosa simultaneously while observing by endoscopy. Endoscopic observation while placing the pH capsule allowed us to place the capsule on the specific spot to be checked.

**Aim:** To evaluate the differences of intragastic and esophageal acidity between GERD subjects and controls using the Bravo system.

**Methods:** Twenty subjects (10 GERD, 10 controls) had endoscopic placement of two Bravo pH capsule. One was positioned 5cm above the squamocolumnar junction, and the other posterior wall of lower gastric body. The signal transmitted from the capsule was received and recorded by a small pager sized receiver for 48-hour and subsequently uploaded to a computer for analysis.

**Results:** Successful 48-h esophageal and gastric pH studies were completed in all subjects. During the 48-h period, the median % esophageal pH < 4 was 1.1% in controls and 12.3% in GERD patients. There was a significant difference between the mean total number of the reflux events of normal subjects and GERD patients. The median % gastric pH > 3 was 11.1% in controls and 6.3% in GERD patients. The mean gastric pH was 1.9 in the control and 1.5 in the GERD patients. Within 14 days, all of the capsule had detached themselves.

**Conclusions:** The wireless Bravo pH monitoring system successfully recorded intragastric acidity and esophageal acid exposure in all subjects. Gastric acidity was slightly higher in the controls than GERD patient.

44

**HELCOBACTER PYLORI INFECTION DOES NOT PROTECT AGAINST THE DEVELOPMENT OF ESOPHAGEAL ADENOCARCINOMA: A CASE CONTROL STUDY**

Purpose: Several studies have suggested that Helicobacter pylori (H. pylori) infection may prevent the development of esophageal cancer. The gastric inflammation that results from H. pylori infection results in decreased gastric acid secretion. This may lead to a decrease in acid reflux and decrease in the incidence of Barrett’s esophagus and adenocarcinoma of the esophagus. Thus, it has been suggested that the prevalence of H. pylori infection would be lower in persons with esophageal adenocarcinoma compared to those without adenocarcinoma. We performed a case-control study to determine if H. pylori infection was less prevalent in patients with Esophageal Adenocarcinoma.

Methods: The study was performed at a single tertiary care facility. Fifty consecutive patients with adenocarcinoma of the esophagus were identified. Eighty-two control patients matched for age, gender and other risk factors were subsequently identified. The prevalence of H. pylori infection was determined by histologic examination. Multiple regression analysis was performed to identify the presence of independent predictors for the development of esophageal adenocarcinoma.

Results: There were no significant differences regarding age, gender, and other risk factors among the cases and controls. Mean age of the patients with adenocarcinoma was 69.4 ± 9.2, controls 68.5 ± 9.1. The ratio of males to females were similar between the two groups, 10 females/40 males in the controls, 14 females/68 males in the controls. The prevalence of H. pylori infection was similar between the two groups, 17 percent of cases, 21 percent of controls (p = 0.22). There were no significant differences in the location of infection and the type of gastritis (mild, moderate, severe).

Conclusions: We conclude that H. pylori infection does not protect against the development of esophageal adenocarcinoma.

45 FIRST DAY EFFECTS OF RABEPRAZOLE ON NOCTURNAL ESOPHAGEAL AND REGIONAL INTRAGASTRIC pH

Lien Vo, PharmD, Hrair P Simonian, M.D., Siva Doma, M.D., Robert S. Fisher, M.D., Henry P. Parkman, M.D.* Temple University School of Medicine, Philadelphia, Pennsylvania.

Purpose: Proton pump inhibitors decrease gastric acid secretion, increase intragastric pH and relieve symptoms of gastroesophageal reflux disease (GERD). Many patients with acid/peptic disorders, such as GERD, are symptomatic at night. AIM: 1) Determine the effects of rabeprazole on nocturnal esophageal and intragastric pH profiles on the first and eighth day of treatment. 2) Correlate the effects on intragastric pH with serum gastrin concentration.

Methods: Ten normal subjects underwent two eight-day treatment sessions with morning placebo or rabeprazole 20 mg qd in a randomized double-blind cross-over study design separated by 2 week washout period. Esophagogastric pH monitoring studies were performed on days 1 and 8 of each treatment. Esophageal pH was measured 2 cm above the LES and gastric pH at 7, 12, and 17 cm distal to the esophageal pH probe. Fasting blood sample was obtained for serum gastrin measurement on the morning after each 24 hour recording.

Results: During the first night (midnight to 8 am) after placebo administration, the median gastric pH was 1.3 ± 0.2, without significant regional differences. Rabeprazole significantly increased the gastric pH on the first night of administration to 3.5 ± 0.6; p < 0.01). On the eighth night of administration, rabeprazole continued to increase gastric pH to 3.9 ± 0.6 (p < 0.01) compared to placebo. There was a slight, but significant, increase in serum gastrin from 42 ± 6 with placebo to 85 ± 28 pg/ml on day 1 and 62 ± 8 pg/ml on day 8 of rabeprazole administration. The distal gastric pH correlated with the serum gastrin level (r = 0.423; p = 0.0009).

Conclusions: Rabeprazole, at 20 mg po qd, significantly elevated nocturnal gastric pH on the first day of treatment to levels that are sustained for the first week. There were no regional intragastric differences in rabeprazole’s action in increasing nocturnal intragastric pH. The increase in gastric pH with rabeprazole is associated with an acute doubling (day 1) and a small rise in serum gastrin at day 8.

46 EFFECT OF ESOMEPRAZOLE ON INTRAESOPHAGEAL pH IN PATIENTS WITH BARRETT’S ESOPHAGUS

Stuart Spechler, M.D., F.A.C.G., Prateek Sharma, M.D., F.A.C.G., Barry Traxler, Douglas S. Levine, M.D., F.A.C.G., Gary W. Falt, M.D., F.A.C.G.* Dallas VA Medical Center, Dallas, Texas; University of Kansas School of Medicine and VA Medical Center, Kansas City, Missouri; AstraZeneca LP, Wilmington, Delaware and The Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: Gastric pH is >4 for 42% to 58% of a 24-hour period in healthy volunteers given proton pump inhibitors (PPIs) once daily in conventional dosages. Patients with Barrett’s esophagus (BE) often have persistently abnormal esophageal acid exposure despite treatment with PPIs in dosages sufficient to eliminate the symptoms of gastroesophageal reflux disease. The mechanism of this apparent PPI “resistance” in BE is unclear. We performed a post hoc analysis of the data from a study of the effects of 3 different dosages of esomeprazole on pH to address this issue.

Methods: Patients with BE (segment length ≥ 2 cm, H. pylori-negative with no adenocarcinoma or dysplasia) were treated for 5 days with each of the following esomeprazole regimens in random sequences: 1) 40 mg twice daily, 2) 20 mg 3 times daily, and 3) 40 mg 3 times daily, with a 10- to 14-day washout period between treatments (D9612L00056/Study 315). A dual probe to measure intragastric and intraesophageal pH was inserted for 24 hours at baseline and on day 5 of each treatment period. The upper electrode was positioned 5 cm above the lower esophageal sphincter.

Results: Of the 34 randomized patients, 94% were men, with a mean age of 63 years, and 31 had evaluable pH data for all 3 treatment periods. The mean % time the intraesophageal pH was >4 was not significantly different among the 3 dosing regimens (see Table). All 3 dosages were well tolerated.

Conclusions: In patients with BE, all 3 dosages tested provided similar, highly effective control of gastric acid, yet 19% to 29% of patients continued to have abnormal esophageal acid exposure (pH < 4 for >1 hour). These data suggest that the apparent PPI “resistance” in BE patients results from their strong predisposition for gastroesophageal reflux not from abnormal resistance to the antisyecretory effects of PPIs.

References:

Mean % time esophageal pH >4 and proportion of patients (N = 31) with esophageal pH <4 for >1 hour of a 24-hour period

<table>
<thead>
<tr>
<th>Esomeprazole treatment</th>
<th>Mean % time gastric pH &gt;4</th>
<th>Mean % time esophageal pH &gt;4</th>
<th>Esophageal pH &lt;4 for &gt;1 h, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 mg 3 times daily</td>
<td>79.3</td>
<td>96.5</td>
<td>7 (22.6)</td>
</tr>
<tr>
<td>40 mg twice daily</td>
<td>81.3</td>
<td>96.0</td>
<td>9 (29.0)</td>
</tr>
<tr>
<td>40 mg 3 times daily</td>
<td>87.6</td>
<td>97.0</td>
<td>6 (19.4)</td>
</tr>
</tbody>
</table>

47 EFFECT OF AGEING ON ESOPHAGEAL MOTILITY IMPAIRMENT CAUSED BY CHAGAS’ DISEASE

Roberto O. Dantas, M.D.*, Lilian R.O. Aprile, M.D. Medical School of Ribeirão Preto, Ribeirão Preto, Sao Paulo, Brazil.

Purpose: Chagas’ disease is a parasitic disease caused by the flagellate protozoan Trypanosoma cruzi, which is more frequently transmitted in childhood. The esophageal involvement shows degeneration and reduction in the number of neurons of the myenteric plexus, with alterations in the esophageal...
motility similar to those of idiopathic achalasia. The ageing process also causes neurodegeneration of the myenteric plexus. Our hypothesis is that older patients with Chagas’ disease may have more esophageal motility alterations than younger patients.

**Methods:** We studied, by the manometric method with continuous perfusion, the esophageal body motility of 30 patients with a positive serologic test for Chagas’ disease, epidemiologic reference of contamination in childhood, and esophageal radiologic examination with barium retention, slow transit and esophageal diameter less than 4cm, all complaining of dysphagia. Fifteen patients had ages between 34 and 59 years (median: 51 years, younger group), and 15 patients had ages between 61 and 77 years (median: 66 years, older group). The control group had 22 subjects, aged 33 to 58 years, median 42 years (younger, n = 15), or aged 61 to 73 years, median 66 years (older, n = 7). The esophageal contractions were measured at 2, 7, 12, and 17 cm below the upper esophageal sphincter after 5 swallows of a 5 ml bolus of water.

**Results:** Compared with controls the patients had low amplitude and area under the curve of contractions (p < 0.01), and more simultaneous and non-conducted contractions (p < 0.05). From 12 to 17 cm, older patients had more non-conducted (41%) and less peristaltic (8%) contractions than younger patients (non-conducted: 16%, peristaltic: 21%, p < 0.05). The distal amplitude (A) and area under the curve (AUC) of contractions were lower in older patients (A: 30.8 ± 4.3 mmHg, AUC: 64.3 ± 9.5 mmHg × seconds, mean ± SEM) than younger patients (A: 51.9 ± 8.6 mmHg, AUC: 121.6 ± 19.7 mmHg × seconds, p < 0.05).

**Conclusions:** We concluded that older patients with Chagas’ disease with clinical and radiologic examinations similar to younger patients had motility alterations that suggested that the ageing process may cause further deterioration of esophageal motility, which may explain, at least partially, the increase in the intensity of symptoms after years of the disease.

---

**DEMOGRAPHICS AND PRACTICE PATTERNS IN THE MANAGEMENT OF PATIENTS WITH ESOPHAGEAL STRICTURES AND RINGS**

Jeffrey S. Olson, M.D., David A. Lieberman, M.D., Amnon Sonnenberg, M.D.*. Department of Veterans Affairs, Portland, Oregon.

**Purpose:** The American Society for Gastrointestinal Endoscopy initiated the Clinical Outcomes Research Initiative (CORI) to develop a database of endoscopic procedures that reflects current practice in a diverse sample of U.S. gastroenterologists. The present study utilized this database to study the epidemiology and management patterns of esophageal strictures and rings.

**Methods:** All data about patient demographics and technique of esophageal dilation during 1998–2003 were retrieved from the CORI database. Cases included 7,287 patients with strictures and 4,993 patients with rings followed over a time period of five years. Controls consisted of 124,120 patients without endoscopic evidence of esophageal stenosis. Differences among patient groups were compared using chi-square test, Student’s t-test, or one-way analysis of variance (ANOVA).

**Results:** Compared with controls (C), strictures (S) and rings (R) showed a slight male preponderance and a predilection for elderly Caucasians. Males: 52% C, 60% S, 53% R; Caucasians: 68% C, 77% S, 75% R; Age: 58yr C, 63yr S, 62yr R, p < 0.001 for all comparisons. Dysphagia (94% S vs. 92% R) and reflux (36% S vs. 31% R) were the most common indications for dilation in both conditions. Dilations using guidewires, balloons, or rubber bougies (Hurst or Maloney) occurred in 20%, 56% or 49% of S, and 6%, 57% or 37% of R, respectively; p < 0.01. The average initial diameter of dilation was 15 mm in S and 17 mm in R. Repeat dilations within a year occurred in 13% S and 3% R, with average intervals of 82 and 184 days, respectively (p < 0.001 for comparisons between S and R).

**Conclusions:** Most differences between strictures and rings stemmed from variations in dilation technique. Many of the similarities between rings and strictures suggested that they are epidemiologically related.

---

**ESOPHAGEAL MASS DUE TO CMV INFECTION**

Aviv Katz, D.O., Nikolaos Pyrsopoulos, M.D., Michael Manetas, M.D., Chester Gwin, M.D., Jamie Barkin, M.D.*. Mount Sinai Medical Center/University of Miami, Miami Beach, Florida.

CMV causes a variety of GI complications including but not limited to esophagitis, colitis, and acalculous cholecystitis. Uncommonly, CMV is implicated as the cause of mass lesions of other organ systems including the brain and lungs, but rarely affects the GI tract. The aim of this case is to report CMV induced esophageal mass.

A 41 yo man with a PMH of HIV; CD4 count of 10 cells/µL, presented with retrosternal chest pain. He was stable until one month prior to admission when he had onset of subjective fevers, night sweats, and five kg weight loss. In addition, he had odynophagia and dysphagia to both solids and liquids and retrosternal chest pain after deglutition.

Upon admission, he was febrile at 38.5 °C, pulse of 104 bpm. He was a well appearing slender man in no distress. Admission PE and labs, WNL. CT of the neck and chest demonstrated thickening of the esophageal wall in the distal portion adjacent to the CE junction with a polypoid soft tissue mass seen in the lumen. EGD demonstrated ulcerative esophagitis and the presence of a large friable mass. Biopsy revealed glandular mucosa with inclusions consistent with CMV, without evidence of malignant cells. Moreover, immunoperoxidase stains correlated with the presence of CMV.

The patient was started on IV ganciclovir, HAART, and antibiotics for opportunistic infection prophylaxis. By hospital day number six he became afebrile and was able to tolerate solid foods. He was eventually sent home without dysphagia, odynophagia or chest pain to complete a 21 day course of PO ganciclovir.

The patient was lost to follow up for approximately four months. He was eventually contacted and admitted to recurrent dysphagia and odynophagia for at least three months despite admittedly being compliant with his medications. EGD at this time revealed a distal clean based ulcer with circumferential heaped mucosal folds, likely explaining the tumoral appearance of the ulcer on initial presentation. Biopsy revealed evidence of inclusions consistent with CMV. The patient resumed PO ganciclovir and was discharged home.

Only two cases of CMV causing esophageal mass have been reported. In conclusion, esophageal mass due to CMV is an important entity to consider in the differential diagnosis of patients with esophageal mass and HIV.

---

**SHORTER DURATION ESOPHAGEAL pH MONITORING PROVIDES SIMILAR DATA TO 24-HOUR STUDY**

Amit Hila, M.D., Inder Mainie, M.D., Amit Agrawal, M.D., Janice Freeman, R.N., Donald O. Castell, M.D., M.A.C.G.*. Medical University of South Carolina, Charleston, South Carolina.

**Purpose:** 24-hour intra-esophageal pH monitoring is the gold standard for diagnosing gastroesophageal reflux disease (GERD). Usually, the pH probe is placed in the morning, and removed the next day, after requiring patients to miss one day of work. We have previously shown that a 16-hr overnight pH monitoring period provided similar results to 24-hr monitoring in 43 patients (Dig. Dis. Sci. 37(6):857–64, June 1992). In addition, we have shown that most overnight reflux occurs during the first half of the sleeping period (Gastroenterology 124(4, suppl 1): M2089, 2003).

The aim of this study is to confirm results of an earlier small study comparing full 24-hr intra-esophageal pH monitoring with those of the 16 hour period from 4 pm to 8 am, and also the 12 hour period from 4pm to 4am.

**Methods:** 400 consecutive dual electrode (5 and 20 cm above LES) pH studies (272 females, 128 males; mean age: 53±s; range: 11 – 88 yrs) performed in our lab between July 2002 and May 2004 were analyzed for percent time pH < 4 at the distal (normal values: total < 4.2%; upright < 6.3%; recurrent < 1.2%) and proximal (normal values: total < 1%; upright < 1.3%; recurrent = 0) sites.
**Results:** The mean duration of the “24-hr” tests was 22-hrs and 34 minutes. Applying the above normal values for % time pH < 4, we separated patients into normal and abnormal for 24-hr, 16-hr, and 12-hr tests. There were 198 normal 24-hr, 204 normal 16-hr, and 203 normal 12-hr studies. Thus, 16-hr monitoring has a sensitivity of 97% and a specificity of 95%, while the 12-hr period gave a sensitivity of 93% and a specificity of 92%. There was significant (p < 0.0001) positive correlation in % time pH < 4 between the 24-hr and 16-hr monitoring periods: distal (total, r = 0.95; upright, r = 0.95; recumbent, r = 0.98) and proximal (total, r = 0.9; upright, r = 0.86; recumbent, r = 0.93) electrodes. Similarly, there was significant (p < 0.0001) positive correlation in % time pH < 4 between the 24-hr and 12-hr monitoring periods: distal (total, r = 0.88; upright, r = 0.93; recumbent, r = 0.92) and proximal (total, r = 0.86; upright, r = 0.83; recumbent, r = 0.88) electrodes. 

**Conclusions:** Reliable results are obtained with shorter durations of ambulatory pH monitoring. Clinical application of this concept should improve patient acceptance.

**51**

**PSEUDOREFLUX: ITS INCIDENCE AND IMPORTANCE**

Amnne Hila, M.D., Amit Agrawal, M.D., Janice Freeman, R.N., Shirley Jamison, Donald O. Castell, M.D., M.A.C.G.*. Medical University of South Carolina, Charleston, South Carolina.

**Purpose:** Pseudoreflux is believed to be caused by drying of proximal placed pH electrodes during recumbency due to decreased saliva production and limited swallowing. As the electrode dries, the signal decays resulting in the classic pattern of a gradual decline in pH. This decrease in pH, if not identified as an artifact and excluded, will be read as a reflux episode, and potentially induce over diagnosis. The aim of this study is to identify the frequency of pseudoreflux, and evaluate its effect on interpretation of 24-hour esophageal pH studies.

**Methods:** 200 consecutive dual electrode pH studies (135 females, 65 males; mean age = 50 years; range: 16 – 88) performed in our lab between July 2002 and February 2003 were analyzed for percent time pH < 4 at the distal (normal values: total < 4.2%; upright < 6.3%; recumbent < 1.2%) and proximal (normal values: total < 1%; upright < 1.3%; recumbent = 0) sites. All tracings were re-analyzed to identify episodes of pseudoreflux and acid reflux time recalculated with these episodes included and excluded.

**Results:** 14 patients (7%) showed at least one typical episode of pseudoreflux during their studies. In all these patients, exclusion of the pseudoreflux episodes showed absent proximal recumbent esophageal acid exposure. When the pseudoreflux episodes were included in the analysis, all the patients (100%) had abnormal proximal recumbent esophageal acid exposure (mean: 5.2%; range: 0.4%–13.5%). Only 4 of these patients showed any abnormal esophageal acid exposure when pseudoreflux was excluded. Thus, not excluding pseudoreflux changed the overall diagnosis from a normal to an abnormal study in 72% (10/14) of these patients. There was also a significant difference in recumbent (p = 0.0001) and total (p = 0.0001) proximal esophageal acid exposure when including or excluding the pseudoreflux episodes.

**Conclusions:** Pseudoreflux is seen on a regular basis during 24-hour esophageal pH studies. Ignoring the need to exclude these artifacts will most often lead to over-diagnosing gastroesophageal reflux disease.

**52**

**HISTAMINE-2 RECEPTOR ANTAGONISTS AT NIGHT IMPROVE GERD SYMPTOMS FOR PATIENTS ON PROTON PUMP INHIBITOR THERAPY**

Andrew Rackoff, M.D., Amit Agrawal, M.D., Amine Hila, M.D., Indre Mainie, M.D., Radu Tutuian, M.D., Janice Freeman, R.N., Donald O. Castell, M.D., M.A.C.G.*. Medical University of South Carolina, Charleston, South Carolina.

**Purpose:** While nighttime symptoms of gastroesophageal reflux are common, considerable controversy exists regarding the use of H2RAs for nighttime reflux control. Some studies have suggested possible tolerance to H2RA while others have suggested that long-term efficacy of gastric acid control can be maintained with nighttime H2RA use. The aim of this study is to identify if GERD patients have sustained symptom improvement with long-term use of nighttime H2RA.

**Methods:** Records of 56 consecutive GERD patients on twice daily proton pump inhibitor (PPI) and nighttime H2RA therapy were reviewed. During a phone interview patients were asked a 5-item questionnaire, which included overall assessment of symptoms, nighttime symptoms, sleep disturbance, duration and frequency of therapy. Questions on the survey were read verbatim, and patient responses were recorded without coaxing to minimize observational bias.

**Results:** Of the 56 patients 39 (31 females, mean age 56) completed the questionnaire (15 were not reached and 2 did not recall enough information). All respondents had taken nighttime H2RA for at least one month (28/39 patients >6 months) with 33/39 patients taking H2RA’s every night. The addition of H2RA led to an improvement in overall symptoms in 28/39 (72%) patients, improvement in nighttime reflux symptoms in 25/34 (74%) patients and improvement of GERD associated sleep-disturbance in 18/27 (67%) patients. Five (13%) patients had stopped the H2RA on their own, stating that its efficacy waned after one month.

**Conclusions:** Our results suggest that the majority of patients report persistent improvement in GERD symptoms from nighttime H2RA use and that clinically meaningful tolerance to H2RA’s occurs in a small number of patients. Further prospective, placebo-controlled studies should help clarify the role for nighttime H2RAs in GERD symptom control.

**53**

**A CONSULTATIVE GASTROENTEROLOGIST (CG) PERSPECTIVE ON POST-MYOTOMY SYMPTOMS IN ACHALASIA PATIENTS**

Amit Agrawal, M.D., Amine Hila, M.D., Indre Mainie, M.D., Radu Tutuian, M.D., Janice Freeman, R.N., Donald O. Castell, M.D., M.A.C.G.*. Medical University of South Carolina, Charleston, South Carolina.

**Purpose:** Heller myotomy is a frequent treatment for achalasia. Persistent or new symptoms after myotomy represent a complicated problem facing the CG. The aim of this study is to identify the characteristics of patients with post-myotomy symptoms.

**Methods:** Retrospective review of 11 patients (4 males, 7 females; mean age 48 yrs) seen in one CG practice for post-myotomy symptoms. Patients divided into:

- Persistent symptoms: persistent dysphagia after surgery.
- New symptoms: new heartburn and regurgitation after surgery.

**Results:** Persistent symptoms: 8 patients; all had persistent dysphagia as their only symptom after myotomy. All of these patients had a Heller myotomy combined with a fundoplication. They all reported worsening of their dysphagia 2 months to 2 years after the surgery. Pneumatic dilatations of the lower esophageal sphincter (LES) were performed in all these patients with no improvement or only a short-lived (less than 2 months) symptom improvement. 3 patients also had LES Botulotoxin injections with no symptom improvement. Two of these patients have required esophagectomy. 

- New symptoms: 3 patients; All had persistent dysphagia after myotomy, but also complained of new heartburn and regurgitation symptoms. All of these patients did not have a fundoplication with the myotomy. Only one patient had an improvement in reflux symptoms with a proton pump inhibitor.

**Conclusions:** Failed myotomy occurs and often results in referral to a CG. Follow-up of myotomy patients is important to identify persistent or new symptoms.
**PHOSPHODIESTERASE TYPE 5 (PDE-5) INHIBITORS IN CONTROLLING SYMPTOMATIC ESOPHAGEAL HYPERCONTRACTILITY**

**Purpose:** Patients with distal esophageal spasm (DES) or nutcracker esophagus (NE), traditionally receive calcium channel blockers, nitrates or antimuscarinics. However, their results are at best variable. Sildenafil blocks the PDE-5 enzyme that degrades CGMP, and thus results in relaxation of smooth muscle (including esophageal) by accumulation of nitric oxide. This drug has been shown to improve symptoms in some patients with hypercontractile esophagus, by lowering lower esophageal sphincter (LES) pressure and contraction amplitudes (Eberer AJ, et al. Gut 2002; 50:758). Recently, two new PDE-5 inhibitors have been FDA approved.

The aim of this study was to compare the effect of sildenafil, vardenafil, and tadalafil on esophageal dysmotility and symptoms.

**Methods:** A 37 year old white male was seen with daily severe retrosternal pain episodes for 3 years, often occurring at night. Cardiac work-up negative. No symptom response to empiric therapy with proton pump inhibitors and H2 blockers. Negative upper endoscopy and barium swallow study. Multichannel intraluminal impedance – esophageal manometry (MII-EM) performed in our laboratory showed: DES, NE and incomplete LES relaxation with complete bolus transit for liquid and viscous swallows. No symptom response to treatment with nifedipine, nitrites, imipramine, bentyl, and Botox injection of the LES. Patient started on sildenafil 50mg qds, with marked decrease from 4 to 5 severe chest pain episodes down to 1 mild episode per day. There was also marked decrease in contraction amplitudes, distal esophageal amplitude (DEA) and LES pressure (LESP) (see table). The patient was sequentially changed to vardenafil 10 mg qd, and tadalafil 10 mg qd with similar symptom and pressure response measured one hour after dose (see table).

**Results:**

**Conclusions:** PDE-5 inhibitors lower LES pressure and esophageal propulsion, and reduce frequency and severity of chest pain related to a hypercontractile esophagus. The 3 available PDE-5 inhibitors seem to have comparable effects.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Post- sildenafil</th>
<th>Post- vardenafil</th>
<th>Post- tadalafil</th>
</tr>
</thead>
<tbody>
<tr>
<td>LESP</td>
<td>40</td>
<td>23</td>
<td>8.6</td>
<td>18.9</td>
</tr>
<tr>
<td>DEA</td>
<td>239</td>
<td>134</td>
<td>54</td>
<td>51</td>
</tr>
<tr>
<td>Symptom score</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

---

**A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL DEMONSTRATING THE EFFECTIVENESS OF AN EDUCATIONAL INTERVENTION IN IMPROVING PROTON PUMP INHIBITOR DOSING HABITS**

**Purpose:** Proton pump inhibitors (PPIs) achieve maximal acid suppression when dosed up to an hour before a meal. PPIs are incorrectly dosed in over 50% of patients (Gastroenterology 2001:120; A2205). Interventions to improve PPI dosing may improve GERD symptoms and decrease drug utilization. We aim to assess the effect of a focused educational intervention on PPI dosing.

**Methods:** 638 patients from a local HMO newly prescribed a PPI for GERD were identified and invited to participate in a prospective randomized, double blind controlled study assessing the effect of an educational intervention on PPI dosing behavior. Participants were considered optimal dosers if they took their PPI 15–30 minutes prior to their first meal of the day, correct dosers if they took their PPI up to 60 minutes prior to any meal and incorrect dosers if they took their PPI at any other time. Dosing behavior was assessed at baseline and patients were randomly selected into a control or intervention group and sent letters at 2 weeks. The control group received lifestyle modification suggestions to reduce GERD. The intervention group received a letter which highlighted the importance of pre-meal PPI dosing in addition to a label reminding them to dose their PPI 15–30 minutes before a meal which they affixed to their pill bottle. Both groups were resurveyed 2 weeks later regarding their dosing habits.

**Results:** 625 subjects were contacted, 173 subjects participated in the study and 139 patients completed the study. No differences were identified between participants and non-participants based on age, gender, or formulation of PPI prescribed. At followup, slightly more control group patients took their PPI optimally than at baseline (12% vs. 8%) but the change was not statistically significant (p = .41, McNemars). Greater improvement was seen in the intervention group, 23% taking optimally at follow up vs. 8% at baseline (p = .01, McNemars).

**Conclusions:** This prospective, randomized controlled trial demonstrated that a focused educational intervention improved dosing behavior in new PPI users. This simple cost-effective intervention could be instituted for a larger group of PPI users, and may lead to improved GERD symptoms and decreased resource utilization.

**DOES ABNORMAL ESOPHAGEAL FUNCTION OCCUR IN PATIENTS WITH NUTCRACKER ESOPHAGUS?**

**Purpose:** Esophageal manometry (EM) is the gold standard for diagnosis of motility abnormalities. Nutcracker esophagus (NE) is defined by mean distal esophageal amplitude (DEA) exceeding 180 mm Hg. Data on the functional (i.e. bolus transit) implications of this finding are limited.

**Aim:** To assess bolus transit in patients with NE using combined multichannel intraluminal impedance and manometry (MII-EM).

**Methods:** In a retrospective review of 558 combined MII-EM tracings recorded at our institution we identified 43 patients (7.7%) with NE and compared their bolus transit patterns to 192 patients (34.4%) with normal esophageal manometry. Patients received 10 liquid (saline) and 10 viscous (apple-sauce like) swallows (5 ml each), 30 second apart. Bolus transit time (time elapsed from bolus entry in the proximal esophagus to bolus exit in the distal esophagus) and overall normal/abnormal bolus transit were recorded. Normal liquid bolus transit was defined as ≥80% swallows with complete bolus transit and normal viscous bolus transit was defined as ≥70% swallows with complete bolus transit.

**Results:** All but one (42/43; 98%) of patients with NE had complete bolus transit for both liquid and viscous swallows compared to 181/192 (94%) of those with normal manometry. Of the total swallows, 421/430 (97.9%) liquid swallows had complete bolus transit in the NE patients compared to 1792/1917 (93.5%) liquid swallows for normal manometry. The mean bolus transit time in the 43 patients with NE (6.5 ± 0.3 sec) was significantly (p = 0.014) shorter than that for the 192 patients with normal esophageal motility (7.5 ± 0.1 sec). Similarly the mean peristaltic onset velocity in the 43 patients with NE (2.6 ± 0.16 sec) was significantly (p = .04) faster than that for the 192 patients with normal esophageal motility (2.3 ± 0.07 sec).

**Conclusions:** The high contraction amplitudes in patients with nutcracker esophagus are associated with more rapid esophageal transit; confirming the superphysiologic nature of this manometric finding. Nutcracker esophagus is not associated with a functional abnormality.
IS GRANULAR CELL TUMOR OF THE ESOPHAGUS COMMON IN AFRICAN AMERICANS? A RETROSPECTIVE ANALYSIS
Samuel A. Giday, M.D., Tammy Naub, M.D., Getachew Mekasha, M.D., Duane Smoot, M.D.*. Howard University Hospital, Washington, District of Columbia.

Purpose: To evaluate the frequency of Granular Cell tumor of the esophagus, which are becoming more frequent and a diagnostic and therapeutic challenge since the advent of endoscopy, in the African American population and to review current literature regarding diagnosis and management.

Methods: Between 1991 and 2003, 11,808 cases were registered in the Howard University Hospital pathology registry. The registry was reviewed for cases of Granular cell Tumor. An expert pathologist reconfirmed the histology of those tumors. Immunohistochemical staining for the S 100 protein was performed in all cases. Inhibin staining was performed on two cases of esophageal granular cell tumors.

Results: A total of 31 cases of Granular Cell Tumor were identified. Out of these 31, 55% were from the skin and subcutaneous tissue, 16% from the breast, 10% from the tongue, 6% from the vocal cords, 6% from the esophagus and 6% from other parts of the body including the bone and the vagina.

The mean age in our study was 44 years which is similar to other reports. The frequency of Granular cell tumor from our review was 0.2% which is similar to the prevalence reported in the general population. Esophageal Granular cell tumors, which are being identified more since the advent of fiberoptic endoscopy, accounted for 0.016% of total cases which is also similar to the reported frequency from studies done in European countries. Biopsy and immunostaining for S 100 protein remain crucial in making the diagnosis of Granular cell tumor. The inhibin staining was not positive in our two cases where the staining was performed.

Conclusions: Our data indicates that the frequency of granular cell tumor in the African American population is not different from the frequency reported in other groups. The age distribution of granular cell tumor is no different between our study and from studies done in European countries.

Location of Granular Cell tumors

<table>
<thead>
<tr>
<th>Location</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin and Subcutaneous tissue</td>
<td>17</td>
<td>55</td>
</tr>
<tr>
<td>Breast</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Tongue</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Esophagus</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Vocal Cords</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Bone</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Vagina</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

EOSINOPHILIC ESOPHAGITIS: GERD OR ALLERGY?
George W. Meyer, M.D.*. Kaiser Permanente Medical Center and UC Davis Med School, Sacramento, California.

Purpose: To develop information about the etiology of eosinophilic esophagitis.

Methods: IgE and peripheral eosinophil data were reviewed from the charts of 9 patients with dysphagia and esophageal rings.

Results:

Conclusions: Four of nine (44%) patients had elevated IgE levels; Eight of nine (89%) patients had peripheral eosinophilia. These data are suggestive that an allergic etiology seems to be present in most of these patients with dysphagia and a ringed appearance of the esophagus. The implication is that there may be a role for topical corticosteroids or disodium cromoglycate in patients with eosinophilic esophagitis.

MANOMETRIC APPRAISAL OF LOWER OESOPHAGEAL Motility and Lower Oesophageal Spincter after Antireflux Surgery
Vinod Narkhede, M.B.B.S., Sandesh Sharma, M.S., Ajit Sewkani, M.S., Rashmi Jaiswal, M.B.B.S., Krishna K. Maudar, M.S., Subodh Varshney, M.S.*. Bhopal Memorial Hospital and Research Centre, Bhopal, Madhya Pradesh, India.
Purpose: Generally patients with Gastro oesophageal reflux disease (GORD) following fundoplication are evaluated symptomatically (subjective data) or endoscopically for disappearance of oesophagitis. We studied the effect of fundoplication on lower oesophageal motility (LOM) and lower oesophageal sphincter (LOS) pressure by oesophageal manometry (OM) and tried to correlate this objective data with symptom score

Methods: Between January 2002 to January 2004, six patients, (male:5), aged between 31 years to 65 years (mean: 43 years), with severe GORD underwent fundoplication (Laparoscopic Nissen’s; n = 2, Open Anterior partial; n = 1, Laparoscopic Anterior partial; n = 3). All were volume refuxer (severe regurgitation) with moderate to severe oesophagitis on endoscopy (Grade II – 2, Grade III-3, Grade IV-1). All had Barium swallow for hiatus hernia and endoscopy for oesophagitis. All had preoperative baseline (after stopping all drugs) OM studies using water perfusion static OM, using 8 ports (4 concentric) catheter and Redtech GiPC window software, California, USA. We studied the LOM (amplitude, duration and velocity) and LOS resting pressure. At least, 3 months after fundoplication all underwent repeat OM studies, endoscopy and symptoms were analysed. The G.I.Physiologist was blinded to patient status. Statistical analysis was done by using paired samples.

Results: All the patients improved symptomatically (no regurgitation) post operatively. Oesophagitis disappeared in all patients on endoscopy post operatively. No patient had dysphagia at 3 months. One patient who underwent laparoscopic Nissen’s fundoplication complained of increased passage of rectal gases. There was no significant change in LOM following fundoplication. The LOS resting pressure improved significantly (p < 0.05) in all patients following fundoplication.

Conclusions: Successful fundoplication significantly improves LOS resting pressure which could be correlated with improvement in symptom score.

61 EFFECT OF VARIOUS PROKINETIC DRUGS ON LOWER OESOPHAGEAL BODY AND LOWER OESOPHAGEAL SPHINCTER Vinod Narkhede, M.B.B.S., Sandesh Sharma, M.S., Ajit Sewkani, M.S., Gopesh K. Modi, D.M., Krishna K. Maudar, M.S., Sabodh Varshney, M.S.*. Bhopal Memorial Hospital and Research Centre, Bhopal, Madhya Pradesh, India.

Purpose: Various prokinetic drugs have different effects on oesophageal manometry and gastro-oesophageal symptoms. We studied subjective and objective effects of various prokinetics in a prospective, single blind, case control study.

Methods: 16 patients (23 to 50 yrs, 15 males) with moderate to severe gastro-oesophageal reflux symptoms (GORS) and 8 asymptomatic controls (21 to 35yrs, 6 males) were enrolled. We performed static perfusion OM using continuous water perfusion system (Redtech, GiPC, CA). Amplitude (Uamp) and velocity (Uvel) of lower oesophagus (5cm above LOS), Resting pressure (RP) and relaxation of LOS (RLOS) were studied. Studies were performed as baseline OM and after 3 days of Omeprazole 20mg b.i.d. The investigator was blinded to subject status. Statistical analysis was done using t-test for paired samples.

Results: The manometry findings were [mean (SD)]:

<table>
<thead>
<tr>
<th>Baseline Post drug</th>
<th>Uamp (mmHg) 17.6 (9.2) 17.23 (10.9)</th>
<th>Udur (sec) 2.27 (1.0) 2.30 (1.03)</th>
<th>Uvel (cm/s) 2.36 (0.8) 2.35 (0.73)</th>
<th>Lamp (mmHg) 46.3 (35) 53.2 (36.3)</th>
<th>Ldur (sec) 4.56 (1.5) 4.59 (1.62)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>RP (mmHg) 24.3 (12) 26.9 (10.2)</th>
<th>p = 0.025</th>
</tr>
</thead>
</table>
| RLOS (%) 97.1 (4.9) 97.06 (7.4) | Conclusion: Omeprazole significantly increased Lower oesophageal sphincter resting pressure in healthy volunteers. We report another property of Omeprazole that may have implications in treatment of upper GI disorder.

63 INTRAVENOUS PROTON PUMP INHIBITOR (PPI) THERAPY AND EARLY HEARTBURN SYMPTOM RELIEF IN PATIENTS WITH GERD Christo van Rensburg, M.B Ch.B. MMed(Int), Corné Kruger, M.B Ch.B. MMed(Int), Zoja Noveljic, M.B Ch.B. MMed(Viroil), Alida Thorpe, R.N., Catarina Mattsson, B.Sc., Göran Hasslegrén, M.D., Ph.D.*. Tygerberg Academic Hospital and the University of Stellenbosch, Tygerberg, South Africa and AstraZeneca, Pepparedsleden 1, Malmö, Sweden.

Purpose: There are limited data on heartburn symptom relief during first 4 h of therapy with acid-inhibiting drugs. This study investigated symptom relief over this period in subjects receiving i.v. omeprazole, which rapidly increases pH to >6 in fasting subjects, after a provocative meal.

Methods: A single-centre, double-blind, randomized, 2-way cross-over study was conducted. Patients with macroscopically abnormal esophageal mucosa were excluded. At first visit, eligible patients (n = 75) were given a provocative meal (hamburger and fries, coca cola, coffee and mint chocolates); those developing at least moderate heartburn within 3 h were given placebo as i.v. bolus followed by continuous infusion for 4 h. To exclude placebo responders, those who experienced complete sustained symptom...
relief within 30 min were withdrawn. After 7-day washout, those remaining were randomized to receive either active treatment or placebo, and given a provocative meal (visit 2). At first perception of heartburn, patients received either omeprazole 80 mg or placebo (30 min bolus) followed by i.v. infusion of omeprazole 8 mg/h or placebo for 3.5 h. Patients graded symptoms according to Treatment Satisfaction Scale (TSS), a 5-point Likert scale, every 15 minutes for 4 h. At visit 3, following 7-day washout the intervention was repeated. Adverse events were reported at follow-up, within 2–9 days of visit 3.

Results: Thirty-eight patients were randomized to placebo/omeprazole and 37 to omeprazole/placebo. Of these, 32 and 35, respectively were included in a per protocol analysis. Mean severity of heartburn during the 4-h treatment period was significantly lower (P < 0.001) with omeprazole (2.5; 95% CI 2.3, 2.7) than placebo (2.7, 95% CI 2.5, 2.9). However, over the 4-h period, no statistically significant differences were observed between omeprazole and placebo, with respect to maximum severity, sustained relief or complete resolution of heartburn. The i.v. omeprazole dose regimen was well-tolerated. Few adverse events were reported, and none were considered serious by the investigator.

Conclusions: In a 4-h period after a provocative meal, i.v. omeprazole reduced the severity of meal-induced heartburn. However, overall differences observed between the two treatments were small, and their clinical relevance uncertain.

64

INTRAGASTRIC AND COLONIC FERMENTATION IN PATIENTS WITH REFLUX ESOPHAGITIS
Yoshihisa Urita, Yoshinori Kikuchi, Naotaka Torii, Kazuo Hike, Eiko Kanda, Hidenori Kurakata, Masahiko Sasajima, Kazumasa Miki*. Toho University, Tokyo, Japan.

Purpose: When unabsorbed carbohydrate reaches the large intestine it is rapidly fermented to short chain fatty acid by anaerobic bacteria, liberating CO2, H2, and some people CH4. Thus, analysis of breath H2 has been used to assess; small bowel transit time, colonic fermentation, lactose intolerance, carbohydrate malabsorption, or bacterial overgrowth. Hydrogen is mainly produced during fermentation in the intestinal tract, whereas intragastric fermentation has also been reported in diabetic patients. In addition, colonic fermentation is known to influence gastric and esophageal motility in healthy subjects. The aim of this study is to evaluate the relationship between intragastric and colonic fermentation and reflux esophagitis.

Methods: A breath sample was collected by the end expiratory breath technique before endoscopy in 135 consecutive patients undergoing esophagogastroscopy. Twenty ml of intragastric gas was endoscopically collected through a biopsy channel without air before conventional interpretation of these discordant results requires further study and consensus.

Results: The mean value of intragastric H2 gas in 29 patients with reflux esophagitis was 15.8±−/21.8 ppm, and 4.68±−/9.05 ppm in 106 patients without reflux esophagitis. Intragastric H2 concentration was >18 ppm in 27.6% and 5.7%, respectively. Intragastric CH4 concentration was >9 ppm in 6.9% and 1.9%, respectively. There was no difference of fasting breath H2 and CH4 concentration between patients with and without reflux esophagitis. Of 29 patients with reflux esophagitis, the mean value of intragastric H2 gas in 14 H.pylori-positive patients was 17.4±−/20.6 ppm, and 14.3±−/23.5 ppm in 14 H.pylori-negative patients.

Conclusions: Intragastric hydrogen concentration in patients with reflux esophagitis was significantly higher than in those without reflux esophagitis. From these results, it was suggested that, although a detail of mechanism was unknown, a rise of intragastric hydrogen gas may be one of pathogenesis of developing reflux esophagitis.

65

TUBELESS ESOPHAGEAL pH MONITORING (BRAVO). ARE TWO DAYS BETTER THAN ONE?
Jorge Uribe, M.D., Mariana de Jongh, M.D., Roy M. Gideon, Philip O. Katz, M.D.*. Albert Einstein Medical Center, Philadelphia, Pennsylvania.

Purpose: Prolonged pH monitoring with the BRAVO capsule has purported to be more patient friendly, provide an additional 24 hours of monitoring and this improvement in “value” of pH monitoring. Initial reports have indicated variability in results when day 1 and day 2 are separately analyzed. How these discordant results are used clinically has not been determined through one group suggests using “worst” day as arbiter. Aim: To evaluate variability in 48 hour pH monitoring results using the BRAVO capsule.

Methods: BRAVO pH studies performed in our esophageal laboratory between August, 2003 and April 2004 were reviewed. Total, upright, recumbent time esophageal pH < 4 graded as normal or abnormal for days 1, 2, and overall using the following: Total time pH less than 4, 4.2%, upright 6.3%, recumbent 1.2% (normal for our laboratory). Data reviewed for concordance and discordance of these results.

Results: Thirty-five studies were performed. Two were excluded for less than 48 hour data and one for capsule falling into stomach. Results of evaluable studies - 18 performed on PPI, 14 on no therapy. Overall, 8 studies revealed different “results” when day 1 and day 2 were accounted for separately. Equal numbers were normal day 1 and abnormal day 2 with no difference between on therapy and off therapy pH monitoring. When overall results were considered an equal number of discordant day 1, 2 results were categorized as normal or abnormal in the aggregate. Using “worst day” or final diagnosis did not always agree with overall results of combined day one and two scores.

Summary: These data are consistent with other reports of variability in day 1, day 2 diagnoses. Overall diagnosis using worst day vs. aggregate (total) scores are divergent.

Conclusions: While the BRAVO capsule provides “more data” the clinical interpretation of these discordant results requires further study and consensus.

66

CLINICAL, PHYSICAL AND DEMOGRAPHIC FACTORS CAN PREDICT THE LENGTH OF BARRETT’S ESOPHAGUS
Asiya Ahmad, M.D., Sujata Chirla, M.D., Nandini Nagaraj, M.D., Zaid Atnooh, M.S., Danielle Kim, M.D., Robert Boyront, M.D., Larry Borowski, M.D., James Reynolds, M.D.*. Drexel University College of Medicine, Philadelphia, Pennsylvania.

Purpose: The increased risk for cancer in patients with Barrett’s esophagus is often cited as a driving force for endoscopic evaluation of patients with gastroesophageal reflux disease (GERD). Long-segment Barrett’s esophagus (LSBE) conveys an increased risk for cancer compared to short-segment Barrett’s (SSBE), but clinical factors that distinguish these patients are less well characterized. The aim of our study is to evaluate clinical and epidemiologic factors that may help distinguish patients with GERD, SSBE and LSBE in a geographically and racially diverse group of patients.

Methods: We prospectively evaluated patients with endoscopic and histologically confirmed SSBE (<3 cm) and LSBE (>3 cm), as well as a GERD cohort. Demographic and clinical features, medication usage, endoscopic appearance and histologic samples from 112 GERD, 40 SSBE and 45 LSBE patients from 2 sites were compared.

Results: There was a higher percentage of men in the LSBE group as compared to the SSBE (p < 0.025) and GERD group (p < 0.05). There was a higher percentage of Caucasians in the Barrett’s groups; but this difference was significant only when comparing LSBE to GERD patients (p < 0.01). LSBE patients were taller than patients in the SSBE (p < 0.025) and GERD groups (p < 0.005). This remained significant even when adjusting for gender differences. LSBE patients were more likely to have gained weight in the preceding year than SSBE (p < 0.025) and GERD patients (p < 0.01). There was a trend towards a higher weight in the LSBE group over the SSBE and
DIFFERENCES BETWEEN PATIENTS WITH CHRONIC COUGH AND HEARTBURN REFERRED FOR GASTROESOPHAGEAL REFLUX AND MANOMETRY TESTING
Michael Plesman, M.D., Marten Duncan, D.O., LaVerne Bell, Corinne Maydonovitch, Inku Hwang, M.D., Roy K.H. Wong, M.D., F.A.C.G.*. Walter Reed Army Medical Center, Washington, District of Columbia.

Purpose: Chronic cough (CC) is often attributed to gastroesophageal reflux (GER). However, the exact mechanism of this relationship has not yet been fully elucidated. We attempted to address this question by retrospectively reviewing the 24-hour pH and manometry studies performed at a tertiary care center over a 5 year period. We analyzed the data from studies performed for CC and compared the data with those studies performed for evaluation of heartburn (HB).

Methods: 302 consecutive 24-hour pH and manometry studies were identified dating between January 1998 and November 2003. Patients taking acid suppressing medications or having a prior history of antireflux surgery were excluded. 228 patients were enrolled of which 96 had CC and 132 had HB.

Conclusions: While several clinical, demographic and physical characteristics distinguish LSBE patients from those with SSBE and uncomplicated GERD, we found no differences between SSBE and GERD patients. Thus, clinical factors cannot be used as discriminatory factors in designing screening guidelines.

RELIABILITY OF MORPHOMETRIC HISTOLOGY IN 497 INFANT ESOPHAGEAL BIOPSIES

Purpose: Non-erosive gastroesophageal reflux disease (GERD) is the most common form of GERD in infants & adults. Even without erosions, morphometric histopathology (papillary height, P, & basal layer thickness, B) of the esophageal epithelium discriminates infants & adults with GERD & abnormal esophageal acid exposure from normals. To determine reliability of P & B in infants, we prospectively randomly analyzed 497 masked suction biopsies, using a light microscope with ocular micrometer.

Methods: 497 biopsies obtained from awake, fasting infants (0–24 mo) during evaluation for GERD, using a Quinton instrument with ~5inHg suction just above 87% of the estimated gingival-sphincter distance were formalin fixed, parafin embedded, cut in ribbons of 3–4 oriented serial sections, & stained. The existing slide with ribbons #4 & 6 from each biopsy was scored independently by 2 investigators (SO, TS) with 22 and 12 years, respectively, experience analyzing esophageal morphometrics.

The primary section scored was the upper left one. P (ht.of tallest papilla—test-retest consistency compared data from SO & TS). Inter-observer consistency compared data from SO initial & repeat readings of a subset of slides. Internal consistency compared SO readings of the upper left & lower right sections on a subset of slides. All comparison readings were performed separate days, masked. Consistency was defined as ≤15% difference between 2 readings. Pearson correlations, & median (range) for averages of each pair of consistent P & B, were determined.

Results: 77 patients were identified with symptoms post-fundoplication, with a 60–40 female preponderance. Median age at presentation was 47 ± 14 years, with a median BMI of 27.1 ± 5.4. Preoperative symptoms included heartburn (80%) regurgitation (66%), chest pain (12%), and abdominal pain (12%). Of 45 patients with a documented pre-operative trial of proton pump inhibitors (PPI), only 53% reported improvement. 56 underwent a laparoscopic Nissen fundoplication, 15 open Nissen fundoplication and 5 had Belsey-Mark, Collis Nissen, or Toupet Fundoplications. The most common postoperative complaints were dysphagia (40%), heartburn (38%), regurgitation (24%), epigastric pain (24%), gas bloating (21%), retching (16%) chest pain (13%), and nausea and vomiting (12%). While dyspepsia and asthma tend to be late complications, and recurrent reflux symptoms could occur early or late, all other symptoms were more likely to occur before six months (60%). The most commonly abnormal tests when done were sham feed (71%), gastric emptying (53%), and 24-hr pH (55%). One quarter had a recurrent diaphragmatic hernia. A variety of medical and surgical treatments were used. Only 35 patients responded to treatment for their postoperative complaints. 34 (44%) required a second operation and 4 (5%) a third. Those with recurrent reflux symptoms or dysphagia had the lowest proportion of responders out of all types of post-operative symptoms(48%, 32%), while those with gas-bloat or dyspepsia had the highest (57%, 55%).

Conclusions: Difficult-to-manage post-operative symptoms can complicate fundoplications. Surprisingly gas and dyspepsia often responded to simple dietary manipulations, whereas recurrent reflux symptoms and dysphagia were relatively refractory, even to second operation.
Conclusions: Suction esophageal biopsies with adequate orientation for morphometric analysis can be obtained from infants & manifest a large range of adequately reliable morphometric values.

<table>
<thead>
<tr>
<th>Score-able</th>
<th>Consistency</th>
<th>Pearson Corr.</th>
<th>Consistent readings</th>
<th>Upper limit of 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>intra-obs P (n = 497)</td>
<td>93</td>
<td>97</td>
<td>0.75</td>
<td>0.67 (0.70-0.79)</td>
</tr>
<tr>
<td>intra-obs B (n = 497)</td>
<td>93</td>
<td>81</td>
<td>0.48</td>
<td>0.34 (0.13-0.61)</td>
</tr>
<tr>
<td>intra-rectal P (n = 67)</td>
<td>97</td>
<td>79</td>
<td>0.79</td>
<td>0.60 (0.28-0.84)</td>
</tr>
<tr>
<td>intra-rectal B (n = 67)</td>
<td>97</td>
<td>88</td>
<td>0.62</td>
<td>0.31 (0.10-0.50)</td>
</tr>
<tr>
<td>Internal control P (n = 20)</td>
<td>100</td>
<td>80</td>
<td>0.71</td>
<td>0.63 (0.38-0.94)</td>
</tr>
<tr>
<td>Internal control B (n = 20)</td>
<td>100</td>
<td>90</td>
<td>0.80</td>
<td>0.38 (0.05-0.90)</td>
</tr>
</tbody>
</table>

**ESOPHAGEAL STRICTURES SECONDARY TO CHRONIC CANDIDAL ESOPHAGITIS**

Harsha Vital, M.D., Joseph Sellin, M.D.*. University of Texas Medical Branch, Galveston, Texas.

Introduction: Candida esophagitis is a common cause of dysphagia in patients with AIDS. As the degree of immunosuppression worsens, the severity of esophagitis and the resistance to conventional treatments increase. Esophageal stricture is a rare complication of chronic candidal esophagitis.

Case Report: A 34 y/o Caucasian female with AIDS (CD 4 count of 4) presented with worsening esophageal dysphagia over several months tolerating only a liquid diet. Physical examination revealed oral candidiasis despite antifungal treatments. Biopsy revealed candida throughout the oropharynx and severe candidal esophagitis in the proximal esophagus. An 8 mm stricture was noted 24 cm from the incisors, preventing advancement of the endoscope. The patient was started on amphotericin B IV, but 4 days later there was no decrease in oral candidiasis or improvement in her dysphagia. Subsequently, the patient was started on caspofungin IV for a total of 10 days with disappearance of her oral candidiasis. Repeat esophagoscopy revealed resolution of candidal esophagitis, but the esophageal stricture persisted. Balloon dilation was performed from 8 mm to 12 mm. A large ulcer was noted distal to the stricture. A second 8 mm stricture was noted at 39 cm from the incisors, which was dilated to 12 mm. No further abnormalities were noted in the stomach or duodenum. Biopsies of the esophageal ulcer base and stricures revealed necrotic cells with degenerated yeast cells and hyphae suggestive of candida species. Immunostains for CMV were negative. At the time of discharge, the patient was tolerating a mechanical soft diet.

Discussion: Chronic candidal esophagitis with chronic inflammation may uncommonly progress to fibrosis and stricture. Although a rare complication, esophageal stricture should be considered in an immunosuppressed patient who continues to have dysphagia despite appropriate antifungal treatments. Furthermore, candidal resistance to azoles should be suspected in patients who do not respond to conventional antifungal regimens and broader spectrum or newer antifungal treatments should be considered.

**OVEREXPRESSION AND CYTOPLASMIC TRANSLOCATION OF SURVIVIN IN BARRETT’S ESOPHAGUS, DYSPLASIA, AND ESOPHAGEAL ADENOCARCINOMA: A KEY FOR MALIGNANT TRANSFORMATION**

B. Abdelkarim, M.D., A. Tarnawski, M.D.*, UC Irvine, Orange and VALBHS, Long Beach, California.

Purpose: Survivin (an apoptosis inhibitor) is over-expressed in fetal tissue, rapidly dividing cells, and human cancers. It acts as a microtubule stabilizer during mitosis, giving cells a survival advantage. Survivin expression in normal esophageal mucosa and Barrett’s esophagus (BE) is not known. **AIMS:** We examined: 1) the expression of survivin in a) normal esophagus, b) reflux esophagitis (RE), c) BE, d) dysplasia and e) esophageal adenocarcinoma, and (2) its spatial relationship to Cox-2 and β-catenin expression. 3) To gain insight into mechanisms, we investigated expression of survivin in normal esophageal epithelium (HET-1A) exposed to HCl.

Methods: Esophageal biopsies (n = 53) were categorized as normal, RE, BE, dysplasia, and adenocarcinoma. HET-1A cells were exposed to HCl (pH 6) for 1 hr and evaluated at 6 or 24 hrs. Biopsy specimens and cultured cells were immunostained with specific antibodies against survivin, Cox-2, and β-catenin.


Results: Survivin expression was detected in all specimens of normal esophagus, BE, RE, and dysplasia. In normal mucosa and RE, survivin staining localized exclusively to the nuclei of basal layer cells. In contrast, in BE and dysplasia, nuclear staining was reduced and cytoplasmic translocation was present in 50–60% of cells (p < 0.001). In adenocarcinoma, survivin expression increased with >75% of cells demonstrating cytoplasmic translocation (p < 0.001). Cox-2 expression was detected in both BE and dysplasia, but not in normal mucosa (p < 0.001). There was co-localization of Cox-2 and survivin in BE (p < 0.01). In dysplasia, β-catenin expression was significantly increased with >97% of cells showing intense cytoplasmic staining (p < 0.01). In HET-1A cells exposed to HCl, survivin expression increased at 24 hrs, with >95% of cells exhibiting nuclear staining.

Conclusions: This is the first demonstration that 1) survivin is expressed in normal esophageal mucosa, BE, RE, and dysplasia with a characteristic distribution pattern. 2) Expression of survivin in BE likely represents a defense mechanism that gives cells a survival advantage. 3) Acid triggers over-expression of survivin in cultured normal esophageal cells. 4) Co-localization of Cox-2, β-catenin and survivin suggest their local interactions and autocrine regulation.

**GENDER DIFFERENCES IN MANOMETRY STUDIES FOR CHEST PAIN OR DYSPHAGIA**

Kenneth R. DeVault, M.D.*, Christina Achem, Ernest P. Bours, M.D., Mark E. Stark, M.D., Sami R. Achem, M.D. Mayo Clinic College of Medicine, Jacksonville, Florida.

Purpose: Esophageal manometry is an important tool in the evaluation of patients with chest pain or dysphagia. There are little clear data on the differences in esophageal manometry findings between men and women. We sought to evaluate those differences in a large series of manometry studies.

Methods: 1307 consecutive manometry studies obtained over 30 months in our open access, tertiary center were reviewed and separated by gender. The indications for the study were recorded and patients who had chest pain or dysphagia were included in this analysis. If patients had multiple symptoms they were included in both indications. The results were characterized into the following groups: achalasia, scleroderma-like, diffuse esophageal spasm (DES), nutcracker (high-pressure) esophagus (NE), ineffective esophageal motility (IEM) or normal. For the purpose of this study, patients with isolated abnormalities of the LES were considered normal.

Results: 802 studies were carried out in women (61.4%) and 505 in men (38.6%). The indications for procedures in men and women respectively were: dysphagia (23.7% vs 23.8%, NS), chest pain (12.7% vs 20.9%, p < 0.001), reflux evaluation (69.3% vs 65.2%, NS)(adds up to >100% since some patients had multiple indications). Patients with chest pain were more likely to have a normal study than those with dysphagia (67.2% vs 48.7%, p < 0.001). Achalasia and scleroderma were only seen in patients with dysphagia. The results of the testing by gender in patients with dysphagia and chest pain are presented in the table.

Conclusions: Chest pain was a more common indication for manometry in women. Patients with chest pain (regardless of gender) were likely to have a
normal study and, in contrast with previous studies, the most common abnormality was IEM, not NE. In our series, no patient with chest pain alone had achalasia, which was most common in men with dysphagia. Scleroderma was rare and only seen in 9 patients in our series (all women with dysphagia). In summary, our major findings, comparing men to women were: 1) manometry studies were more likely to be ordered for chest pain in women, 2) there were differences in the prevalence of achalasia (more in men) and scleroderma (more in women).

Results:

Table: Follow up EGD in Patients with Erosive Esophagitis.

<table>
<thead>
<tr>
<th>Grade</th>
<th>B</th>
<th>C or Moderate</th>
<th>D or Severe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>31</td>
<td>83</td>
<td>43</td>
<td>157</td>
</tr>
<tr>
<td>Barrett’s</td>
<td>7</td>
<td>22</td>
<td>10</td>
<td>39</td>
</tr>
<tr>
<td>No Barrett’s</td>
<td>24</td>
<td>61</td>
<td>33</td>
<td>118</td>
</tr>
<tr>
<td>% positive per grade</td>
<td>22.5%</td>
<td>26.5%</td>
<td>23.2%</td>
<td>24.8%</td>
</tr>
<tr>
<td>% positive per total</td>
<td>17.9%</td>
<td>56.4%</td>
<td>25.6%</td>
<td></td>
</tr>
</tbody>
</table>

* p < 0.001, ** p < 0.025 (men v women).

**EROSIVE ESOPHAGITIS IS ASSOCIATED WITH BARRETT’S ESOPHAGUS**


**Purpose:** The prevalence of Barrett’s esophagus in patients with GERD symptoms is estimated to be between 3–15%. The prevalence of Barrett’s esophagus in patients with erosive esophagitis has not been established. The purpose of this study is to determine whether moderate to severe erosive esophagitis is a predictor of the presence of Barrett’s esophagus and whether a second look endoscopy is required to screen for intestinal metaplasia in this population.

**Methods:** A review of the endoscopic database at a VA medical center was performed from January 1998 to June 2004. Patients were included if they had no prior endoscopy and had moderate to severe erosive esophagitis (LA classification Grade B to D) on EGD. The length of inflammation was documented. Patients were placed on a high dose PPI regimen. Follow up EGD was performed at a mean duration of 3 months after initial EGD (range: 4 weeks to 1 year) to determine whether or not patients had Barrett’s esophagus. Complete healing was documented in all patients. The presence of Barrett’s esophagus was documented by visual inspection and confirmed by biopsy of suspicious areas. The length of Barrett’s esophagus was also noted.

Follow up EGD in Patients with Erosive Esophagitis.

<table>
<thead>
<tr>
<th>Grade</th>
<th>B</th>
<th>C or Moderate</th>
<th>D or Severe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>31</td>
<td>83</td>
<td>43</td>
<td>157</td>
</tr>
<tr>
<td>Barrett’s</td>
<td>7</td>
<td>22</td>
<td>10</td>
<td>39</td>
</tr>
<tr>
<td>No Barrett’s</td>
<td>24</td>
<td>61</td>
<td>33</td>
<td>118</td>
</tr>
<tr>
<td>% positive per grade</td>
<td>22.5%</td>
<td>26.5%</td>
<td>23.2%</td>
<td>24.8%</td>
</tr>
<tr>
<td>% positive per total</td>
<td>17.9%</td>
<td>56.4%</td>
<td>25.6%</td>
<td></td>
</tr>
</tbody>
</table>

**Results:** In 157 patients, 39 or 24.8% had documented Barrett’s esophagus on subsequent EGD. 31 patients had Grade B esophagitis, 83 patients had Grade C esophagitis, and 43 patients had Grade D esophagitis. Barrett’s esophagus was demonstrated on subsequent EGD in 7 of 39 or 17.9% with Grade B esophagitis; 22 of 39 or 56.9% with moderate or Grade C esophagitis; and 10 of 39 or 25.6% with Grade D or severe esophagitis. In each cohort, the proportion of patients that developed Barrett’s was roughly the same: for Grade B, 7 of 31 or 22.5%; for Grade C or moderate: 22 of 83 or 26.5%; and for Grade D or severe: 10 of 43 or 23.2%.

**Conclusions:** Erosive esophagitis is often associated with Barrett’s esophagus. The severity of inflammation is associated with an increased risk of harboring this condition. Patients with erosive esophagitis should have a second look endoscopy to evaluate for Barrett’s esophagus.

**THE EFFECT OF A NEGATIVE SCREENING UPPER ENDOSCOPY ON QUALITY OF LIFE AND HEALTH-RELATED ANXIETY IN PATIENTS WITH GERD**

Kate R. Lawrence, B.A., Sarah Schmitz, B.A., Sidney Levinson, M.D., Morton Malkin, M.D., Michael Brody, M.D., Joseph Galanko, Ph.D., Nicholas J. Shaheen, M.D., M.P.H.*. University of North Carolina, Chapel Hill, North Carolina.

**Purpose:** A large proportion of patients who undergo screening upper endoscopy (EGD) for reflux will have normal exams. Investigators have postulated that a negative upper endoscopy may have a positive psychological effect. The purpose of this study is to determine the effect of a negative screening EGD on quality of life and health-related anxiety over time in patients with GERD symptoms.

**Methods:** Subjects ages 18–80 with classic GERD symptoms who were scheduled for screening EGD were prospectively enrolled at a university endoscopy unit and two community centers. One week prior to their EGD, subjects completed the SCL-90-R, the Spielberger State/Trait Anxiety Scale, the SF-36, the Gastrointestinal Quality of Life Index, the GERD-HRQL, and the GERD Symptom Assessment Scale. Endoscopic and pathologic reports were reviewed following the procedure. Subjects with a normal endoscopic exam were sent the same questionnaires at six and twelve weeks post-endoscopy. Paired t-tests were performed comparing the pre-procedure anxiety and quality of life levels to those six and twelve weeks post-endoscopy, to assess the extent and durability of any changes.

**Results:** To date, 33 subjects have enrolled in the study, with 13 subjects (8 females, 5 males, mean age 46) having completed the study. Compared to the pre-procedure data, there was a transient and insignificant improvement in each of the 8 domains of the SF-36, as well as the Spielberger State Anxiety Scale (see graph). These improvements decreased by week 12, with all subjects having returned to baseline levels of quality of life and healthcare-related anxiety. [figure1]

**Conclusions:** These preliminary data suggest that positive effects of a negative EGD on quality of life or anxiety levels in GERD patients are transient and small in magnitude. Clinicians should not perform low-yield upper endoscopy for GERD expecting durable reassurance and improved quality of life for patients with a negative exam.
FOOD AS A RISK FACTOR FOR GER SYMPTOMS IN ADOLESCENTS

Purpose: Gastroesophageal Reflux (GER) is a common GI disorder. We reported a prevalence of 38% of esophageal GER symptoms among adolescents and found cigarette smoking, alcohol and non-steroidal anti-inflammatory drugs (NSAIDs) were risk factors. Now we are analyzing if certain foods and drinks are risk factors for GER symptoms in the same age group.

Aim: To find out the association between GER symptoms and the following as risk or protective factors: spicy foods, citrus fruit juices, 12 caffeinated and 15 non-caffeinated carbonated beverages, obesity, NSAIDs, alcohol, smoking and chewing gum.

Methods: A cross sectional survey was done among 14–18 year old students at a high school. The survey instrument contained questions on esophageal (heartburn, regurgitation and dysphagia), respiratory symptoms (cough and shortness of breath) over the past year measured by symptom frequencies on a 6-point scale and questions on the proposed risk factors. The data were entered into a MS Access Database and analyzed using SPSS.

Results: Drinking coffee or tea, caffeine containing carbonated drinks (Barq’s root bear, Dr. Pepper, Diet Dr. Pepper) and caffeine-free carbonated drinks (Sierra mist, barq’s diet root bear, A&W root bear, IBC root bear, Mug root bear, 7-Up, ginger ale, caffeine-free Coke, and Fanta) were found to be risk factors. Spearman’s rho was between 0.01 to 0.30 and p value less than 0.05.

Eating spicy food, drinking citrus fruit juices or chocolate drinks were not risk factors. Subjects with greater BMI tended to have more frequent GER symptoms (rho = 0.11, p = 0.016). As we showed earlier, alcohol, NSAID use and cigarette smoking were found to be risk factors (Odds ratios: NSAIDs: 1.38, cigarettes: 1.76, alcohol: 1.35, p < 0.05).

Conclusions: Certain carbonated caffeine containing and caffeine free drinks were found to be risk factors for GER symptoms. Coffee drinking had a higher risk than tea for GER symptoms. Contrary to our previous study, increasing BMI was a risk factor. Use of NSAID, alcohol and cigarette smoking were risk factors for GER symptoms. Chewing gum was not found to be protective for GER symptom.

References:

A CASE OF DYSPHAGIA CAUSED BY TWO SYNCHRONOUS DISTINCT ESOPHAGEAL MALIGNANCIES

A 76 year man was referred by his primary care physician with a 2 week history of dysphagia. A barium swallow revealed an irregular narrowed lesion in the distal esophagus 5 cm in length. His past medical history was unremarkable, though he did complain of frequent reflux symptoms. He also has a history of heavy tobacco and alcohol use. He underwent EGD which revealed a 3 cm plaque-like tumor in the proximal esophagus (26 cm), and a 5 cm circumferential, partially obstructing mass in the distal esophagus (at 35 cm). Biopsies were taken. Biopsies from the proximal lesion revealed a poorly differentiated mucinous adenocarcinoma, whereas those from the distal lesion revealed a poorly differentiated squamous cell carcinoma. Images and a discussion of this case will be presented.
were treated with BID PPI for additional two months and symptom response assessed.

**Results:** 85 patients enrolled (mean age 52.5 years; 68% female; 77% Caucasian). 60 patients treated with BID PPI (30 patients PPI alone, 30 patients PPI + H2RA) and 25 patients treated with QD PPI. **Symptom prevalence:** hoarseness (79%), throat clearing (79%), cough (66%), sore throat (60%), and globus (49%). **Response to therapy** (Figure): BID PPI = 15/30 (50%) BID PPI + H2RA = 16/30 (53%) QD PPI = 7/25 (28%). BID PPI resulted in significantly (p < 0.04) more response than QD PPI. No significant difference was found between BID PPI groups with and without H2RA (p = 0.50). 13 non-responders from the QD group were treated with BID PPI and 7/13 (54%) showed response to therapy at two months.

**Conclusions:** 1) In this open-labeled trial, empiric therapy with twice daily PPI is more effective than once daily PPI in the treatment of GERD related ENT symptoms. 2) Until we better understand the placebo response rate for this group of patients, BID PPI dosing is recommended.[figure1]

---

**GASTROESOPHAGEAL REFUX DISEASE IS A RISK FACTOR FOR LUNG CANCER: A CASE CONTROL STUDY IN HALF A MILLION VETERANS**


**Purpose:** To evaluate the incidence of lung cancer in the veteran population with gastroesophageal reflux disease (GERD) versus patients without reflux.

**Background:** Lung cancer is the leading cause of cancer deaths in the United States and throughout the world. GERD is notable for its prevalence, variety of clinical presentations, and substantial economic consequences. A variety of extraesophageal manifestations of GERD due to its chronic irritation effect, have been described. Which include asthma, laryngitis, chronic cough and esophageal cancer. Evidence is increasing about the association of GERD and head and neck cancer, however, the association between reflux disease and lung cancer has not been investigated.

**Methods:** A retrospective cross sectional case control study was conducted using data from the VISN 16 VA database from 1998 to 2004. We analyzed 534,273 patients from 4 states (LA, MS, TX, AK). The mean age was 61.1 (SD +/- 14.4) years and 92.1% were males. Multiple logistic regression analysis was done to adjust for smoking, alcohol, obesity, asbestos exposure, and sex.

**Results:** Of the 534,273 patients in the study, 203,978 (38.2%) were diagnosed with GERD. Of these, lung cancer was seen in 8412 (61.7%). In the control group 330,295 (61.8%) did not have GERD. Of these, lung cancer was seen in 2993 (38.3%). GERD patients were more likely to have lung cancer (Odds ratio 2.14, 95% CI 2.03 to 2.24).

**Discussion:** In US Veterans with GERD, the incidence of lung cancer was significantly increased as compared to patients without GERD. This study emphasizes the need to examine GERD as a risk factor for the development of lung neoplasms. Our data should be evaluated with caution, given the limitations of the population, the database and the fact that this is a case control study. Duration and severity of GERD symptoms were not factored into the analysis. Some factors known to increase the risk of lung cancer such as h aloethers, polycyclic aromatic hydrocarbons, nickel arsenic and passive exposure to “second-hand” smoke were not factored into the study. However, the large size of the database was felt to limit the errors in this study related to the assumption of these effects.

**Conclusions:** Our data shows that patients with GERD are at an increased risk of developing lung cancer.

---

**THE INCIDENCE OF HEAD AND NECK CANCER IS INCREASED IN PATIENTS WITH REFUX DISEASE: A STUDY BASED ON HALF A MILLION VETERANS**


**Purpose:** It is known that the risk of esophageal adenocarcinoma increases with the frequency, duration, and severity of reflux symptoms. It has only been recently acknowledged that reflux disease is related to extraesophageal diseases such as chronic cough and asthma. Chronic irritation due to acid reflux has been postulated as a causative factor for head and neck cancers. However, evidence is still relatively weak for this association. The objective of this study was to evaluate the incidence of oropharyngeal cancers in the veteran population with reflux disease versus patients without reflux.

**Methods:** A retrospective, case-control, cross-sectional analysis was conducted using data obtained from the Veteran’s Administration VISN 16 database covering Texas, Arkansas, Mississippi and Louisiana. A total of 501,350 records were collected with a mean age of 61.4 years (SD +/- 14.4) with 92.1% males. Specifically, patients with neoplasms of the oropharynx (ICD-9 140.x-149.x) were selected. Patients with and without reflux disease were allocated using the corresponding ICD-9 code (530.81 or 530.11). Multivariate logistic regression was used to analyze the data and the variables were controlled for age, alcohol, smoking and BMI. Significance was accepted at the 95% level.

**Results:** Of the 501,350 patients in the study 83,827(16.72%) patients had GERD. In this group, 586(0.7%) patients had oropharyngeal cancer. In the control group, there were 415,238(83.28%) patients without GERD. In this group, 586(0.7%) patients had oropharyngeal cancer. In the oropharyngeal cancer group (OR 2.1, CI 1.76 to 2.84) and alcohol use (OR 1.39, CI 1.28 to 1.50).

**Conclusions:** This cross sectional study including about half a million patient population postulates a strong correlation between reflux disease and oropharyngeal cancer. This study contributes to a growing body of evidence indicating that chronic acid induced irritation may be an important causative factor in oropharyngeal cancers. Nevertheless, prospective studies are needed to further validate the outcomes of this study.

---

**DEVELOPMENT OF A MULTIDIMENSIONAL MEASURE FOR GASTROESOPHAGEAL REFUX DISEASE IN CHILDREN**

Hoda M. Malaty, M.D., F.A.C.G.*, Kimberly J. O’Malley, Ph.D., Mark Gilger, M.D., F.A.C.G., Sahib Abadzic, M.D., David V. Graham, M.D., F.A.C.G., Linda Rubeneck, M.D., F.A.C.G. Baylor College of Medicine, Houston, Texas and Sunnybrook and Women’s College Health Sciences Center, Toronto, Canada.

**Purpose:** Gastroesophageal reflux disease (GERD) in children presents with combinations symptoms including, abdominal pain, heartburn, regurgitation...
and vomiting. We aimed to develop and test an age-specific instrument for measuring GERD in children.

Methods: We examined the responses of children participating in a validation study for a multi-dimensional measure of recurrent abdominal pain in (RAP). That measure consisted of 4 scales: a pain intensity scale (3 items), a symptoms scale (12 items), a disability scale (3 items), and a satisfaction scale (2 items). The symptoms scale was derived from 12 items that included GERD symptoms each rated from 1 to 5 (very severe). We applied factor analysis to examine the different components to identify GERD symptoms. The extraction method used all 20 items of the four scales and was used to identify and reconstruct the components needed to develop a GERD-specific measure for children.

Results: 307 children (ages 4–17) participated. The internal consistency (Cronbach’s coefficient alpha) for the RAP scales were 0.75, 0.81, 0.80, and 0.78 (range 0–1) for the pain intensity items, non-pain items, disability items and satisfaction items respectively. The 12-items of the symptoms scale were subclassified into two components; GERD symptoms (heartburn, burping, passing gas, bloating, and abdominal pain) and IBS symptoms (diarrhea, constipation/hard stool, and nausea/vomiting). The other symptoms items had correlation of 0.40 or less and were excluded.

Conclusions: We have developed a multi-dimensional measure for assessing the severity of GERD symptoms in children. The measure remains to be validated in order to serve as an evaluative measure for treatment in clinical trials.

82
EVALUATION OF BARRETT'S ESOPHAGUS WITH EUS AND EMR

Purpose: The primary aim of our study was to assess the ability of endoscopic mucosal resection (EMR) and endoscopic ultrasound (EUS) to aid in the diagnose high grade dysplasia or early cancer in Barrett's esophagus. Although EUS is routinely used, the use EMR has only recently been suggested to be of value for diagnosis.

Methods: Patients with high grade dysplasia or early cancer who were evaluated between 9/98 and 4/04 and underwent EMR and EUS we reviewed. EUS was performed with a radial scanning endoscope at 7.5 and 12 MHz with specific lesions investigated with 20 or 30 MHz probes. Suspicious lymph nodes were sampled using a linear array instrument and fine needle aspiration. Following EUS, endoscopic mucosal resection was performed by lifting the lesion with a saline-epinephrine injection followed by removal of the lesion using a suction cap with a pre-fitted wire snare. EMR specimens were oriented, carefully sectioned in 2 mm intervals. The histological slides were reviewed by at least two pathologists.

Results: 163 patients (139 males, 24 females) mean age 65+1 years were evaluated. The mean length of the Barretts esophagus was 5+0.3 cm. No endoscopically visible lesions were present in 16 (10%), mucosal irregularities in 79 (48%), nodules in 66 (42%), and ulcers in 2 (1%). 122 (75%) of these lesions were regions of high grade dysplasia (85) or cancer (68). EUS found a total of 36 T1 lesions and seven T2 cancers. Periesophageal lymph nodes were found in 33 patients but only one (3%) was positive on FNA. Of the 119 T0 lesions, 74 were high grade dysplasia and 39 had cancer by EMR. Two of the seven EUS staged T2 cancers had only high grade dysplasia while 12 of 36 T1 lesions had either high grade dysplasia or more benign lesions. 14 of 43 (33%) of the EUS identified cancers were found to be more benign lesions. Most (57%) of the histologically diagnosed cancers were not visible to EUS.

Conclusions: The use of EMR improves the diagnosis of cancer and high grade dysplasia in Barretts esophagus. Over half of cancers found by EMR were not visible to ultrasound whereas a third of potentially malignant lesions on EUS were found by EMR to contain more benign lesions.

83
ENDOSCOPIC GERD THERAPY GENERATES NEW REFERRALS AND A POSITIVE IMPACT ON HOSPITAL REVENUE
David S. Fefferman, M.D., Thomas B. Kelleher, M.D., Sara A. O’Connor, Ram Chattani, M.D., Douglas K. Pleskow, M.D.*. Beth Israel Deaconess Medical Center, Boston, Massachusetts.

Purpose: There is a growing demand amongst patients with severe or refractory GERD for endoscopic GERD therapies. With the advances in recent technology, the endoscopist now has the option to inject, suture, or plicate the esophagus to achieve GERD symptom relief. Since the advent of endoscopic GERD therapy reimbursement has remained inconsistent due to the lack of a CPT reimbursement code. The purpose of this study was to analyze the hospital revenues generated from referrals for endoscopic GERD therapy.

Methods: From 8/2003 to 6/2004, 61 patients were referred to 2 Interventional Gastroenterologists at a tertiary referral center for endoscopic GERD therapy evaluation (Enteryx or NDO plicator). The medical records for all patients were reviewed. The revenues collected from consultations, diagnostic procedures and radiology studies were analyzed. The endoscopic GERD therapies were not included in the analysis in order to isolate the financial impact of the ancillary services associated with endoscopic GERD therapy referrals.

Results: 23 of the 61 patients had endoscopic GERD procedures (6 Plicators, and 17 Enteryx), 19.7% (n = 12) of patients were internal to the hospital system and 80.3% (n = 49) were new referrals. During the pre-procedure work-up, patients underwent a mean of 1 office consultation. 16% (n = 10) had a surgical consultation, 33%(n = 20) a diagnostic endoscopy, 23% (n = 14) a GERD related radiograph (UGI/Gastric emptying studies), 16% (n = 10) a Ph study and 8% (n = 5) had an esophageal manometry. Post procedure there were 2 admissions for observation, 4 EGDs and 8 office consultations. As a result of the referral for endoscopic GERD therapy, there were 5 surgeries; 4 laproscopic Nissen fundoplications and one for a gastric tumor resection detected during the pre-procedure work-up.

The total hospital revenue excluding the endoscopic GERD procedure was $1,609/patient. The mean revenue generated as a result of the GERD referral was $474/patient for the consultation and diagnostic work-up, $1,031/patient for surgical referrals or interventions and $104/patient for post procedure care.

Conclusions: In conclusion, performing endoscopic GERD therapy results in a net positive ancillary revenue of $1,609 per patient referred. Therefore, irrespective of the potential income generated by therapeutic GERD procedures, the evaluation and management of these patients has positive financial implications to an institution.

84
TREATMENT SATISFACTION AND GERD SYMPTOMS AMONG ENTERYX PATIENTS
Ronald E. Pruitt, M.D., Robert A. Ganz, M.D., Michael Brown, M.D., William Snape, M.D., Kathryn A. Peterson, M.D., James Satller, M.D., David A. Johnson, M.D.*. Nashville Medical Research Institute, Nashville, Tennessee; Abbott-Northwestern Hospital, Minneapolis, Minnesota; Rush University Medical Center, Chicago, Illinois; California Pacific Medical Center, San Francisco, California; University of Utah, Salt Lake City, Utah; Torrance Hospital, Torrance, California and Eastern Virginia School of Medicine, Norfolk, Virginia.

Purpose: To evaluate the effectiveness of Enteryx treatment of GERD symptoms, postprandial dyspepsia and sleep satisfaction.

Methods: Patients with a GERD diagnosis responsive to proton pump inhibitor therapy were asked to participate in a multicenter prospective study to evaluate the effectiveness, safety and satisfaction of the Enteryx procedure. As part of this study, treatment satisfaction and GERD symptoms are assessed at baseline and at months 1, 3, 6, 12, 24, and 36 post procedure. Treatment satisfaction regarding control of reflux symptoms, response to choice of food and drink, and subjective quality of sleep is assessed.
using a GERD-specific questionnaire. Symptoms are evaluated using the Velanovich GERD-HRQL instrument. GERD-HRQL scores range from 0–45, with higher scores indicating worse symptoms.

**Results:** To date, 48 patients have undergone the Enteryx procedure; 56% (27/48) and 31% (15/48) of patients have completed 1 and 3 months follow-up. The average age is 49 years (range 23–72). At 1 month following the Enteryx procedure 68% (19/28) of patients reported that the Enteryx treatment allowed them to sleep better than prior medical treatment. At 3 months 75% (12/16) of patients reported improvement in quality of sleep. At baseline 43% (21/49) of patients reported that their medical regimen provided satisfactory postprandial symptom relief with normal eating habits compared to 68% (19/28) and 73% (11/15) of patients at 1 and 3 months following the Enteryx procedure. Compared to baseline, patients also reported considerable improvement in GERD symptom control as well as overall satisfaction following the Enteryx procedure. The mean GERD-HRQL scores at 1 and 3 months were significantly lower compared to pretreatment scores (21.8 vs 13.0, p = 0.0003; 21.8 vs. 13.1, p < 0.0001).

**Conclusions:** The initial data from this study indicates that following the Enteryx procedure patients have improved GERD-HRQL measurements as well as improved postprandial GERD symptoms and quality of sleep.

**THE STRETTA PROCEDURE IS EFFECTIVE AT 3+ YEAR FOLLOW UP FOR IMPROVING GERD SYMPTOMS AND ELIMINATING THE REQUIREMENT FOR ANTI-SECRETORY DRUGS**


**Purpose:** To evaluate the long-term (3+ year) durability of the Stretta procedure as it relates to GERD symptom control and anti-secretory drug utilization.

**Methods:** The Stretta procedure was performed on 220 patients between October 2000 and March 2004. At baseline, all patients had evidence of GERD (by symptoms, esophagitis, and/or 24-hr pH testing) and were dependent on daily a anti-secretory drug regimen for symptom relief. Patients were queried at baseline, 1 year, and 3+ years regarding their anti-secretory drug use (dose and frequency), GERD symptom score (0–3 points, 3 = severe), and GERD Quality of Life score (1–5 points, 5 = excellent).

**Results:** All procedures were performed using conscious sedation and there were no serious complications (i.e., no perforation, bleeding, or stricture). Sixty-eight patients (mean age 59.4 yrs, range 33–86) have reached a follow-up interval of 36+ mos; 66 of whom have data from 1 and 3+ year follow-up for analysis.

At 1 and 3+ yrs, the % of patients using “any” anti-secretory drug was reduced from 100% to 29.4% and 12.1%, respectively (p < 0.001), the mean GERD symptom score improved from 2.8 to 0.4 and 0.5, respectively (p < 0.001), and the mean GERD QOL score improved 2.4 to 4.5 and 4.3, respectively (p < 0.001). At baseline, 51 of 66 patients (78%) reported a “3” on the GERD symptom score (most severe), while at 3+ yrs, 0 of 66 (0%) patients reported a “3”. There was no significant change in any of the reported outcomes variables between the 1 and 3+ year intervals, indicating no loss of therapeutic effect.

**Conclusions:** This 3+ year follow-up study demonstrates that the Stretta procedure is both an effective and durable treatment for GERD, with significant and sustained reductions in anti-secretory drug use and significant and sustained improvements in GERD symptom and QOL scores.

**PATIENTS WITH REFLUX ESOPHAGITIS SECRETE MORE EGF IN THE PROXIMAL THAN THE DISTAL SEGMENT OF ESOPHAGUS: ITS POTENTIAL PATHOGENETIC IMPLICATION**

Tomasz Skowylas, M.D., Cezyray Poplawski, M.D., Mazen Asadi, M.D., Richard W. McCullum, M.D., Grzegorz Wallner, M.D., Jerzy Sarosiek, M.D.*. Kansas University Medical Center, Kansas City, Kansas and Slubiszewski Medical University of Lublin, Lublin, Poland.

**Purpose:** Human esophagus contains numerous submucosal mucous glands exhibiting significant secretory protective potential in terms of inorganic as well as organic components, especially epidermal growth factor (EGF). Patients with reflux esophagitis (RE) exhibit lower rate of esophageal EGF secretion than asymptomatic volunteers in the distal esophagus (M. Rourke, J. Sarosiek et al. AJG,89;1177–84,1994). The rate of EGF secretion within the proximal esophagus of patients with RE, however, remains to be determined.

**Methods:** The study was approved by the HSC at KUMC and conducted on 2 groups of RE patients (predominantly Grade B acc. to LA classification). In the first group of RE patients (10 patients, 5F & 5M, mean age of 39) the proximal esophageal mucosal perfusion was implemented whereas in the second group of patients with RE (14 patients, 8F & 6M, mean age of 46) the distal esophageal mucosa was explored. The esophageal secretions were collected during mucosal exposure to NaCl, HCl/pepsin (pH 2.1), and NaCl, mimicking the natural gastroesophageal reflux scenario; using the specially designed esophageal perfusion catheter (Wilson-Cook Medical Inc. NC). To eliminate the potential cross-contamination with saliva, a parallel collection of salivary secretion was also conducted. Concentration of esophageal EGF was measured by commercial EGF radioimmunoassay (Amersham, IL). Statistical analysis was performed using Sigma-Stat software (SPSS Inc. CA).

**Results:** The basal rate of the esophageal EGF secretion was significantly higher within the proximal than distal (8.60 ± 0.79 vs 3.78 ± 0.29 ng/min, p < 0.001) esophagus. The rate of esophageal EGF secretion remained also significantly higher during the mucosal challenge with HCl/pepsin (6.26 ± 0.67 vs 2.27 ± 0.27 ng/min, p < 0.001). Finally, during the esophageal mucosal exposure to saline and return of the esophageal mucosal pH to neutral conditions the proximal esophageal EGF secretion still remained significantly higher (10.1 ± 1.17 vs 3.73 ± 0.25 ng/min, p < 0.001).

**Conclusions:** The significantly higher rate of EGF secretion from submucosal mucous glands in the proximal esophagus may help to prevent injury and accelerate healing of any potential mucosal cell damage and thus prevent complications.

**OBESITY - SHOULD WE WORRY ABOUT ESOPHAGEAL ADENOCARCINOMA?**

Heiko Pohl, M.D., Douglas J. Robertson, M.D.*. VA Medical Center, White River Junction, Vermont.

**Purpose:** The incidence of esophageal adenocarcinoma has increased in the industrialized world over the past 30 years, more rapidly than any other malignancy. Some but not all studies have identified obesity as a risk factor for esophageal adenocarcinoma.

**Methods:** We performed a systematic review of all case-control or controlled cohort studies that examined obesity as a risk factor for esophageal adenocarcinoma (Medline 1966–2003). The search was limited to peer-reviewed articles. No language limitations were imposed. Studies were included if controls were matched by age and gender and if a possible association was expressed as odds ratio (OR) or relative risk.

**Results:** Nine case-control studies were identified enrolling a total of 1,102 patients with esophageal adenocarcinoma. Seven found obesity to be a risk factor; two did not find an association. Four studies found a significant dose-dependent association between body mass index (BMI) and risk. The two negative studies did not distinguish between esophageal adenocarcinoma and adenocarcinoma of the cardia. Lack of adjustment for other known risk factors for esophageal adenocarcinoma and adenocarcinoma of the cardia. Lack of adjustment for other known risk factors for esophageal adenocarcinoma. Lack of adjustment for other known risk factors for esophageal adenocarcinoma over the past 30 years.

**Conclusions:** Obesity is associated with an increased risk of esophageal adenocarcinoma with a significant dose-dependent relationship. The obesity epidemic may in part account for the marked increase in esophageal adenocarcinoma over the past 30 years.
88 RADIO FREQUENCY ENDOSCOPIC ANTI-REFLUX PROCEDURE (STRETTA) IN THE ELDERLY
Lois I. Hemmingren, NP-C, Donna Shelton, NP-C, Herbert C. Wolfzen, M.D.*.
Mayo Clinic, Jacksonville, Florida.

Purpose: The purpose of this study was to review our experience using the Stretta endoscopic anti-reflux procedure in patients over 65 years of age.

Methods: At last clinical follow up in June 2004, patients were asked to report their experience after having undergone treatment with the Stretta anti-reflux procedure at our institution since January 2001. Specifically, we inquired about their current use of anti-secretory medications, whether they had subsequently required other surgical or endoscopic anti-reflux interventions, and whether they had experienced any treatment complications or developed any new symptoms since their treatment.

Results: Since January 2001, we have treated 13 patients with the Stretta endoscopic anti-reflux device. Follow up information was available on 11/13 patients (85%). The median patient age was 71 years (range 67–75). Median time since Stretta was 21 months (range 8–41). No patients reported any treatment complications or new symptoms since their procedure. None had subsequently undergone other endoscopic or surgical reflux treatment. All patients were using at least twice daily PPI at time of treatment. At follow up, 4 patients were off medication, 1 patient was using H2RA or PPI prn, daily PPI was used in 5 patients, and twice daily PPI was used in 1 patient.

Conclusions: In this limited number of elderly patients over 65 years of age, the Stretta procedure was safe and not associated with treatment complications or development of any new symptoms at a median follow up of 21 months. Compared to baseline drug usage, all but one patient experienced improvement in their medication usage including four patients who no longer require anti-secretory medication.

STOMACH

89 IMPROVED INFRARED SPECTROSCOPY FOR POINT OF CARE PATIENT 13C-UREA BREATH TESTING IN THE PRIMARY CARE SETTING

Purpose: The 13C-UBT is the most accurate method of detecting the presence of an active H. pylori infection. Infrared detection devices are becoming smaller, lighter, more rapid, with decreased warm-up time and sample measurement time. The aim was to compare the standard UBIT-IR300 (22.5 kg, 5–6 min sample measurement) with the new POCone Infrared Spectrophotometer (10 kg, 2 min sample measurement) for Point-Of-Care testing of H. pylori status in the primary care setting.

Methods: The study was done in 4 primary-care (2 family practice, 2 internal medicine) clinics and one subspecialty clinical laboratory using 13C-UBT kits (75 mg 13C-urea, 3 g citric acid, final breath collection at 15 min). Breath samples were analyzed in duplicate and the results with the two 13CO2 analytical devices were compared. The clinic staffs had no prior experience in 13C-urea breath testing.

Results: Outpatients attending 4 primary-care clinics or 1 subspecialty clinic underwent 13C- UBT testing with the both the POCone Infrared and the UBIT-IR300 Infrared spectrophotometers. 220 individuals entered; mean age = 42.1 years (18–74 years); M:F = 35:65. There were 86 positive cases and 134 negative cases. The overall agreement was 99.6% (95% CI = 97.67, 99.98); the positive agreement was 100%; the negative agreement was 99.3% (1 discordant case). Data for all subjects result in a correlation of DOB values of 0.9994. Technical performance of the instruments was excellent.

Conclusions: The POCone Infrared Spectrophotometer is a practical, accurate, and rapid, point of care 13C-urea breath testing in the primary care setting even by inexperienced personnel.

90 SYMPTOM RESPONSES, LONG-TERM OUTCOME PARAMETERS AND adverse EVENTS BEYOND THREE YEARS OF HIGH-FREQUENCY GASTRIC ELECTRICAL STIMULATION FOR GASTROPARESIS
Richard W. McCallum, M.D.*, Zhiyue Lin, M.S., Irene Sarosiek, M.D., Jameson Forster. University of Kansas Medical Center, Kansas City, Kansas.

Purpose: The aim of this study was to determine symptom responses, long term outcome parameters and adverse events in gastropareic (GP) patients receiving gastric electrical stimulation (GES) therapy beyond 3 years.

Methods: This study included 45 patients (11M, 34F, mean age: 44 years, range: 27–65) with refractory GP (30 diabetic, 9 idiopathic and 6 postsurgical) undergoing GES implantation at KUMC between April 1998 and June 2001. High-frequency GES therapy was administered as previously reported (Am J Surg 2001; 182:676–681). Data collected at baseline and beyond three years included 1) 7 upper GI symptom sub-scores (TSS) in severity frequency, each graded using a 5-point scale; 2) patients’ global assessment of improvement rated on 0 to 100 scale; and 3) days of hospitalization in the year prior to GES implant as well as in the last year of follow-up; 4) weight; 5) HbA1c in diabetes; 6) adverse events.

Results: Of 45 patients included, 9 died of non-pacemaker related complications, 3 had devices removed due to hardware infection, 1 device was replaced due to displacement in an accident and 9 patients could not be reached for follow-up beyond 3 years. The remaining 23 patients had the device activated for a mean follow-up of 46 ± 2 months (range 36 to 73). Results are summarized in the table below (p < 0.05 vs. baseline). Nausea and vomiting and TSS beyond 2 years of GES were all significantly reduced. Average global improvement was 75 ± 6%, with 19 patients having global improvement >50% compared to only 3 patients (13%) with <50%. At implantation, 12/22 patients required nutrition support and only 3 at follow-up.

Conclusions: In patients with refractory GP receiving GES for beyond 3 years significant improvements in GP symptoms, nutritional support, days of hospitalization and HbA1c were achieved and sustained with a good safety profile.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Baseline</th>
<th>Follow-up (36–73 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSS (0–28)</td>
<td>21.3 ± 0.8</td>
<td>8.1 ± 1.3*</td>
</tr>
<tr>
<td>Vomiting (0–4)</td>
<td>2.9 ± 0.3</td>
<td>0.9 ± 0.3*</td>
</tr>
<tr>
<td>Nausea (0–4)</td>
<td>3.6 ± 0.2</td>
<td>1.6 ± 0.3*</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>62.8 ± 3.2</td>
<td>65.4 ± 2.8</td>
</tr>
<tr>
<td>Days in hospital</td>
<td>39 ± 10</td>
<td>4 ± 2*</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>9.5 ± 0.7</td>
<td>8.0 ± 0.8*</td>
</tr>
</tbody>
</table>

91 THE EFFECTS OF REBAMIPIDE, A GASTROPROTECTIVE AGENT, ON SYMPTOM RESOLUTION IN PATIENTS WITH FUNCTIONAL DYSPESIA - A DOUBLE-BLIND PLACEBO-CONTROLLED STUDY FROM JAPAN-
Hirot0 Miwa, M.D., F.A.C.C.G.*, Taro Osada, M.D., Kazutoshi Hori, M.D., Toshihiko Tomita, M.D., Takayuki Matsumoto, M.D., Nobuhito Sato, M.D. Hyogo Medical College, Hyogo and Juntendo University, Tokyo, Japan.

Purpose: Treatment of functional dyspepsia (FD) is performed based on the proposed physiological abnormalities. However, normalization of such physiological disorders does not necessarily resolve their symptoms, suggesting that efficacy of the treatment need to be evaluated by the clinical trials. In Japan, gastroprotective agents are frequently used for the treatment of peptic ulcers or chronic gastritis, and they are known to act through increase of mucosal blood flow and mucosal mucus, stimulation of prostaglandin synthesis or stabilization of the neutrophils. Yet, whether it resolves FD symptoms has
not been examined. Accordingly, we investigated its efficacy by a double-blind placebo-controlled study.

Methods: After approval of the study protocol by IRB, 81 FD patients without out reflux symptoms (female 63, mean 48 yrs, ranging 21 to 73 yrs) were enrolled into the study. They were randomly assigned either the treatment group (41 patients) or placebo group (40 patients). The patients in treatment group received rebamipide 100 mg t.i.d. (Mucosta®; Otsuka Pharmaceutical Co.) and those in placebo group received identical placebo for 4 weeks. Before and after the treatment, their symptoms and health related QOL were assessed by symptom scores (consisted of 12 items) and PGI-S 32 questionnaires that divided into three health concepts related to peptic ulcer, respectively. The scores of pre and after dosing were compared.

Results: Data from 71 patients were analysed (10 patients, 5 in the treatment group and 7 in the placebo group, were excluded from analysis). There was no significant difference in the total patients’ symptom scores between the treatment and placebo groups and ratio of the patients with complete or maximum symptom resolution. However, following three individual symptoms were significantly improved only in patients given rebamipide (bloating p = 0.038, belching p = 0.008, relief of pain after meal p = 0.07). As to QOL scores, there was no significant difference in over all QOL scores between the treatment and placebo groups, yet among them a subscale “pain intensity” was significantly much improved in the treatment group than in placebo groups (P = 0.033).

Conclusions: Some symptoms in patients with functional dyspepsia as well as quality of life may possibly be improved by rebamipide, a gastroprotective agent, in our patients’ population.

92

INFLUENCE OF PROTON PUMP INHIBITORS ON RAPID UREASE TEST IN THE DIAGNOSIS OF HELICOBACTER PYLORI INFECTION IN PAKISTAN


Purpose: The diagnostic methods available for detecting H. pylori infection include rapid urease test and histopathology. In Pakistan self-prescription of medications is common. This study was conducted to determine the effect of self-prescribed acid reducing drugs e.g., proton pump inhibitors (PPI) on the results of rapid urease test (Pronto dry).

Methods: Seventy-four consecutive patients with dyspeptic symptoms attending the endoscopy suite were enrolled. An informed consent was taken from all patients. Clinical symptoms at the time of presentation, diagnosis, drug treatment dosage and duration were noted with endoscopic findings. Antrum biopsy specimens were collected at endoscopy from each patient for the rapid urease test, Pronto dry (Medical Instrument Corp. France) and histopathology. Pronto dry results were read in 30 minutes and 1h after sampling as directed by the manufacturer. The color change from yellow to pink was considered positive result and no color change as negative for Pronto dry. Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of Pronto dry were compared against histology.

Results: There were 57% (42/74) males and 43% (32/74) females, age range 17–80 years and mean age of 44 ± 14.3 years. 65% (48/74) were not on any medications while 32% (24/74) used PPI and 3% (2/74) histamine-2 receptor blocker (H-2RB) before presentation to the outpatients. The presenting symptoms were abdominal pain in 58% (43/74), dyspepsia 19% (14/74), vomiting 9% (7/74), heart burn in 7% (5/74), and weakness 7% (5/74). The main endoscopic findings were gastritis 70% (52/74), gastroesophageal reflux disease 14% (10/74), duodenitis in 11% (8/74) and duodenal ulcer in 5% (4/74). Histopathology was positive for H. pylori in 61% (45/74) while Pronto dry was positive in 39% (29/74) with a p = 0.025. The sensitivity, specificity, negative predictive value (NPV) and positive predictive value (PPV) of Pronto dry with and without PPI was 18%, 71%, 26% and 60% vs 86%, 100%, 85% and 100%.

Conclusions: The sensitivity, specificity, NPV and PPV of Pronto dry is significantly reduced on PPI. Another test should be considered for the rapid diagnosis of H. pylori infection in our patients on recent acid reducing medications.

93

RANDOMIZED ACTIVE AND PLACEBO-CONTROLLED ENDOSCOPY STUDY EVALUATING A NOVEL PROTECTED FORMULATION OF ORAL ALENDRONATE


Purpose: Despite good tolerability in clinical efficacy trials, post-marketing surveillance has associated oral aminobisphosphonates with esophageal injury leading to ulceration, stricture or perforation attributed to prolonged pill contact. We undertook a randomized, active and placebo controlled endoscopy study to assess upper gastrointestinal injury with a novel formulation of alendronate (“protected alendronate”), designed to reduce direct contact between the active drug and the upper gastrointestinal mucosa.

Methods: Eighty healthy subjects with normal baseline endoscopy were randomly assigned to receive: protected alendronate 70 mg (N = 30); Fosamax™ 70 mg (N = 30); or (3) a lactose placebo indistinguishable from protected alendronate (N = 20) once daily for 14 days. Endoscopy was repeated on Day 8 and Day 15. Gastric and duodenal injury was rated using Lanza scores and esophagial injury was scored using the Hetzel-Dent scale. Differences in injury scores among treatment groups were assessed by analysis of variance (ANOVA) with post hoc Bonferroni tests. Differences in ulcer rates between groups were assessed using chi square test with post hoc Z tests for pair-wise comparison.

Results: Two subjects randomized to Fosamax™ were withdrawn due to protocol violation. The remaining 78 subjects (mean age 48.3 yrs +/- 5.9; 81% female) completed the protocol. Both Fosamax™ and protected alendronate were associated with significantly higher mean gastric Lanza scores than placebo. Mean gastric Lanza scores did not differ significantly between the Fosamax™ and protected alendronate arms. However, severe gastric injury (Lanza score 3 or 4) was more common on Fosamax™ vs. protected alendronate (67.9% vs. 33.3%; p < 0.01), and subjects on Fosamax™ were more likely than those on protected alendronate to develop gastric ulcers (21.4% vs. 3.3%; p = 0.03). No ulcers developed among subjects randomized to placebo. No significant differences in duodenal and esophageal injury were observed.

Conclusions: Overall gastric Lanza scores did not differ significantly between Fosamax™ and protected alendronate. However, protected alendronate was associated with fewer cases of severe erosive gastritis and fewer gastric ulcers than Fosamax™ when given at an equivalent oral dose. These results suggest that a protected formulation of alendronate reduces its potential for significant upper gastrointestinal mucosal injury.

94

RANDOMIZED CONTROLLED COMPARISON OF HEMOSTASIS EFFICACY & RETENTION RATES OF THREE TYPES OF HEMOCLOTS FOR BLEEDING CANINE ULCERS

Dennis Jensen, M.D.*, Gustavo Machicado, M.D., Ken Hirabayashi, B.A. CURE DDRC/V A GLAHC, Los Angeles, California.

Purpose: Mechanical closure of bleeding ulcers & visible vessels is clinically appealing & several types of hemoclips are now marketed for endoscopic hemostasis. However, there are conflicting reports whether these goals are achievable with current hemoclips. Further, no comparative data have been reported on ease of clip placement, hemostasis efficacy, or clip retention rates on bleeding lesions such as ulcers. Our purposes were to
compare the initial times/ease of deployment & efficacy of 3 types of hemoclips for hemostasis of bleeding ulcers & to quantitate clip retention rates & ulcer healing during endoscopic follow-ups. Methods: 7 adult dogs with prehepatic portal hypertension were heparinized & acute gastric ulcers were made with jumbo biopsy forceps for en face treatments. Resulting bleeding ulcers were randomized in pairs (2 for each treatment/dog) to endoscopic hemoclip treatment-(Olympus QuickClip-QC; Wilson-Cook TriClip-TC; or Boston Scientific Resolution Clip-RC) or control (C). Treatment endpoints were acute control of bleeding & apposition of the sides of the ulcers. Failure of initial clip retention, time for placement of 2 clips, & ease of deployment were assessed. Animals received oral PPI daily & had weekly endoscopies to quantitate clip retention, ulcer healing, & stigmata. Results: See table. There was no difference in ulcer healing rates of control or hemoclipped ulcers. No major complications occurred. Long-term clip retention at 9 weeks with RC (27.3%) was more common than with QC (7.4%) or TC (0%). Conclusions: 1) For the 3 hemoclip devices, initial hemostasis rates were similar, all devices required similar experience & time to place clips successfully. 2) TriClip retention rates at 1 week were significantly less than QuickClip or RC. 3) Long-term clip retention was more common with RC. 4) All 3 hemoclips were safe & none interfered with ulcer healing although some were retained long-term. Partially supported by BSC, Olympus, & NIH K24 (DK02650).

95 PREVALENCE OF HELICOBACTER PYLORI INFECTION IN LITHUANIAN CHILDREN

Purpose: Worldwide, H. pylori prevalence in children ranges from under 10% to almost 90%. The prevalence is low in developed countries whereas high prevalence is observed in underdeveloped countries. Epidemiological studies in other countries show a decrease in H. pylori infection. These changes are best seen in children. Recently, a new enzyme linked immunosay (Premier Platinum HpSA, Meridian Diagnostics, Cincinnati, OH, USA) has been developed to detect the presence of H. pylori antigens in stool specimens. This test can be performed quickly, utilizes a non-invasive sample, and initial reports from formal clinical trials suggest the HpSA test has a high level of accuracy. This test has not previously been used for epidemiological studies in Lithuania. The aim of this study was to determine the prevalence of H. pylori infection among children in Lithuania using this new non-invasive method.

Methods: We have chosen a random typical primary school in Vilnius. 94 school children (mean age 10.5 ± 0.5 years, girls/boys (61.5%/28.5%) were tested, using The Enzyme Immunoassay for H. pylori Stool antigen (HpSA) detection (Premier Platinum HpSA, Meridian Diagnostics, Cincinnati, OH, USA).

Results: The H. pylori infection was present in 32 of 92 (36%) children we had tested.

Conclusions: The current prevalence of H. pylori infection appears to be 36% in 10–11 year old children. These results suggest that Lithuania has a medium spread of H. pylori infection as compared with other European countries. The last decade in Lithuania is not rich in epidemiological data on H. pylori infection in children. Different methods have been used. We can still speculate about changes in the prevalence of H. pylori infection in children and other age groups.

96 FUNCTIONAL DYSPEPSIA SUBGROUPS PREDICT THE RESPONSE TO PROTON PUMP INHIBITOR (PPI) THERAPY
David A. Peura, M.D., Jeff Gudmundson, Nicholas J. Talley, M.D.*, University of Virginia Health Sciences Center, Charlottesville, Virginia; TAP Pharmaceutical Products Inc., Lake Forest, Illinois and Mayo Clinic, Rochester, Minnesota.

Purpose: While PPIs relieve functional dyspepsia symptoms, treatment response in dyspepsia subgroups remains unclear. We assessed whether dyspepsia subgrouping could predict response to PPI therapy.

Methods: Patients (n = 92) with functional dyspepsia (persistent or recurrent upper abdominal discomfort during the prior 3 months); moderate severity > = 30% of screening days; without predominant symptoms suggestive of gastroesophageal reflux and no endoscopic evidence of erosive or ulcerative disease were randomized to receive lansoprazole 15 mg (LAN 15), lansoprazole 30 mg (LAN 30), or placebo daily for 8 wks (Peura 2004). Patients recorded frequency and severity of symptoms in daily diaries and post-hoc were classified by dyspepsia type: ulcer-like, reflux-like, dysmotility-like and nausea/vomiting based on average patient-reported bothersomeness of symptoms at baseline. Complete resolution of symptoms was defined as the absence of upper abdominal discomfort in the 3 days prior to the specified visit as reported in patient diary. Since the results for LAN 15 and LAN 30 were similar, these groups were combined.

Results: 802 patients with data at Wk 8 were identified as having ulcer-(526), reflux- (187), dysmotility- (42) or nausea/vomiting-like (47) dyspepsia. Overall, significantly more patients treated with LAN achieved complete resolution of symptoms versus placebo. Response by dyspepsia type was also significantly better in patients treated with LAN than those treated with placebo at Wk 8 (table).

In addition, the majority of LAN treated patients in the overall, ulcer-, reflux-, dysmotility- and nausea/vomiting-like patients with complete symptom resolution at Wk 4 reported sustained complete resolution at Wk 8 (< 0.05 vs. other treatments. **Retention (# retained/# successfully placed).

Patients with Complete Resolution of Symptoms at Week 8

<table>
<thead>
<tr>
<th>Overall</th>
<th>Ulcer-like</th>
<th>Reflux-like</th>
<th>Dysmotility-like</th>
<th>Nausea/Vomiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAN</td>
<td>59/123 (48%)</td>
<td>15/248 (44%)</td>
<td>9/123 (41%)</td>
<td>9/29 (31%)</td>
</tr>
<tr>
<td>Placebo</td>
<td>8/273 (29%)</td>
<td>56/178 (31%)</td>
<td>19/64 (30%)</td>
<td>1/13 (8%)</td>
</tr>
</tbody>
</table>

* p < 0.05 vs. other treatments. ** Retention (# retained/# successfully placed).

97 CAN THE ACIDITY INDEX (AI) BE USED AS A SURROGATE FOR ASSESSING GASTRIC ACID PRODUCTION?
Wojciesz C. Bionski, M.D., Grace L. Shih, M.D., Colleen M. Breininger, M.S., David A. Katzka, M.D., David C. Metz, M.D.*, University of Pennsylvania Health Systems, Philadelphia, Pennsylvania and Wroclaw Medical University, Wroclaw, Poland.

Purpose: A recent study in patients receiving PPI therapy (Tutuan et al. Aliment Pharmacol Ther 2004) described a new parameter, the acidity index (AI), as less complicated to calculate and of comparable accuracy (r = 0.93) to integrated acidity (IA) in assessing intragastric pH control. The aim of this study was to correlate AI with IA using a large database of ambulatory 24-hr pH-metry studies in untreated patients.

Methods: We retrospectively analyzed 645 studies obtained from 1995 to 2001. Daytime (8AM-10PM), nighttime (10PM-8AM) and 24-hr IA and AI were calculated and correlations between these parameters were assessed according to age, gender and presence or absence of GERD using the Spearman correlation coefficient. GERD was defined as total esophageal pH time intervals.
Aim: Evaluate intragastric pH control in normal adults treated with esomeprazole 40 mg once daily in four different ethnic groups.

Methods: This study was performed in 76 patients with dyspepsia symptoms undergoing endoscopy in Evanston Northwestern Healthcare. To overcome the problem of patchy H. pylori, the same gastric specimen was used for both CLOtest and PCR assay. The CLOtest was performed first, once the result (waiting from 20 minutes to 24 hours) was read, the specimen in the CLOtest gel was collected, and then DNA isolation and the one-step multiplex PCR were performed.

Results: Positive results were achieved in 64% (49/76) with multiplex PCR and 43% (33/76) with CLOtest respectively. The sensitivity and specificity of CLOtest relative to Multiplex PCR is 65% (32/49) and 96% (26/27) respectively.

Conclusions: Our results suggest that our multiplex PCR method is a highly specific and sensitive method in the detection of H. pylori when an invasive diagnostic is justified.
Methods: Forty adult volunteers (10 Non-Hispanic Caucasians, 10 Blacks, 10 Hispanics, 10 Asians) were given esomeprazole 40 mg once daily 30 minutes before breakfast for five consecutive days followed by a 24-hour intragastric pH study. Intragastric pH was assessed with electrode 15 cm below a reference esophageal electrode 5 cm above the proximal border of the LES (7–10 cm below the distal border of the LES). Intragastric pH assessed for time pH less than 4 total, upright, recumbent. Statistics: Independent sample student’s T test (p < .05, significant).

Results: See table. Thirty-seven subjects (10 Non-Hispanic Caucasians, 10 Blacks, 10 Hispanics, and 7 Asians) have completed the study. Fifteen female, 22 male. Summary: Intragastric pH control in the recumbent period is superior in Blacks and Asians compared to Caucasians. Control of intragastric pH was similar across ethnic groups for all other measures.

Conclusions: The etiology of this difference is unclear, but not due to Helicobacter pylori infectivity.

This research was supported by an AstraZeneca ISS grant.

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Ethnicity</th>
<th>Mean St. Dev</th>
<th>t-test**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total % time</td>
<td>Caucasian*</td>
<td>47.1 21.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>43.7 8.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>30.8 20.6</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>30.4 17.8</td>
<td>0.08</td>
</tr>
<tr>
<td>Upright % time</td>
<td>Caucasian*</td>
<td>29.9 20.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>32.7 12.6</td>
<td>0.72</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>24.6 19.0</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>22.8 16.1</td>
<td>0.40</td>
</tr>
<tr>
<td>Supine % time</td>
<td>Caucasian*</td>
<td>70.6 34.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>62.4 16.4</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>36.6 26.9</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>40.1 23.8</td>
<td>0.04</td>
</tr>
</tbody>
</table>

*Non-Hispanic Caucasian, **All comparisons versus Caucasians

101 GASTRIC OUTLET OBSTRUCTION SECONDARY TO HELICOBACTER PYLORI RELATED GIANT FOLD GASTRITIS

Case: A 40-yr. old man presented with recurrent, spasmodic epigastric pain occurring once a month for a several years. He also had nausea with emesis of undigested food without bile or blood and obstipation. Symptoms resolved spontaneously after 2–3 days. Self-induced vomiting relieved pain temporarily. Between the episodes of abdominal pain, patient was asymptomatic. There was no weight loss. Barium x-ray showed a filling defect at the base of the duodenal bulb. Esophagogastroduodenoscopy revealed a 2-cm mass extending from the pylorus into the duodenal bulb. Biopsies from mass revealed mild active chronic gastritis with numerous Helicobacter pylori (HP). During endosonographic exam, the mass was found to be redundant, gastric mucosa prolapsing through the pylorus. Biopsy forceps was used to grasp and withdraw the mucosal folds back into the stomach. At the base of the duodenal bulb. Esophagogastroduodenoscopy revealed a 2-cm mass extending from the pylorus into the duodenal bulb. Biopsies from mass revealed mild active chronic gastritis with numerous Helicobacter pylori (HP). During endosonographic exam, the mass was found to be redundant, gastric mucosa prolapsing through the pylorus. Biopsy forceps was used to grasp and withdraw the mucosal folds back into the stomach. The etiology of this difference is unclear, but not due to Helicobacter pylori infectivity.

102 EFFECTS OF 5 MARKETED PROTON PUMP INHIBITORS ON ACID SUPPRESSION RELATIVE TO A RANGE OF pH THRESHOLDS

Purpose: Maintaining gastric pH >4.0 facilitates healing of esophageal erosions, but pH thresholds other than 4.0 are sometimes used to predict outcomes in patients with other acid-related diseases. In this post hoc analysis, we assessed the number of hours that intragastric pH was above a range of prespecified pH thresholds (pH 2.0 to 6.0 in 0.5 increments) at presumed steady state (day 5) with the standard erosive esophagitis (EE) healing doses of proton pump inhibitors (PPIs).

Methods: In a randomized, open-label, 5-way crossover study,1 esomeprazole 40 mg, omeprazole 20 mg, lansoprazole 30 mg, pantoprazole 40 mg, or rabeprazole 20 mg was administered 30 min before breakfast once daily for 5 days to 34 H. pylori (−) patients with symptoms of GERD. A ≥10-day washout period separated treatment periods. A calibrated pH micro-electrode positioned in the stomach 10 cm below the lower esophageal sphincter recorded intragastric pH every 4 seconds for 24 h beginning the morning of treatment day 5. Traces were blinded, assessed for evaluability, and the number of hours per 24-h period that pH was above a range of pH thresholds was analyzed using ANOVA. The slopes of the lines for hours vs pH were determined and compared.

Results: The figure shows the results and the differences between esomeprazole 40 mg and the other PPIs. Between pH 2 and 4, the slopes (−2.17 to −2.57) of the lines for all 5 comparators were similar and not significantly different. Over this range of pH thresholds, the order of efficacy was consistent among all comparators. In the regression analysis, the intercepts were significantly different among treatment groups (P < .05).

Conclusions: At presumed steady state, between prespecified pH thresholds of 2.0 and 4.0 the relative and comparative pharmacodynamic effects of the 5 studied PPIs for control of gastric acid secretion are predictable.
Significant differences in efficacy exist among the studied doses of these comparators.

Reference:

103
SAFETY AND PHARMACODYNAMICS OF 2- AND 3-MINUTE INJECTIONS OF INTRAVENOUS LANSOPRAZOLE
Chang Lee, M.D., Cong Han*. TAP Pharmaceutical Products Inc., Lake Forest, Illinois.

Purpose: Some patients, such as those in intensive or critical care, may require acid suppressive therapy and are unable to take these agents orally. Raising and sustaining intragastric pH levels require acid suppressive therapy and are unable to take these agents orally. Additional prospective clinical studies are necessary to further define the optimal dosing regimen of IV LAN for bolus administration in other populations.

Methods: Seven studies (6 randomized crossover and 1 single regimen) assessed continuous intragastric pH after bolus IV LAN in healthy, male Japanese volunteers. In these studies, 15 to 30 mg/d IV LAN doses for 1, 3 or 5 days were administered as a rapid IV infusion over 2 or 3 min. A solution of polyethylene glycol 400 and hydrochloric acid was used as a diluent in all but 1 study (G) that used physiological saline. All studies assessed continuous intragastric pH on Day 1. Some studies also assessed pH after 3 or 5 days of treatment. Adverse events (AEs) were collected to assess safety. Due to possible heterogeneity of subjects between studies, formal comparisons between studies were not made.

Results: 80 healthy subjects received IV LAN with Day 1 pH data available in 76 (table). IV LAN may result in improved acid suppression when administered in 2 separate daily doses versus a single dose. No treatment-related AEs were reported in 5 studies. In the other two studies, mild AEs reported (30%, 9/30) included diarrhea, abdominal pain, headache, loose stool, nausea, decreased blood cholesterol, nasal soreness, epistaxis, laceration, and feeling of ear being closed. No serious adverse events or events related to the injection sites or vision/ocular disorders were reported.

Conclusions: These data from a Japanese population suggest that 2- to 3-minute bolus dosing of IV LAN may be well-tolerated and effective in gastric acid suppression. Additional prospective clinical studies are necessary to further define the optimal dosing regimen of IV LAN for bolus administration in other populations.

Studies sponsored by Takeda Chemical Industries.

104
THE PREVALENCE OF PROTON PUMP INHIBITOR USE IN HOSPITALIZED PATIENTS

Purpose: The purpose of this study was to investigate the indications and frequency of proton pump inhibitor (PPI) use in patients admitted to a large teaching hospital.

Methods: Consecutive patients admitted to the internal medicine service at Beth Israel Medical Center, New York, who were prescribed oral pantoprazole (Protonix®) on admission orders over a two-month period, were surveyed. Patients admitted to other services or intensive care units were excluded. The prescribing physician was surveyed by filling out a questionnaire regarding the primary reason for ordering the medication and the patient’s past medical history and current medications. Appropriate use for Protonix® was determined by evidence-based criteria including: erosive esophagitis, active ulcer disease, gastroesophageal reflux disease, *H. pylori*, stress ulcer

Reasons for PPI Administration

<table>
<thead>
<tr>
<th>Reason</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent GI bleeding</td>
<td>90 (50)</td>
</tr>
<tr>
<td>On PPI at home</td>
<td>25 (14)</td>
</tr>
<tr>
<td>GERD Symptoms</td>
<td>20 (11)</td>
</tr>
<tr>
<td>On Anticoagulation</td>
<td>14 (8)</td>
</tr>
<tr>
<td>On Steroids</td>
<td>13 (7)</td>
</tr>
<tr>
<td>“I give it to all my patients”</td>
<td>11 (6)</td>
</tr>
<tr>
<td>Abdominal Pain</td>
<td>11 (6)</td>
</tr>
<tr>
<td>History of GI bleeding</td>
<td>10 (5.6)</td>
</tr>
<tr>
<td>Prevent NSAID Gastritis</td>
<td>3 (2)</td>
</tr>
</tbody>
</table>

Characteristics of patients on pantoprazole “To prevent GI bleed”

<table>
<thead>
<tr>
<th>Past Medical History</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GI bleeding</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Peptic Ulcer Disease</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>31 (34)</td>
</tr>
<tr>
<td>GERD</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Medications</td>
<td></td>
</tr>
<tr>
<td>Warfarin</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Heparin IV</td>
<td>5 (6)</td>
</tr>
<tr>
<td>Heparin SQ</td>
<td>46 (51)</td>
</tr>
<tr>
<td>ASA/Plavix®</td>
<td>41 (46)</td>
</tr>
<tr>
<td>NSAIDS</td>
<td>4 (4)</td>
</tr>
<tr>
<td>Steroids</td>
<td>7 (8)</td>
</tr>
</tbody>
</table>
prophylaxis in high risk patients (i.e. coagulopathic, mechanically ventilated), gastric acid hypersecretory states, dyspnea from nonsteroidal anti-inflammatory medications.

**Results:** One hundred and seventy-nine patients were surveyed over the two-month period. The mean age was 61.7 years and 80 (44.7%) were male. Of the 90 patients who were prescribed pantoprazole to “prevent GI bleed,” only 5 (5.5%) patients met criteria for being at increased risk for gastrointestinal GI bleeding. Of the 6 patients who were taking NSAIDs, none had a history of GI bleeding. GERD or peptic ulcer disease. There was no difference of intragastric CH4 concentrations between patients with and without atrophic gastritis.

**Conclusions:** The most common reason among medical residents for prescribing proton pump inhibitors to hospitalized patients on admission is primary prophylaxis of gastrointestinal bleeding. The vast majority of these patients have no evidence-based indication for using Protonix®. Further education on appropriate indications for and usage of proton pump inhibitors is required.

**Purpose:** Breath hydrogen (H2) and methane (CH4) concentrations were measured in fasting subjects as a marker of colonic fermentation by gut microbiota.

**Methods:** Studies were performed in 700 consecutive subjects undergoing esophagogastroscopey. At the time of endoscopic examination, we intubated the stomach without inflation by air, and 20 ml of intraluminal gas samples of both sites was collected through the biopsy channel. Intraluminal hydrogen concentrations were measured by gaschromatography.

**Results:** The mean values of intragastric H2 and CH4 gas were 10.5 ± 4.9 ppm (0–219) and 3.2 ± 4.9 ppm (0–53), respectively. Intragastric H2 differed more widely among subjects than intragastric CH4. If the intragastric H2 or CH4 levels more than 10 ppm was considered as the positive result of bacterial overgrowth in the stomach, 185 (26%) patients was positive. The intragastric hydrogen level was the highest in gastritis group followed by bacterial overgrowth in the stomach, 185 (26%) patients had a history of GI bleeding, and 3 (4%) had a history of peptic ulcer disease.

**Conclusions:** Unexpectedly, intragastric H2 or CH4 concentrations more than 10 ppm was detected in 26% of all subjects in this study. Although it is known whether intraluminal fermentation is related to digestive diseases, a large amount of intragastric H2 and CH4 may cause abdominal symptoms. We have to make a further study to evaluate whether bacterial overgrowth in the stomach is associated with some clinical symptoms or gastrointestinal diseases.

**Purpose:** Sucrose permeability has been suggested as a marker for gastric mucosal injury. The aim of this study was to investigate changes of sucrose permeability after a treatment of gastric ulcer (GU) and early gastric cancer (EGC) as well as usefulness of the test for detection of GU and EGC.

**Methods:** Eighty-five subjects were included in this study, that is; 18 patients with GU, 25 with EGC, and 42 apparently healthy controls. After an overnight fast, the subjects ingested 450 ml of water containing 100g of sucrose. Urine was collected for five hours and assayed for sucrose by enzymatic assay. All the patients with GU were prescribed proton pump inhibitor or histamine receptor blocker and 23 with EGC were treated by endoscopic submucosal desection (ESD). Of them, 5 with GU and 5 with EGC were repeatedly performed the test 2 months after the treatment.

**Results:** The urinary sucrose excretion before treatment was significantly elevated in patients with GU and EGC compared to healthy control (225.9 ± 201.1, 170.2 ± 86.4 vs. 50.6 ± 25.1, P < 0.01). Sucrose excretion in the healthy controls was uniformly low and an upper limit of normal (100.8mg) was defined as the cut off level. Based on this normal value, the sensitivities for detection of GU and EGC were 94.4%, 80.0%, respectively. Sucrose excretion of GU and EGC were found to be significantly decreased after the treatment (262.4 ± 121.2 to 80.6 ± 42.1, and 246.0 ± 136.9 to 139.1 ± 69.2, respectively).

**Conclusions:** In patients with GU and EGC, sucrose excretion was significantly high compared to healthy controls and apparent decrease of excretion was observed after the treatment. Sucrose test was considered useful not only to detect gastric ulcer and early gastric cancer but to estimate treatment effect of these diseases.

**Purpose:** Diminished production of prostaglandins through the COX-1 pathway after administration of nonsteroidal anti-inflammatory drugs (NSAIDs) is recognized as the major causative factor in the development of chronic mucosal injury and complications within the alimentary tract. Additionally, impairment of mucin production is considered as a direct link to NSAIDs-induced ulcerogenesis in experimental setting. The impact, however, of NSAIDs administration on secretion of purified gastric mucin, in H. pylori negative asymptomatic volunteers, has never been explored.

**Methods:** 21 asymptomatic, H. pylori (−), volunteers participated in the double-blind study approved by HSC at KUMC. The gastric juice (GJ) was aspirated during 1 hour of basal and pentagastrin-stimulated conditions before and after 7 days of naproxen (500 mg bid) administration. The content of gastric mucin in GJ, after exhaustive dialysis and complete lyophilization, was measured after its purification with equilibrium density-gradient ultracentrifugation (48 h @ 280,000g) in cesium chloride (CsCl).

**Results:** The rate of gastric mucin secretion in basal conditions was 92.0 ± 9.7 mg/h and declined significantly (by 41%) during administration of naproxen (54.1 ± 6.0 mg/h, P < 0.01). The rate of gastric mucin secretion in pentagastrin-stimulated conditions was 112 ± 20 mg/h but also profoundly and significantly declined (by 55%) during administration of naproxen (50.6 ± 6.1 mg/h, P < 0.01). Out of 21 investigated subjects, 20 responded by the decline in pure gastric mucin output in basal or stimulated conditions. The decline of pure gastric mucin output by at least 50% was detected in 10 subjects in basal and in 11 patients in stimulated conditions.

**Conclusions:** The profound and significant pure gastric mucin production impairment in both basal and stimulated conditions, during administration of naproxen, may set the stage for the development of mucosal injury and complications within the alimentary tract mucosa.
ADMINISTRATION OF RABEPRAZOLE RESULTS IN RESTORATION OF NAPROXEN-INDUCED GASTRIC MUCIN PRODUCTION IMPAIRMENT: ITS SIGNIFICANT CLINICAL POTENTIAL
Tomasz Jaworski, M.D., Irene Sarosiek, M.D., Sandra Sostarich, R.N., Katherine Roesser, B.S., Mike Connor, M.D., Scott Brozte, M.D., Grzegorz Wallner, M.D., Jerzy Sarosiek, M.D.*. Kansas University Medical Center, Kansas City, Kansas and Skabizewski Medical University of Lublin, Lublin, Poland.

Purpose: It has recently been demonstrated that rabeprazole augments gastric mucin and mucin production in humans (T. Skecylas et al. DDS, 48:322-8, 2005). However, its potential restorative impact on gastric mucin production impairment, resulting from administration of naproxen, remained to be explored. Therefore, we measured the content of mucin in gastric juice (GJ) after 7 days naproxen administration (500 mg BID) with rabeprazole (20 mg QD) or placebo.

Methods: The study was approved by HSC at KUMC and conducted in 21 asymptomatic, H. pylori negative, volunteers in a double-blind, placebo-controlled, cross-over design. The content of gastric mucin in GJ, aspirated during basal conditions (1h) and after stimulation with pentagastrin (1h) was measured after its purification using equilibrium density-gradient ultracentrifugation (@ 260,000g for 48h) in CsCl and subsequent lyophilization.

Results: The output of pure gastric mucin during administration of naproxen/rabeprazole combination increased significantly (by 67%) in pentagastrin-stimulated conditions (p = 0.002) and increased by 43% in basal conditions from the corresponding values during therapy with naproxen/placebo (p = 0.05). All 21 investigated subjects responded by increase of pure gastric mucin output in basal or pentagastrin-stimulated conditions. Furthermore, an augmentation of the pure gastric mucin output by at least 50% was detected in 17 patients in basal or stimulated conditions.

Conclusions: The restorative capacity of rabeprazole on the quantitative impairment of pure gastric mucin secretion during administration of naproxen may translate into a highly effective clinical remedy for protecting the upper alimentary tract from NSAIDs-related mucosal injury.

PEPTIC PYLORIC STENOSIS: LONG TERM RESULTS AFTER ENDOSCOPIC BALLOON DILATION AND H. PYLORI (HP) ERADICATION
Riadh Bouali, M.D.*. Fawzi Khediri, M.D., Amine Hila, M.D., Hatem Ben Abdallah, M.D. Military Hospital of Tunis, Tunis, Tunisia and Medical University of South Carolina, Charleston, South Carolina.

Purpose: Through the scope balloon dilation is a useful alternative to surgery in patients with peptic pyloric stenoses. However, there is a high rate of recurrence on the long term follow-up. The aim of this study is to evaluate long term results in balloon dilation associated to HP eradication.

Methods: Between october 1996 and december 2003, we included 36 consecutive patients (27 from our department; 32 males; mean age 46 years) with peptic pyloric stenosis. After successful dilation, patients received PPI for 1 month and HP treatment if they were infected. Endoscopy was repeated at 2, 12 months and in case of recurrence. Clinical controls were proposed every 6 month.

Results: All included patients were HP positive. Dilation was successful in 89% (32/36) of cases after an average 1.9 dilations (range: 1–7). 11% needed surgery (perforations = 2; failure of dilatation = 2). Of the 27 patients of our department, 22 had a mean follow-up time of 45 months. 36% (8/22) had recurrence of pyloric stenosis, and all of them were positive for HP of these 8 patients had a repeat endoscopic pyloric dilatation, with a positive clinical response during a 39 months follow-up.

Conclusions: Balloon dilation of peptic pyloric stenosis is a safe, effective and cheap technique, even in case of recurrence. HP infection is frequent and eradication improves long term results.

PCR BASED ANALYSIS OF HELICOBACTER PYLORI ISOLATED FROM SALIVA: AN APPROACH FOR RAPID MOLECULAR GENOTYPING IN CORRELATION WITH DISEASE STATUS

Purpose: The intact presence of cag-PAI is considered to affect the severity of the gastro-duodenal disease. Hence analysis of complete cag-PAI of H. pylori isolated from saliva would be of immense importance to standardize saliva as a reliable non-invasive diagnostic specimen and also to evaluate the type of H. pylori infecting. The aim of the present study was to analyze the total genes of cag-PAI of H. pylori for their presence in saliva and correlating them with the disease status of the patients.

Methods: One hundred and twenty patients (55 duodenal ulcer (DU), 25 gastric ulcer (GU) and 40 non-ulcer dyspepsia (NUD)) were investigated for the study. Eight pairs of oligonucleotide primers (cagA1, A2, AP1, AP2, E, T, LEC1 and LEC2) of five different loci, cagA, cag4 promoter region, cagE which represents cag I region, cagT and LEC representing cag II were used to detect the presence of the cag - PAI genes in salivary secretion by Polymerase chain reaction (PCR).

Results: The comprehensive analysis of the genes constituting cag-PAI showed almost equivalent prevalence of all the genes between both the study groups (Ulcer and NUD) included, not much significant difference was found in the percentage distribution in both the clinical groups. Further we found that cagE and cagT loci were found in larger proportion of ulcer group (92.5% and 96.2%) in comparison to the NUD group (77.5% and 85%) respectively.

Conclusions: In conclusion, we showed in this study that saliva could serve as a reliable specimen not only to diagnose the presence of active H. pylori infection but also to assess the type of infecting strain. This could be of immense importance for clinical interpretations and treatment. In addition to this, our study also demonstrated that the cagT could be one of the key virulence determinants affecting the outcome of the disease status.

FOOD INTAKE AND DIETARY HABIT IN IRANIAN PATIENTS WITH NON-ALCOHOLIC STEATOHEPATITIS
Leila Eyvazzadeh, B.S., Roshanak Tahidi, B.S., Hamid Reza Sima, M.D., Ameneh Mashayekh, M.D., AmirHooshang Mohammad Alicheh, M.D., Mohammad Javad Ehsani Andakani, M.D., Seyed Moayed Alavian, M.D., Kazem Aysostif, M.D., Mohammad Reza Zali, M.D.*. Research Center for Gastroenterology and Liver Disease and Tehran Hepatitis Center, Tehran, Islamic Republic of Iran.

Purpose: To stimate the nutrition state in Iranian patients with Non-Alcoholic SteatoHepatitis (NASH) which lead us to study food intake and dietary habit of these patients.

Methods: A descriptive study was carried out on 18 patients with clinical, laboratory and histopathologic diagnosis of NASH. Food intakes were recorded using a Food Frequency Questionnaire (FFQ) and dietary habits. 

Results: The mean intake of energy was 70.91% and 101.54%, total fat intake was 24.36% and 32.76%, protein intake was 137.5% and 161.5%, and carbohydrate intake was 76.94% and 53.96% for males and females respectively, and was higher than individual requirement for energy, Fat, Protein and Carbohydrate.

The dietary intakes of patients with NASH was richer in cholesterol for females (47.88% ratio RDA) and poorer for males (4.56% ratio RDA). Fiber intakes for both males and females were below ratio RDA (89.76%, 91.42% respectively).

The food analysis showed that amino acids except methionine in males were below RDA and minerals except calcium in women were higher than RDA.
In general subjects did not enough affinity to consume fruits and vegetables but preferred salty foods, dairy products with 2.5% fat and sugar.

**Conclusions:** Unsuitable balance between macronutrients and micronutrients could be a reason to Non-Alcoholic SteatoHepatitis in Iranian population. Also poor dietary habit would be conducted to NASH in them.

### 112 INTRAGASTRIC CARBON MONOXIDE IN PATIENTS WITH CHRONIC GASTRITIS

**Yoshihisa Urita, Yoshinori Kikuchi, Kazuo Hike, Naotaka Torii, Eiko Kanda, Hidenori Kurakata, Masahiko Sasajima, Kazumasa Miki.** Toho University, Tokyo, Japan.

**Purpose:** Measurements of exhaled carbon monoxide (CO) in humans have been used as an indicator of smoking habit or CO poisoning. CO is made in many tissues of the body by an enzyme called heme oxygenase and has been reported to have biologic actions such as smooth muscle relaxation or inhibition of platelet aggregation. Recently, increased CO in exhaled air of asthmatic patients, reflecting inflammation in the lung, was reported. Many cytokines are involved in inflammation induced by Helicobacter pylori (H.pylori), including IL-1, IL-6, and TNF-α. 112

**Methods:** Subjects were immediately measured by CO analyzer (Sensor Tech Inc., Shiga, Japan). Many cytokines are involved in inflammation induced by Helicobacter pylori (H.pylori), including IL-1, IL-6, and TNF-α. We therefore examined whether patients with chronic gastritis have more CO in the stomach than do H.pylori-negative subjects.

**Results:** Intra gastric CO was detectable in all subjects and the mean value was 2.95±1.92 (0.6−7.7) ppm. Intragastric CO concentrations were significantly higher in H.pylori-positive patients (3.0±1.89 ppm) compared with those in H.pylori-negative subjects (3.1±2.10 ppm). Smoking subjects had higher levels of intragastric CO concentration (3.36±1.74 ppm) than non-smoking subjects (2.78±2.01 ppm) but there was no significant difference.

**Conclusions:** In the present study there was a negligible difference between H.pylori-positive and H.pylori-negative groups. Exhaled CO seems to be derived from an endogeneous source, whereas intragastric CO concentrations may be affected by other factors such as fermentation.

### 113 CAN SURGICAL DIAGNOSIS OF EARLY GASTRIC CANCER AND LYMPH NODE METASTASIS BE ACCURATE?

**Daisaku Morita, M.D., Hitoshi Tsuda, M.D.*, Takashi Ichikura, M.D., Mikihiko Kimura, M.D., Eiji Shinto, M.D., Hidehaka Mochizuki, M.D., Osamu Matsubara, M.D. National Defense Medical College, Tokorozawa, Saitama, Japan.

**Purpose:** Sentinel node navigation surgery is based on the sentinel node (SN) concept. The object of this study evaluated the accuracy of the intraoperative assessment of early gastric cancer and lymph node status.

**Methods:** A total of 53 patients underwent curative gastrectomy for primary gastric cancer at the Department of Surgery I, National Defense Medical College Hospital, Japan. The locations of positive lymph nodes were analyzed retrospectively according to the stations defined in the Japanese Classification of Gastric Carcinoma. The identification of SNs was carried out using radioactive tin colloids and indocyanine green. Endoscopically, 2.0 ml of technetium-99m tin colloid (74MBq/ml) was injected at four sites around the tumor at 21 hours before surgery. Just after laparotomy, an injection of 4ml 1.25% indocyanine green was delivered into the same area as the radiocolloid. Intraoperatively, a hand-held gamma-detector probe was used to locate hot node (HN) and green dying node (GN) was found. HNs and/or GNs were examined initially with conventional frozen sections and paraffin-embedded sections using hematoxylin-eosin (HE) staining. After usual pathological diagnosis, the lymph nodes were studied by serial sectioning each 100 µm interval. The lymph nodes were examined by HE staining and by immunohistochemical staining of pancytokeratin.

**Results:** A total of dissected lymph nodes were 1302 nodes, Hot and/or Green nodes (HGN) were 243 nodes. Lymphatic station (LS) was defined as the regional area where either HNs or GNs were found. LSs were 88 stations. By one section diagnosis, lymph node metastases were found in 7 patients (group A). Complete serial sectioning found other 4 patients with micrometastases (group B). The average size of metastatic nodes was 5.0mm in group A and 5.3mm in group B. In HGNs, lymph node metastases were detected in 9 of 11 patients who had actually lymph node metastases. The sensitivity was 82%. In non-HGNs, 2 of 53 patients (4%) had lymph node metastases. The accuracy was 96%. In LS, lymph node metastases were found in all patients with lymph node metastases. Both sensitivity and accuracy were 100%.

**Conclusions:** 1. Sentinel node is difficult exactly to detect by radioisotope and dyeing methods. 2. The concept of lymphatic station enables to dissect accurate sentinel nodes.

### 114 GATIFLOXACIN-BASED TRIPLE THERAPY AS A SECOND-LINE TREATMENT AFTER FAILURE OF HELICOBACTER PYLORI ERADICATION

**Ala I. Sharara, M.D., F.A.C.P.*, Hani F. Chaar, Pharm D, Eile Aoun, M.D. American University of Beirut Medical Center and Lebanese American University, Beirut, Lebanon.

**Purpose:** The most widely used primary eradication regimen for Helicobacter pylori (H. pylori) infection consists of clarithromycin-based triple therapy with reported eradication rates of 70–90% on intent-to-treat basis. In view of the increasing resistance to clarithromycin, alternative treatment regimens are being evaluated for primary and secondary eradication. We have recently shown the efficacy of a gatifloxacin-based regimen in the primary eradication of H.pylori (Helicobacter 2004; 9:255–261). The objective of this study is to evaluate the efficacy of a novel treatment regimen consisting of gatifloxacin (400mg daily), amoxicillin (1g twice daily), and rabeprazole (20 mg twice daily) for seven days in the secondary eradication of H. pylori.

**Methods:** Eligible patients with persistent H. pylori infection following failure of conventional or gatifloxacin-based triple therapies were enrolled in this open-label trial. Persistent H. pylori infection was documented by rapid urease assay and/or urea breath test (UBT). Compliance and side effects were evaluated by phone calls. 14C-UBT was performed a minimum of 4 weeks after therapy and ≥ 2 weeks off any acid suppressive therapy.

**Results:** A total of 45 patients (23 males and 22 females, mean age: 44.79 ± 13.34 years) were enrolled. Eradication occurred in 38 out of 45 patients (84.4%; 95% CI: 74–95%). No significant adverse effects were reported.

**Conclusions:** A 7-day regimen of gatifloxacin-rabeprazole-amoxicillin is an effective second-line eradication therapy for H. pylori. This regimen is simple, well tolerated, and may lead to higher compliance because of short duration, limited number of pills, and lower costs.

### 115 INTRAGASTRIC pH CONTROL ON TWICE DAILY PROTON PUMP INHIBITORS (PPIs). IS A PPI A PPI?

**Jennifer K. Lehrer, M.D., Stacey Zavala, M.D., Leonard Braintree, Ph.D., Roy M. Gideon, Donald O. Castell, M.D., Philip O. Katz, M.D.*. Albert Einstein Medical Center, Philadelphia, Pennsylvania and Medical University of South Carolina, Charleston, South Carolina.

**Purpose:** Intragastric pH monitoring has been used as a way of assessing pharmacodynamic differences between PPIs. A recent comparison of intragastric pH control with the five available PPIs found greater duration of control for esomeprazole 40 mg compared to the others with mean duration time pH greater than 4 for PPIs ranging from 10–14 hours/per day. No information comparing intragastric pH control with twice daily PPIs has been published to date. Aim: To determine if esomeprazole 40 mg twice daily
affords superior intragastric pH control compared to other available proton pump inhibitors given twice daily.

**Methods:** A retrospective review of patients in the database of our esophageal laboratory between 1990 and 2003 were identified. All studies in which PPIs were given bid were included for review. Data analyzed for percentage time intragastric pH greater than 4, total, upright, recumbent.

**Statistics:** Bootstrap analysis (unequal sample size) used to compare esomeprazole against each proton pump inhibitor. Results: Thirty-three studies were identified, 29 excluded due to less than 16 hours worth of pH data or inadequate documentation of optimal or correct dosing regimen. Three hundred and four total studies were reviewed. Ome 20 bid (N = 194), Lanso 30 bid (N = 67), Rab 20 bid (N = 11), Panto 40 bid (N = 8), Eso 40 bid (N = 24). Mean total time intragastric pH greater than 4 was superior for esomeprazole (76.4%, 18.3 hrs) compared to lansoprazole (64%, 15.4 hr) and pantoprazole (56%, 15.4 hr), p < 0.003 and 0.01 respectively, with no difference compared to omeprazole (27%, 17.5 hr) and rabeprazole (21%, 19 hrs). Though not specifically evaluated nocturnal breakthrough of gastric pH was seen with all five PPIs.

**Results:** Eso 40 mg twice daily may afford greater time intragastric pH greater than 4 than other PPIs.

**Conclusions:** 1. These retrospective results require validation in prospectively designed clinical studies. 2. The clinical importance of this increase in acid control is unclear. 3. Twice daily proton pump inhibitors appear to afford approximately five additional hours of pH control when twice daily dosing is used.

**NIGHTTIME DOSING OF OMEPRAZOLE IMMEDIATE-RELEASE ORAL SUSPENSION RAPIDLY DECREASES NOCTURNAL GASTRIC ACIDITY**

Barry Goldlust, Ph.D., Bonnie Hepburn, M.D.*, Yun Hardiman, M.S., Santarus, Inc., San Diego, California.

**Purpose:** Proton pump inhibitors (PPIs) suppress gastric acid secretion sufficiently to treat most symptoms of GERD. However, in some patients, PPIs fail to control nighttime gastric acid secretion and also fail to control nighttime GERD symptoms. The PPIs used to treat these symptoms have all been delayed-release formulations with enteric coatings. A new omeprazole immediate-release suspension (OME-IR[SUSP]) has been developed, using sodium bicarbonate to protect the acid-labile PPI, rather than the traditional delayed-release enteric coating. The present trial was conducted to evaluate the effectiveness of OME-IR(SUSP) in controlling nighttime gastric acidity after twice-daily (b.i.d.) dosing.

**Methods:** Seventeen healthy subjects were enrolled in this open-label trial. Single 20-mg doses of OME-IR(SUSP) (Sanatarus, San Diego) were given 1 hr prior to breakfast (qAM) for 7 days. On Day 8, the 20-mg suspension was given b.i.d.: at 0800 hrs (1 hr prior to a standardized high-fat breakfast) and at 2200 hrs (bedtime). On Days 7 and 8, standardized lunch and dinner were given at 1300 and 1800 hrs. Gastric pH was continuously monitored (Medtronic) for 24 hrs following the morning doses on Days 1–6 and 40-mg OME-IR(SUSP) (Santarus, San Diego) given at 2200 hrs on Days 1–6. On Day 7, both PPIs were given 1 hr prior to breakfast and at 2200 hrs: P 40 mg (n = 32); OME-IR 40 mg (n = 17) and 20 mg (n = 15). Continuous 24-hr gastric pH monitoring (Medtronic) was performed on Days 1, 6, and 7. Median gastric pH% time pH was > 4, and the proportion of patients with “nocturnal acid breakthrough” (NAB) (> 1 hr of continuous pH < 4) were determined for the nighttime period (2200–0600 hrs).

**OMEPRAZOLE IMMEDIATE-RELEASE ORAL SUSPENSION IS MORE EFFECTIVE THAN PANTOPRAZOLE DELAYED-RELEASE CAPSULES IN REDUCING NIGHTTIME GASTRIC ACIDITY IN GERD PATIENTS**

Donald Castelli, M.D., Barry Goldlust, Ph.D., Gaetano Morelli, M.D., Jacqueline Major, M.S., Theresa Gautille, R.N., Bonnie Hepburn, M.D.*. Med. U. of S. Carolina, Charleston, South Carolina; Santarus, Inc., San Diego, California and MDS Pharma Services, Montreal, Quebec, Canada.

**Purpose:** The present trial was conducted to evaluate nighttime dosing of omeprazole immediate-release oral suspension (OME-IR[SUSP]) in once- and twice-daily regimens, comparing the effect of OME-IR on nocturnal gastric acidity to that of pantoprazole (P), the only PPI with FDA-approved labeling for reduction in rate of nighttime heartburn symptoms.

**Methods:** Thirty-two patients with nocturnal GERD symptoms were enrolled in a crossover trial with 40-mg doses of P (Protonix®, Wyeth-Ayerst, Philadelphia) given at 2200 hrs (bedtime) on Day 1 and prior to dinner on Days 2–6 and 40-mg OME-IR(SUSP) (Sanatarus, San Diego) given at 2200 hrs on Days 1–6. On Day 7, both PPIs were given 1 hr prior to breakfast and at 2200 hrs: P 40 mg (n = 32); OME-IR 40 mg (n = 17) and 20 mg (n = 15). Continuous 24-hr gastric pH monitoring (Medtronic) was performed on Days 1, 6, and 7. Median gastric pH% time pH was > 4, and the proportion of patients with “nocturnal acid breakthrough” (NAB) (> 1 hr of continuous pH < 4) were determined for the nighttime period (2200–0600 hrs).
Results: Nighttime median gastric pH on Day 6 is shown below. For this 8-hr period, median % time pH was > 4 was greater for OME-IR (55%) than for P (27%) (p < 0.001); median pH was 4.7 for OME-IR and 2.0 for P (p < 0.001); and NAB occurred in fewer OME-IR-treated patients (17/32) than P-treated patients. (25/32) (p = 0.005). For the 8-hr nighttime period after twice-daily dosing, median % time pH was > 4 was greater for OME-IR (40 mg and 20 mg) than for P (92% vs. 37% and 79% vs. 31%; p < 0.001 each); median pH was also higher (6.5 vs. 1.5 and 5.8 vs. 1.9, p < 0.001 each). NAB occurred in fewer OME-IR-treated patients than P-treated patients (2/17 vs. 12/17 and 7/15 vs. 12/15, p<0.025 each).

Conclusions: OME-IR(SUSP) is more effective in reducing nighttime gastric acidity than P. These results suggest that OME-IR may also be more effective than delayed-release PPIs in controlling nighttime symptoms of GERD when dosed at bedtime.[figure1]

119

PREOPERATIVE IV PANTOPRAZOLE (IVP) DECREASES GASTRIC VOLUME (GV) AND ACID OUTPUT (GAO) AND INCREASES pH IN ELECTIVE SURGERY PATIENTS


Purpose: Anti-secretory agents have been used preoperatively in general anesthesia patients (pts) to reduce the risk of aspiration pneumonia by decreasing the volume and acidity of gastric contents. There is limited data demonstrating that proton pump inhibitors (PPIs) are effective in NPO pts.

Methods: This was a multicenter, randomized, single blind, pilot study of adult preoperative pts randomized to 1 of 6 IVP regimens: 40mg QD, 40mg BID or 80mg BID, each given as a 2 or 15 min infusion for up to 72 hrs. The purpose of this study was to evaluate the effects of IVP on GV, pH and GAO in elective major surgery pts. A secondary objective was to evaluate the effect of IVP on the risk of aspiration pneumonia.

Results: GV, pH and GAO were measured in each sample and hourly values were calculated. A chest x-ray was obtained at baseline and at 48 h after the last dose of study drug. Results: 26 pts (17M and 9F, 25–81 yrs) received at least 1 dose of IVP and 21 were evaluable. No marked differences were found between 2 and 15 min administrations; thus data were combined. Also, data from the two 40 mg groups were combined through the first 12 hr postdose. The table presents the mean hourly GV and median pH at baseline (BL), prior to induction of anesthesia and during the 1st h of surgery. In both groups, mean GV was below the threshold of 25 cc/h during the first hr of surgery and remained below 15 cc/h through the end of the collection period; median pH was above 2.5 at the onset of surgery. Mean GAO postdose was lower than at BL and below 15 cc/h through the end of the collection period; median pH was above 3.5 at the onset of surgery and during the 1st h of surgery. In both groups, mean GV was also higher (6.5 vs. 1.5 and 5.8 vs. 1.9, p < 0.001 each). NAB occurred in fewer OME-IR-treated patients than P-treated patients (2/17 vs. 12/17 and 7/15 vs. 12/15, p<0.025 each).

Conclusions: OME-IR(SUSP) is more effective in reducing nighttime gastric acidity than P. These results suggest that OME-IR may also be more effective than delayed-release PPIs in controlling nighttime symptoms of GERD when dosed at bedtime.[figure1]
were homogenized, serially diluted and plated on on Skirrow’s agar for \textit{H. pylori} colony forming units (cfu). \textit{H. pylori} colonies were counted on Day 3 after plating and cfu/biopsy site was calculated. Correlation analysis was used to relate cfu obtained per biopsy site to urease activity.

**Results:** We report here the preliminary findings of this study which demonstrate good correlation ($r^2 = 0.93$, $p = 0.023$) between log cfu at biopsy location GA-4cm and 30 minute urease activity rate. However, no correlation with the 30 minute urease activity rate was found with other biopsy sites.

**Conclusions:** A correlation was observed between log cfu and urease activity at 30 minutes on UBT at one of six biopsy sites in this limited sample. We speculate that either inadequate sample size or uneven distribution of \textit{H. pylori} infection may explain the lack of correlation at other sites. This may be useful in antibiotic therapy development by providing an early indicator of bacterial kill, which could guide the dosing and sequence of component administration in combination therapies. This warrants further study.

### 121

**PROTON PUMP INHIBITORS HAVE A MORE PROFOUND EFFECT ON GaSTRIC ACID SECRETION IN FEMALE AND OLDER GERD PATIENTS**

Vijaya S. Pratha, M.D., Sagar Munjal, M.B.B.S., Daniel L. Hogan, Ph.D.*. Clinical Applications Laboratories, Inc., San Diego, California.

**Purpose:** Proton pump inhibitor (PPI) therapy is believed to be equally effective in all patients with upper GI symptoms. However, data is lacking on the degree of PPI efficacy in various subgroups including males, females, the young and old where acid secretion rates may differ (Gastroenterology 1991; 101: 977–990). Therefore, our aim was to assess the influence of gender and age in PPI inhibition of basal and pentagastrin (Pga)-stimulated gastric acid secretion (GAS) in symptomatic GERD patients.

**Methods:** A total of 36 GAS studies were conducted in 15 male (22–69 y) and 10 female (35–67 y) HP-negative GERD patients on a daily AM dose of PPI therapy for 8–10 days. Basal and Pga (6 mcg/kg, s.c.)-stimulated GAS was measured during the trough period (22–24 h post-dose). Gastric acid was continuously aspirated via a nasogastric tube, aspirate volume recorded, [H+] measured by titration to pH 7.0, pH determined and GAS calculated.

**Results:** In females, PPIs had a more significant effect on both basal and Pga-stimulated GAS compared to males (Table; median data; *P < 0.03*). The same was true for inhibition of Pga-stimulated GAS in older (age > 44 y) compared to younger (age < 44 y) patients (Table). Differences in GAS were due to significant decreases in gastric [H+] and volume secretion in female and older patients (Table). Interestingly, median intragastric pH under basal conditions was pH 2.0 or less during steady state conditions. Furthermore, median Pga-stimulated gastric volumes were over 100 ml/h in males and younger patients.

**Conclusions:** In GERD patients on daily PPI therapy: 1. PPIs have a more profound effect on GAS in female and older subjects; and 2. Despite steady-state conditions, significant gastric acid secretion was noted. We speculate that these findings may explain the variability in PPI efficacy in GERD as is seen in clinical practice, and may have implications in nocturnal acid breakthrough.

**PPI-inhibition of GAS in GERD Patients**

<table>
<thead>
<tr>
<th>Patients (n)</th>
<th>Age (y)</th>
<th>BAO (mEq/h)</th>
<th>MAO (mEq/h)</th>
<th>[H+] (mEq/L)</th>
<th>Volume (ml/h)</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female (10)</td>
<td>50</td>
<td>0.3*</td>
<td>2.4*</td>
<td>41*</td>
<td>63*</td>
<td>1.5*</td>
</tr>
<tr>
<td>Male (15)</td>
<td>40</td>
<td>1.1</td>
<td>9.3</td>
<td>69</td>
<td>109</td>
<td>1.3</td>
</tr>
<tr>
<td>Older (15)</td>
<td>52</td>
<td>0.5</td>
<td>2.4*</td>
<td>48*</td>
<td>69*</td>
<td>1.4</td>
</tr>
<tr>
<td>Younger (10)</td>
<td>36</td>
<td>1.2</td>
<td>9.4</td>
<td>72</td>
<td>112</td>
<td>1.3</td>
</tr>
</tbody>
</table>

[H+], Volume, pH during Pga stimulation; *P < 0.03 vs. respective subgroup.
LACK OF ASSOCIATION BETWEEN HELICOBACTER PYLORI SEROPOSITIVITY AND THE METABOLIC SYNDROME AMONG PERSONS IN THE UNITED STATES: DATA FROM THE THIRD NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES III)

Purpose: The metabolic syndrome, which has been linked to the development of coronary artery disease, is a significant public health problem with an estimated prevalence of 23% among U.S. adults. The role of H. pylori colonization in the development of the metabolic syndrome remains unclear. Because of potential effects on gastric leptin and ghrelin homeostasis, we hypothesized that H. pylori colonization decreases the risk for the development of metabolic syndrome.

Methods: Non-pregnant participants ≥20 years of age who had H. pylori testing performed during NHANES III were included in this analysis. The metabolic syndrome was defined as meeting ≥3 of the following published ATP III criteria: 1) waist circumference >102 cm in men or >88 cm in women 2) triglycerides ≥150 mg/dL 3) HDL <40 mg/dL in men or <50 mg/dL in women 4) blood pressure ≥130/85 mm Hg or taking antihypertensive medications 5) fasting glucose ≥110 mg/dL or taking antidiabetic medications. Based on H. pylori serologic results, the cohort was divided into H. pylori positive (Hp+) and H. pylori negative (Hp−) groups and subsequently subcategorized into H. pylori positive (Hp+), H. pylori positive/cagA positive strain (Hp+cagA+), or H. pylori positive/cagA negative strain (Hp+cagA−). The association between H. pylori and the metabolic syndrome was determined by multivariate logistic regression analysis after adjusting for age, sex, race/ethnicity, poverty level, physical activity, geographic location, country of birth, education level, alcohol and tobacco use, and family history of diabetes or myocardial infarction.

Results: 7,114 persons (mean age 44.3 years; 51.2% female) had complete H. pylori and metabolic syndrome data. The prevalence of H. pylori colonization was 39.8% (24.6% of all persons had cagA+ strains) and 22.1% met the criteria for the metabolic syndrome. After adjusting for potential confounding variables, the relative odds of the metabolic syndrome in Hp+ subjects was 1.06 (95% CI = 0.87–1.29; p = 0.54) compared with those who were Hp−. Compared to Hp− persons, the relative odds of metabolic syndrome was 1.11 (95% CI = 0.87–1.41; p = 0.37) in Hp+cagA+ subjects and 1.02 (95% CI = 0.80–1.31; p = 0.85) in Hp+cagA− subjects.

Conclusions: In this U.S. population-based study, there was no significant association between H. pylori colonization, nor with cagA+ strains, and the metabolic syndrome.

GASTROENTEROLOGISTS’ BELIEFS ON PEGs IN PATIENTS WITH ADVANCED DEMENTIA (AD)
Patricia L. Kozuch, M.D., Daniel Gelrud, M.D.*, Lawrence J. Brandt, M.D., M.A.C.G. Montefiore Med Ctr/Albert Einstein Coll of Med and Jacobi Medical Ctr/Albert Einstein Coll of Med, Bronx, New York.

Purpose: While an estimated 30% of percutaneous endoscopic gastrostomy (PEG) tubes placed in the US are in demented patients, no clear data support the traditional goals of PEGs in patients with AD. Further, beyond the usual risks associated with PEGs, there are additional ones in patients with AD, such as need for restraints. The purpose of this study was to ascertain a better understanding of gastroenterologists’ beliefs regarding the benefits and risks of PEGs in patients with AD.

Methods: A one-page survey was mailed to 700 non-trainee members of the American College of Gastroenterology. The survey included Likert scale items of physicians’ beliefs about the possible benefits of PEGs in patients with AD, an open-ended question about the risks discussed with family members, and a question about preferences regarding desire for PEG in themselves or a family member if AD develops.

Results: 117 surveys were returned, a 17% response rate. Most gastroenterologists surveyed believe that PEGs in patients with AD neither increase longevity (81%) nor comfort (84%), decrease risk of aspiration (80%) nor improve functional status (92%). Conversely, 61% thought that PEGs do improve nutritional status. While almost all gastroenterologists surveyed discussed the risks of bleeding, infection, perforation and anesthesia-related complications with family members, few mentioned such risks as the possible need for restraints (2%) or prolonged suffering (2%). 80% agreed that withholding feeding from a patient with AD may be an acceptable alternative

UNIQUE GLOBAL POPULATION: ENDEMIC GASTRIC CANCER GENETIC SUSCEPTIBILITY IN WESTERN HONDURAS
Douglas Morgan, M.D.*, Ricardo Dominguez, M.D., Tentiquote Keku, Ph.D., Paris Heidt, B.A. University of North Carolina, Chapel Hill, North Carolina and Hospital Regional del Occidente, Santa Rosa de Copan, Honduras.

Purpose: Gastric cancer is the second leading cause of cancer with significant geographic variability. Cytokine polymorphisms (IL-1B, IL-1RA, IL-10, TNF-a) are associated with noncardia gastric adenocarcinoma in H. pylori infected patients. Multiple genotype carriage increases cancer risk. The background prevalence of polymorphisms in Europe and Asia is about 50% (IL-1B-511T+CT, <50%; TT, 4–21% and IL-10-1082A: GA, <50%; AA, 28%). No previous studies have systematically evaluated host genetic, bacterial and dietary factors in a population-based study, nor polymorphisms in Latin America.

Methods: We conducted a prospective, population-based, case-control study in Honduras, Central America. The western region (95% Mestizo) has a high incidence of gastric cancer, with standardized annual incidence rates of 39 and 21(M,F), often in younger patients (25%, 12% under ages 50,35). Cases were enrolled at the Western Regional Hospital. Controls were selected from houses at random using mapping from the Honduran government thru UNESCO. Unique image-based software established dietary and micronutrient intake.

Results: We have enrolled 258 subjects, with genetic data available for 110 controls and 65 cases(IL-1B, IL-10). The rates of high risk polymorphisms are the highest reported, defining a significant genetic risk in the Honduran population. In the controls, the IL-1B-511T+ prevalence was 84% (95% CI, 81–88%) with CT 57%, TT 27%. The IL-10-1082A+ prevalence was 93% (95% CI, 91–95%) with GA 33%, AA 60%. Endemic H. pylori infection was confirmed (88%). Nutrient data suggests antioxidant deficiencies (alpha-carotene, selenium). Haplotype Analysis shows that 89% of the general population is at increased risk for gastric adenocarcinoma. Nearly 20% of the population was homozygotic for both polymorphisms (TT/AA), while less than 1% carried the wild type (CC/GG). Haplotype prevalence was increased in the cancer group, shy of statistical significance (p = 0.11), due to sample size given the high background genotype prevalence.

Conclusions: This is the first study of gastric cancer cytokine polymorphisms in Latin America and the Latino population. We have identified a unique population with endemic genetic susceptibility, defined by the highest reported prevalence of haplotypes of cytokine polymorphisms in the setting of endemic H. pylori infection. Host genetics, H. pylori, and diet explain the high incidence and provide an opportunity to design intervention studies.

UNIQUE GLOBAL POPULATION: ENDEMIC GASTRIC CANCER GENETIC SUSCEPTIBILITY IN WESTERN HONDURAS
Douglas Morgan, M.D.*, Ricardo Dominguez, M.D., Tentiquote Keku, Ph.D., Paris Heidt, B.A. University of North Carolina, Chapel Hill, North Carolina and Hospital Regional del Occidente, Santa Rosa de Copan, Honduras.

Purpose: Gastric cancer is the second leading cause of cancer with significant geographic variability. Cytokine polymorphisms (IL-1B, IL-1RA, IL-10, TNF-a) are associated with noncardia gastric adenocarcinoma in H. pylori infected patients. Multiple genotype carriage increases cancer risk. The background prevalence of polymorphisms in Europe and Asia is about 50% (IL-1B-511T+CT, <50%; TT, 4–21% and IL-10-1082A: GA, <50%; AA, 28%). No previous studies have systematically evaluated host genetic, bacterial and dietary factors in a population-based study, nor polymorphisms in Latin America.

Methods: We conducted a prospective, population-based, case-control study in Honduras, Central America. The western region (95% Mestizo) has a high incidence of gastric cancer, with standardized annual incidence rates of 39 and 21(M,F), often in younger patients (25%, 12% under ages 50,35). Cases were enrolled at the Western Regional Hospital. Controls were selected from houses at random using mapping from the Honduran government thru UNESCO. Unique image-based software established dietary and micronutrient intake.

Results: We have enrolled 258 subjects, with genetic data available for 110 controls and 65 cases(IL-1B, IL-10). The rates of high risk polymorphisms are the highest reported, defining a significant genetic risk in the Honduran population. In the controls, the IL-1B-511T+ prevalence was 84% (95% CI, 81–88%) with CT 57%, TT 27%. The IL-10-1082A+ prevalence was 93% (95% CI, 91–95%) with GA 33%, AA 60%. Endemic H. pylori infection was confirmed (88%). Nutrient data suggests antioxidant deficiencies (alpha-carotene, selenium). Haplotype Analysis shows that 89% of the general population is at increased risk for gastric adenocarcinoma. Nearly 20% of the population was homozygotic for both polymorphisms (TT/AA), while less than 1% carried the wild type (CC/GG). Haplotype prevalence was increased in the cancer group, shy of statistical significance (p = 0.11), due to sample size given the high background genotype prevalence.

Conclusions: This is the first study of gastric cancer cytokine polymorphisms in Latin America and the Latino population. We have identified a unique population with endemic genetic susceptibility, defined by the highest reported prevalence of haplotypes of cytokine polymorphisms in the setting of endemic H. pylori infection. Host genetics, H. pylori, and diet explain the high incidence and provide an opportunity to design intervention studies.
to PEG, while 46% said they would agree to PEG for themselves or a family member with AD.

**Conclusions:** With the exception of improved nutritional status, most gastroenterologists surveyed did not believe patients with AD benefit from PEG. Further, most agreed that just withholding feedings in such patients may be acceptable. Thus, reasons for PEG placement in this population are unclear. Despite a lack of perceived benefit, close to half of gastroenterologists surveyed would still agree to a PEG for themselves or a family member with AD. More research is needed to better understand this apparent incongruity. While most gastroenterologists said they spoke with family members about the common complications of PEGs, the majority did not discuss special risks such as need for restraints. Further work is needed to address these unique issues in patients with AD.

**127**

**HIGH ERADICATION RATES OF HELICOBACTER PYLORI INFECTION WITH FIRST AND SECOND LINE COMBINATION OF ESOMEPRAZOLE, TETRACYCLINE AND METRONIDAZOLE IN PATIENTS ALLERGIC TO PENICILLIN**


**Purpose:** To assess the eradication rate of H. pylori in patients allergic to penicillin, in first line and failures to prior therapy, the efficacy of healing of active DU, and erosive gastritis, and the safety and tolerability of the combination.

**Methods:** 20 patients with documented allergy to penicillin, Peptic Ulcer Disease (PUD) and H. pylori infection, (17) 85% for first line treatment, and (3) 15% prior therapy failures, were given a 10 days regimen of esomeprazole 40mg qd, tetracycline 500mg qid, and metronidazole 500mg qid. Baseline and follow up endoscopy ≥30 days after end of treatment were performed for rapid urease test (Clotest®), and 4 site biopsies for H. pylori, and to document endoscopic PUD. All adverse events during treatment were documented.

**Results:** Eradication rates by Intention to treat (ITT) were 85% for first line treatment and 100% for failures. 70% of all cases had normal endoscopy at follow up, and 85% and 100% of patients healed erosive gastritis and DU/DUD respectively, from baseline. There were histological improvements in most patients. High eradication rate was obtained even in patients that had reduced duration of treatment. The combination was well tolerated.

**Conclusions:** A combination of esomeprazole, tetracycline and metronidazole is effective for eradication of H. pylori in patients allergic to penicillin, both for first line treatment and failures of prior treatment.

**128**

**HELICOBACTER PYLORI SEROPOSITIVITY IS NOT ASSOCIATED WITH BEING OVERWEIGHT AMONG PERSONS IN THE UNITED STATES: DATA FROM THE THIRD NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES III)**


**Purpose:** Obesity is one of the most significant public health problems facing the U.S. today, with an estimated >50% of the population being overweight or obese. The role of H. pylori colonization in the regulation of weight control remains unclear. Because of potential effects on gastric leptin and ghrelin homeostasis, we hypothesized that H. pylori colonization decreases the risk for the development of overweight.

**Methods:** Non-pregnant participants ≥20 years of age who had H. pylori testing performed during NHANES III were included in this analysis. Participants were categorized as overweight if they had a body mass index (BMI) ≥25, calculated as (weight in kg)/(height in meters)². Serologic analysis was performed to detect antibodies to H. pylori whole cell as well as to the cagA antigen. Based on H. pylori serologic results, the cohort was divided into H. pylori positive (Hp⁺) and H. pylori negative (Hp⁻) groups and subsequently subcategorized into H. pylori negative (Hp⁻), H. pylori positive/cagA negative strain (Hp⁺cagA⁻), or H. pylori positive/cagA positive strain (Hp⁺cagA⁺). The association between H. pylori and being overweight was determined by multivariate logistic regression analysis after adjusting for age, sex, race/ethnicity, poverty level, physical activity, geographic location, country of birth, education level, and alcohol and tobacco use.

**Results:** 7,238 persons (mean age 44.4 years; 51.3% female) had complete H. pylori and BMI data. The prevalence of H. pylori seropositivity was 39.9% (24.6% of all persons had cagA⁺ strains) and 52.7% were overweight by BMI measurements. After adjusting for potential confounding variables, the relative odds of being overweight in Hp⁺ subjects was 1.11 (95% CI = 0.93–1.31; p = 0.23) compared with those that were Hp⁻. Compared to Hp⁻ persons, the relative odds of being overweight was 1.05 (95% CI = 0.85–1.31; p = 0.62) in Hp⁺cagA⁻ subjects and 1.14 (95% CI = 0.95–1.37; p = 0.14) in Hp⁺cagA⁺ subjects.

**Conclusions:** In this U.S. population-based study, there was no significant association between H. pylori colonization, nor with cagA⁺ strains, and being overweight based on BMI measurements.

**129**

**NON SPECIFIC ABDOMINAL PAIN, THE MOST COMMON REASON TO INITIATE A PROTON PUMP INHIBITOR IN HOSPITALIZED PATIENTS**

Hafiz Massoon, M.D., Harish Manisivam, M.D., Ashraf Seedhom, M.D., Mrittini Yadlu, M.D., Ajit Kokkat, M.D., Mario Ricci, M.D., Edward Norkus, Ph.D., Nejat Kyisci, M.D., Hilyar Herton, M.D., F.A.C.G.*. Our Lady of Mercy Medical Center, Bronx, New York.

**Purpose:** To assess the pattern of PPI use in a teaching community hospital.

**Methods:** We have examined charts of all patients who received PPI therapy in April 2003 in our institution. Patient’s demographics, comorbid conditions, surgical history, endoscopy reports, course of hospitalizations, symptoms and signs, labs and medications were recorded.

**Results:** A total of 192 patients were enrolled into this study, 67.2% female and 32.8% male with mean age of 67.7 ± 15.8 (SD) years. Patients coming from home were almost twice more likely to be on PPI compared to patients from nursing home (52% versus 27%). Omeprazole was the least likely PPI used in the community though it was less expensive than all other PPIs. In patients who were started on PPI in this admission, only 23.5% had a PPI used in the community though it was less expensive than all other PPIs.

**Conclusions:** Non specific abdominal pain is the most common reason for a hospitalized patient to be started on a Proton Pump Inhibitor.

**130**

**FALSE NEGATIVE H. PYLORI – GASTRITIS AND GERD**

Tat-Kin Tsang, M.D.*, Xiangwen Meng, Ph.D., Hongjun Zhang, Ph.D., Rebecca Tsang. Evanston Northwestern Healthcare, Northwestern University Feinberg School of Medicine, Evanston, Illinois and Northwestern University.

**Purpose:** The causal relationship between H. Pylori and gastritis/reflux esophagitis is very controversial partially because of uncertain sensitivity and specificity of the current methods in diagnosing H. Pylori. Certain
patients with H. Pylori-negative gastritis and GERD do not respond to PPIs treatment or the symptoms returned when PPIs are stopped. With the newly developed multiplex PCR for H. Pylori, we would like to explore the possible presence of H. Pylori in these patients and their response to treatment with PPIs and antibiotics (PPiA).

**Methods:** 57 GERD and gastritis patients with negative H. Pylori biopsy diagnosed by CLOtest and pathology were included in this study. Multiplex PCR were performed on these patients. GERD was diagnosed with either symptom of heart-burn or biopsy, and gastritis was diagnosed with biopsy with or without abdominal pain. The PCR-positive patients were treated with PPiA. The treatment responses were evaluated as followed: a nonresponder had < 40% symptom improvement, a partial responder had 40–80% symptom improvement and a total responder had > 80% symptom improvement. Biopsy was obtained from the patients who were treated and underwent second EGD for H. Pylori with multiplex PCR.

**Results:** 32 patients (56.1%) have positive H. Pylori diagnosed with the Multiplex PCR (14 GERD, 5 gastritis, and 13 gastritis and GERD). Of 28 patients who were treated with PPiA and with complete follow-up information, 13 had complete symptoms responses, 10 partial responses, and 5 non-response. The detailed results of treatment and PCR results from second EGD were summarized in the Table.

**Conclusions:** Most gastritis/GERD patients in this group that were H. Pylori negative for CLOtest and pathology but positive for Multiplex PCR do respond to the treatment with PPiA. This study raises the question whether H. Pylori has been under-diagnosed in other so called H. Pylori-negative patients i.e. duodenal ulcer, gastric ulcer or non-ulcer dyspepsia.

**131**

**HIGH RATES OF ANTIBIOTIC RESISTANCE DETERMINE THE LOW RATES OF HELICOBACTER PYLORI ERADICATION TO STANDARD PPI-BASED TRIPLE THERAPIES IN SAUDI PATIENTS**

Mohammad S. Khuroo, M.D.∗, Mohammad Q. Khan, M.D., Saleem T. Duhab, M.D., Hamad Al-Asghar, M.D., Mohammad Al-Fadda, M.D. King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia.

**Purpose:** Helicobacter pylori eradication is essential to cure many gastrointestinal diseases. Standard PPI-based triple therapies achieve over 95% eradication rates in most regions of the world. At KFSHRC, Riyadh standard PPI-based triple therapies attained only 65% H pylori eradication rate. The reason’s for this low eradication rate is not known.

**Methods:** From November 2000 to December 2001, we enrolled 369 consecutive naïve patients with upper gastrointestinal symptoms into this study. At upper gastrointestinal endoscopy, multiple endoscopic forceps biopsies were obtained for CLOtest®, histology and H pylori culture and sensitivity to 7 antimicrobial agents. 123 (76.3%) of the 161 patients with H pylori infection received physician-driven pharmacy-recommended therapy [OCA (Omeprazole, Clarithromycin & Amoxcillin) regimen in 72 and OCM (Omeprazole, Clarithromycin & Metronidazole) regimen in 51)]. Compliance of therapy was checked and confirmed by home phone call. H pylori eradication was assessed by 14C-Urea Breath Test. Multiple clinical, biochemical, histological and microbiological parameters were assessed in a univariate and stepwise multiple logistic model to determine the factors determining low eradication rates.

**Results:** H pylori culture was validated in this model against gold standard CLOtest® & histology and found to have an overall accuracy of 97.4% (95% CI 0.95 to 0.99). Antibiotic resistance to clarithromycin, amoxicillin and metronidazole was 22.4%, 9.6% & 76.4% respectively. H pylori eradication rates to OCA & OCM regimens were 66.7% and 47% respectively. In the univariate and stepwise multiple logistic model, the dominant factor which determined low H pylori eradication was resistance to the antibiotic used in the regimen. In the OCA regimen, antibiotic resistances in the eradicated and not-eradicated groups were 83.3% (4/48) and 78.1% (19/24) respectively. In the OCM regimen the resistances in the two groups were 25% (6/24) and 100% (27/27) respectively.

**Conclusions:** In-vitro antibiotic resistance to H pylori to first line drugs is widely prevalent and affect the clinical response to first line antibiotics used for therapy. H pylori therapy and eradication needs exploring newer antibiotic combinations to get respectable eradication rates in this community.

**132**

**THE ASSOCIATION OF HELICOBACTER PYLORI INFECTION AND NON-STEROIDAL ANTI-INFLAMMATORY DRUGS IN PEPTIC-ULCER DISEASE**


**Purpose:** Evaluate a cohort of patients with peptic ulcer disease (PUD) to determine the characteristics and impact of H. pylori infection and non-steroidal anti-inflammatory drugs (NSAIDs) use.

**Methods:** The medical charts of patients with endoscopic diagnosis of gastric ulcer (GU) or duodenal ulcer (DU) were evaluated between September 2002 to August 2003. Patients were divided in three groups according to ulcer etiology: 1) H. pylori infection, 2) NSAIDs use and 3) H. pylori infection and NSAIDs use (combined). Demographic characteristics, ulcer location and time from NSAIDs consumption to development of PUD were evaluated. H. pylori diagnosis was made in histological analysis.

**Results:** One hundred and two patients were evaluated. The frequency of female patients was significantly higher in group 2 (p = 0.01). The mean age of patients in group 1 was significantly lower than the other 2 groups (p = 0.003). PUD developed earlier in the combined group in comparison with NSAIDs group. Thirty-two patients (32.7%) presented with bleeding peptic ulcer (BPU). Group 2 had higher risk of BPU compared with the other 2 groups, (OR 3.81; CI 95% : 1.56 - 9.3; p = 0.001) (Table 1).

**Conclusions:** NSAIDs and combined-related ulcers had a higher frequency according to gender and age. The development of PUD was observed earlier in the combined group and bleeding was more frequently with NSAIDs intake alone. NSAIDs use and H. pylori infection may have a sinergistic role in the development of PUD.
COMBINATION OF GASTRIC (GES) AND SACRAL ELECTRICAL STIMULATION (SES) IS SAFE AND EFFECTIVE FOR PATIENTS WITH CONCOMITANT GASTROPARESIS AND BLADDER DYSFUNCTION

Shaily Jain, M.D., Amar Al-Jaburi, M.D., John Brizzolara, M.D., Charles L. Secrest, M.D., Anil Minocha, M.D., Thomas L. Abell, M.D.*, University of Mississippi Medical Center, Jackson, Mississippi and University of Arkansas for Medical Sciences, Little Rock, Arkansas.

Purpose: Gastric Electrical Stimulation (GES) is useful for patients with the symptoms of refractory gastroparesis. Patients with gastric motor disorders often have co-existing abnormalities of the genitourinary system (Gastroenterology 112: A737, 1997), which may now be treated with sacral electrical stimulation (SES). This pilot study is the first to document the safety and efficacy of combined gastric and sacral electrical stimulation.

Methods: We studied the effect of combination therapy with GES and SES in 8 patients who were implanted with both devices. All patients (6 females, 2 males; mean age 41 years) had documented gastroparesis as well as bladder or other pelvic floor dysfunction. All 8 patients received their GES before the SES. METHODS: Patients were evaluated at baseline and follow up (median 4 years for GES and 2 years for SES), according to previously standardized scores of GI (GI: 0–4, TSS max 20) and GU (GU: 0–3, UTSS, max 12) function. Results were compared by paired t-tests and reported as mean ± SE.

Results: Both GI and GU symptoms improved in all patients (see table below). The results of most clinical parameters as nausea, vomiting, gastric total symptom score (TSS), leakage, voiding difficulty and urinary total symptom score (UTSS) were statistically significant.

Conclusions: The combination of GES and SES appears to be both safe and effective for patients with concomitant gastroparesis and bladder dysfunction and the existence of a stimulator for one disorder does not preclude another stimulator.

Vomiting Nausea TSS Leakage Voiding difficulty UTSS
Before 2.75 ± 6.2 4 ± 0 16 ± 1.57 1.33 ± .49 2.43 ± .43 6.5 ± 1.28
After 5.2 ± 22 1.27 ± 4.5 6.19 ± 1.43 0 .5 ± .31 1.4 ± .75

PANCYSTIC/BILIARY

134

INTRADUCTAL PAPILLARY MUCINOUS NEOPLASMS OF THE PANCREAS: PREDICTIVE FACTORS FOR MALIGNANCY, CLINICOPATHOLOGICAL ANALYSIS AND LONG-TERM OUTCOMES-SINGLE CENTER EXPERIENCE

Yoshikazu Toyoki, M.D., Ph.D., Kenichi Hakamada, M.D., Ph.D.*, Shunji Narumi, M.D., Ph.D., Hirotsuki Kasajima, Yajima, Soouko Yaghashi, M.D., Ph.D., Mutsuo Suzuki, M.D., Ph.D. Hiroasuki University School of Medicine, Hiroasuki, Aomori, Japan.

Purpose: Intraductal papillary-mucinous neoplasms (IPMNs) of the pancreas have a wide range of malignant potentials in which the preoperative accurate diagnosis of carcinoma still remains challenging. The aim of this study is to determine predictive indicators for malignant lesion in IPMNs and to disclose the long-term surgical results based on the clinicopathological features.

Methods: Medical records of 30 patients with IPMNs operated on between 1990 and 2002 at our department were reviewed retrospectively.

Results: Eleven (36.7%) patients had adenoma, 4 (13.3%) borderline neoplasms, 3 (10%) carcinoma in situ, and 12 (40%) invasive carcinoma. The five-year survival rate of the patients with non-invasive carcinoma and benign tumors was 100%, and that of the patients with invasive carcinoma was 65.6%. Diameters of the main pancreatic duct were more dilated in cases with invasive carcinoma than in those with non-invasive carcinoma and benign tumors (p = 0.03). The presence of mural nodules was more common in the invasive carcinomas (100% vs. others 72%, p = 0.07). In clinicopathological study, the patients of positive staining of p53 (4 patients) were worse prognosis than p53 negative staining patients (p = 0.06). And MIB-1 index of invasive carcinoma patients was higher than that of patients with non-invasive carcinoma and benign tumors (p = 0.03).

Conclusions: Our data suggested that predictor factors for invasive carcinoma were mural nodules and dilatated main pancreatic duct. In clinicopathological examination, p53 positive staining patients were worse prognosis than that of patients with negative.

135

THE EFFICACY OF THE RENDEZVOUS PROCEDURE AFTER AN INITIAL FAILED ERCP

Prashant Krishnan, M.D., Leslie Nelson, M.D., Charles Evans, M.D., Andrew Catanzaro, M.D., Sachin Goel, M.D.*, Henry Ford Hospital, Detroit, Michigan.

Purpose: To study the efficacy of the rendezvous procedure for obtaining biliary access.

Methods: CPT billing codes were used to identify all patients undergoing both ERCP and PTC at a single tertiary institution between January 1998 and October 2003. Patients’ charts were reviewed to collect data. Success was defined as achievement of the therapeutic goals, including (when necessary) desired hepatic lobar decompression. Complications for both ERCP and PTC were described using the Atlanta Classification system for ERCP-related complications- pancreatitis, bleeding, perforation and infection.

Results: 2241 patients underwent 3520 ERCPs. 37 patients had a rendezvous procedure attempted after a failed ERCP. Indications for PTC were as follows: 1) unsuccessful common bile duct (CBD) cannulation (n = 29), 2) incomplete lobar drainage (n = 5), and 3) patients who became unstable during an ERCP (n = 3). PTC placed a percutaneous drain across the ampulla into the small bowel in all 37 patients. PTC achieved desired lobar access in 4 out of 5 patients with complex hilar strictures. At the second ERCP (n = 37), biliary cannulation using the PTC catheter as a guide was successful in 35/37 patients. Deep cannulation was not achieved in 2 patients due to duodenal obstruction (n = 1) and severe biliary obstruction (n = 1). In the 4 patients with complex hilar strictures and successful PTC, ERCP achieved desired lobar decompression in 1 of the 4 patients. ERCP was successful for the desired therapy (n = 32) with subsequent removal of the PTC catheter. Standard biliary sphincterotomy (n = 27) and needle knife sphincterotomy over the PTC catheter (n = 9) were performed. Complications of PTC were pneumothorax (n = 1) and pancreatitis (n = 1). Complications of a second ERCP were perforations (n = 2) which were managed conservatively. Final diagnoses were choledocholithiasis (n = 11), benign stricture (n = 9), pancreatic cancer (n = 5), ampullary cancer (n = 3), cholangiocarcinoma (n = 3), bile leak (n = 3), metastatic cancer (n = 2), and gallbladder cancer (n = 1).

Conclusions: PTC successfully obtained biliary access (97%) when initial ERCP failed. PTC enabled subsequent successful salvage ERCP’s (86%). The complication rate of PTC and a second ERCP for this cohort of patients was 5% respectively. The rendezvous procedure is safe and effective for these challenging cases.

136

PILOT EVALUATION OF A NEW SYSTEM ALLOWING INTRADUCTAL EXCHANGE OF CATHETERS OVER A GUIDE WIRE DURING ERCP

Jacques Deviere, Ph.D./M.D.*, Olivier Le moine, Ph.D./M.D., Brigitte Schumacher, M.D., Horst Neuhaus, M.D./Ph.D., V. Perri, M.D., Guido Costamagna, M.D./Ph.D. Erasmse hospital Brussels, Brussels, Belgium; Evangelisches Krankenhaus, Dusseldorf, Germany and Policlinico a Gemelli, Rome, Italy.
Purpose: exchange of devices over a guide wire during ERCP is time consuming and increases fluoroscopic exposure. Moreover, when implants have to be left in place, the access to the bile ducts is lost after their release.

Methods: We prospectively evaluated a new system of ERCP devices (Wilson-Cook Medical Inc., Winston-Salem, USA) having a side hole in the guide wire channel located at 6 cm from the tip of the catheters and allowing to proceed with an intraductal exchange (IDE) of the catheters without the need of pulling it back over the wire. Over a one month period, 42 patients (median age: 57, range 31–93, 15 M/27 F) with biliary indications for therapeutic ERCP (16 CBD stones, 18 CBD strictures (7 malignant, 8 benign and 3 undetermined), 6 hilar malignant strictures and 2 chronic pancreatitis associated stenoses) were treated in 3 centers.

Results: Selective cannulation was successful in all but 2 cases, in which it had to be performed with standard instruments. The techniques performed included EST (N = 30), stones extraction (N = 18), dilations (N = 10), stenting (N = 24) and brush cytology (N = 6). IDE was planned in 40/42 patients. It failed in 4 patients having hilar tumors (N = 3) and/or strictures too difficult to pass (N = 3) and requiring special catheters and/or the help of a GI assistant. In the 36 remaining patients, a total of 71 IDEs have been successfully performed (median 2, range 1–6).

Conclusions: This system was highly effective for proceeding to IDE, potentially saving time, and would deserve prospective comparison with the currently available material.

137

EARLY USE OF THE MILWAUKEE CRITERIA IN A MIXED HEPATOBILARY DISEASE STATE

This case study demonstrates the benefit of ERCP with sphincterotomy in patients with mixed hepatobiliary disease, primarily both cholestasis and significant transaminase elevation. Typically cholestatic disease has some degree of transaminase elevation, but usually 2 to 3 times upper limits of normal. In this case a mixed picture existed with transaminases at 7 to 10 times normal and total bilirubin of 10 times normal (primarily conjugated). In a setting such as this one must investigate the causes of liver disease, as well as investigate the source of the cholestasis. This dual tract of testing and treatment could lead to increased time before definitive therapy is employed. The Milwaukee criteria provide guidelines for consideration of ERCP with sphincterotomy as a definitive treatment option for cholestasis. This study showed that even with the potential of different disease states co-existing, applying the Milwaukee criteria illustrated that the cholestasis could be successfully treated. In addition, this case showed that while other sources of hepatic disease require investigation, one should consider applying the Milwaukee criteria on the initial patient evaluation and possibly treating the cholestasis early versus later in the course of patient care. In conjunction with using the Milwaukee criteria as an initial tool, this case suggests, being able to correlate US or CT ductal measurements to the ERCP ductal measurements would give the physician a vital piece of information for classifying patients as to whom would benefit from ERCP with sphincterotomy prior to the actual procedure; thus potentially decreasing the time to definitive care and patient recovery.

138

DOUBLE ENDOSCOPIC STENTING FOR PALLIATION OF MALIGNANT BILARY AND GASTRIC OBSTRUCTION: THE UCSF EXPERIENCE
William H. Brown, M.D., James W. Ostroff, M.D.*, Elizabeth Cruz, M.D., Paul Chard, M.D. UCSF, San Francisco, California.

Purpose: Patients with unresectable cancer leading to biliary and gastric obstruction typically have a life expectancy of less than 3 months. However, surgical palliation has a high morbidity and mortality. The surgical morbidity can range from 15% to 37%, and the mortality can range from 3.1% to 18% depending on the series. Further therapeutic options are thus needed for these patients. Biliary and gastric outlet stenting have been shown to be safe and effective treatment options independently. However, there have been few studies analyzing their combined use. The purpose of this study is to find the short term effectiveness, morbidity and mortality of palliative endoscopic double stenting.

Methods: After IRB approval, the UCSF Moffit hospital endoscopic database was searched for patients who received double palliative stenting for biliary and gastric obstruction, (1997–2003) The endoscopic reports, medical notes, laboratory data and radiologic reports were then reviewed.

Results: 10 patients received double palliative stenting for biliary and gastric obstruction. All ten presented with symptoms of gastric (nausea, vomiting and inability to tolerate P0s) and biliary obstruction (jaundice, pruritis, cholangitis). The 10 patients were high risk interventional candidates. Five were ASA IV, and five were ASA III. The mean age was 71 (ranged 44 to 89) and ECOG performance status 3.4. Patients had a variety of unresectable carcinomas (pancreatic, cholangiocarcinoma and gastric). Patients received the biliary stent first (3 silver stent, 4 wallstent, and 3 plastic). Enteral stent was placed within 3 weeks in 90% of patients, 1 week in 60% (22 mm x 90 mm enteral wallstent). The complication rate was low. One perforation successfully treated with TPN and antibiotics and one bleed. All but one had symptomatic relief from gastric and biliary obstruction. At time of discharge, 6 patients tolerated soft diet and 3 tolerated liquids. Jaundice resolved and bilirubin decreased in all but one patient. Patients had a mean hospital stay of 7.2 (r. 1–15) Patients were discharged to home (8), nursing facility (1) and inpatient hospice (1). Only one patient needed surgical palliation after the double stenting (3 months after procedure).

Conclusions: Endoscopic double stenting’s short-term effectiveness, morbidity, and mortality is comparable to or superior than surgical palliative double bypass. Further prospective studies and longer follow-up should be performed.

139

POST-CHOLECYSTECTOMY COMPLICATIONS-PRESENTATION AND MANAGEMENT

Purpose: 1) To determine the etiology and presentation of post cholecystectomy complications 2) To determine the efficacy of ERCP in their management.

Methods: This is a simple descriptive study done in a tertiary care center from Jan 2003 to March 2004. Patient population consisted of 25 patients being referred to the gastroenterology division of our hospital for the evaluation of biliary tract after cholecystectomy. All these patients underwent ERCP and the findings of ERCP and treatment rendered were recorded and the data analyzed.

Results: A total of 25 patients with post cholecystectomy complications underwent ERCP over 14 months. Out of these 25 patients 21 were females and 4 were males with a female to male ratio of 5:2.5: 1. The age group ranged from 14 to 77 years with 10 (40%) in the age group less than 40 years, 12 (48%) patients in the age group of 40–60 years and 3(12%) patients were beyond 60 years. The indication for referral was suspected post- cholecystectomy complications in all 25 patients. ERCP was possible in all these patients with intervention possible in 21 (84%) of these patients; 4(16%) patients were referred for surgical interventions. The most common presenting complaint in the patients was persistent abdominal pain after cholecystectomy present in 15 (60%) patients followed by post-cholecystectomy jaundice present in 7 (28%) patients and abdominal distension present in 7 (28%) patients. Regarding the ERCP findings post-cholecystectomy injury to the biliary tract was present in 14 (56%), retained stones were present in 8(32%) and CBD was found ligated in 3 (12%) patients. Stent placement was successfully done in all the 14 patients with CBD leak, retained stones
were retrieved in 7 out of patients and 4 patients were referred for surgical intervention including the three with ligated CBD and one with a large stone which could not be retrieved by ERCP. Patients were followed up and were found to be stable with no immediate complications.

**Conclusions:** 1) Post-cholecystectomy complications are increasingly being recognized following laparoscopic cholecystectomies. 2) The problems include injury to CBD leading to CBD leak, retained stones and the accidental ligation of biliary tract. 3) Presentation includes abdominal pain, jaundice and abdominal distension. 4) ERCP is an effective tool to diagnose and manage these complications.

---

**140**

**THE EFFECT OF MAGNESIUM SULFATE ON THE HUMAN GALLBLADDER**

Kamil Obideen, M.D., Mohammad Wehbi, M.D., Aasma Shaukat, M.D., Qiang Cai, M.D.∗. Emory University School of Medicine, Atlanta, Georgia.

**Purpose:** Magnesium Sulfate has been used to treat many diseases, such as eclampsia, status asthmaticus. MgSO4 may increase bile secretion and relax the sphincter Of Oddi, resulting in emptying and consequently a reduction of Gallbladder volume. The aim of the study is to determine the effect of magnesium on human Gallbladder by measuring the gallbladder volume.

**Methods:** A double-blinded prospective study with 6 healthy volunteers. Each volunteer was randomly assigned three different meals on three different days: a fatty meal (positive control), normal saline (negative control) and 2 grams of oral magnesium sulfate. All volunteers fasted overnight and underwent an ultrasound to check the measurements of the gallbladder prior to the administration of a meal and thereafter at intervals of 30 min, 1 hour, 2 hours, and 4 hours After meal (total of 5 ultrasounds each day). The ultrasound operator was blinded to the designated meal during the entire study. The mean post-meal Gallbladder volumes and post-meal percentage change in Gallbladder volume were calculated. Paired T test was used to compare the pre-meal and post-meal Gallbladder volumes, as well as the post-meal Gallbladder volumes between normal saline, fatty meal and MgSO4.

**Results:** The mean pre-meal Gallbladder volumes for fatty meal, MgSO4, and normal saline were 14.22 cc, 14.42cc and 12.52cc respectively. The mean post-meal Gallbladder volumes for the fatty meal, MgSO4, and normal saline groups were, 9.4cc, 11.3cc, 11.6cc respectively, while the mean percentage change post-meal were 32.8%, 24.1%, 5.1%, respectively. There was a significant change in Gallbladder volume post-meal after administration of fatty meal (p = 0.005) and MgSO4 (p = 0.01) compared to pre-meal volume There was a significant difference between mean percentage change in Gallbladder volume between normal saline and fat (p = 0.01) and between normal saline and MgSO4 (p = 0.03). The mean post-meal Gallbladder volumes for the MgSO4 at 30minutes, 1 hours, 2 hours and 4 hours were 11.79, 10.94, 10.65, and 11.98 respectively. The maximal effect occurred at 1 to 2 hours post its administration with p values of 0.0092 and 0.0074 respectively. The mean post-meal Gallbladder volume for normal saline at 30 minutes, 1 hour, 2 hours, and 4 hours were 11.44, 11.41, 11.41, and 12 respectively. There was a significant effect on Gallbladder volume with maximum effect at 1 and 2 hours after medication.

---

**141**

**ENDOSCOPIC THERAPY FOR PANCREAS DIVISUM: LONG TERM FOLLOW UP**

Mohammad M. Alsolaiman, M.D., Gregory D. Borak, M.D., Mark Payne, M.D., Robert Haves, M.D., Peter Cotton, M.D.∗. Medical University of South Carolina, Charleston, South Carolina.

**Background:** Several small studies with relatively short follow-up suggest that most patients with pancreas divisum and recurrent pancreatitis have good outcomes from ERCP with minor papilla sphincterotomy and/or stenting, but that patients with chronic pancreatitis and those with only pain gain less benefit. Our goal was to evaluate results from this institution with a follow-up of 3–6 years.

**Method:** Subjects with documented pancreas divisum and endoscopic pancreatic treatment (but no prior endoscopic treatment) were identified from our routine endoscopy database. Patients were categorized as recurrent acute pancreatitis, chronic pancreatitis, or pain with no documented pancreatitis. Treatment consisted of temporary stenting of the minor papilla with a sphincterotomy (usually performed with a needle knife.). Short-term response and early complications were assessed by chart review. Subjects were contacted by telephone with a standard questionnaire. The Institutional Review Board approved the study.

**Results:** A total of 240 subjects were identified from July 1997 –December 2002. Up to May 2004, we were able to obtain follow up information on 91 patients who had undergone endoscopic pancreatic therapy. The mean length of follow up was 45.7 months (range 18–75 months), and the average age was 52.6 (range 14–83 years). Results are tabulated.

**Table 1**

<table>
<thead>
<tr>
<th></th>
<th>N (91)</th>
<th>Cured</th>
<th>Better</th>
<th>Same</th>
<th>Patients needed repeat procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrent pancreatitis</td>
<td>52</td>
<td>37</td>
<td>14</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Chronic pancreatitis</td>
<td>22</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Pain only</td>
<td>17</td>
<td>7</td>
<td>7</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

---

**142**

**LONG TERM SAFETY OF LAPROSCOPIC DISTAL PANCREATECTOMY IN PATIENTS WITH NEOPLASMS OF THE PANCREAS**

Olga Maimon, M.D., Bala Shaya, M.D., Theodoros Daskalakis, M.D., Joel Horovitz, M.D., Richard Lazarro, M.D., Jerzy Macura, M.D., Scott Tenner, M.D., M.P.H.∗, Sonnay, Kaumudi, M.D., Zinelman Michael, M.D., Downstate Medical Center, New York, New York.

**Purpose:** The incidence of cystic neoplasms of the pancreas is increasing. Differentiating benign serous cystic lesions from pre-malignant mucinous tumors is often difficult. Due to the underlying malignant potential of these lesions, patients with cystic lesions in the tail of the pancreas are typically treated with a Distal Pancreatectomy. Despite small numbers of case reports suggesting efficacy, long-term follow-up of patients who had undergone laparoscopic pancreatectomy is limited. We report our long term experience of this technique in the management of cystic lesions of the tail of the pancreas.

**Methods:** We prospectively followed all patients at our institution who underwent laparoscopic distal pancreatectomy for the treatment of cystic neoplasms between January 2000 and April 2004. Laparoscopic surgical procedures were performed by a team of two surgeons assisted by surgical residents. Data was prospectively collected.

**Results:** Nine patients were followed, mean age 67.4 (range 20–86). No conversion to an open procedure was performed. The median operative time was 3 hours (range 2–4 hours). Median intra-operative blood loss was 350 ml. Pathology demonstrated 1 microcystic adenoma, 1 serous cystadenoma, 1 islet cell tumor, 6 mucinous cystadenoma. Minor post-operative complications including one case of hypertension, atrial fibrillation and symptomatic fluid collection occurred. There were no major complications, such as pancreatic duct leak, paralytic ileus. Splenectomy was performed in only 2 cases.
There was no mortality. Median hospital stay was 5 days (range 3–9 days). With a mean follow-up of 22 months, all patients remain well. Repetitive imaging has identified no further cystic lesions, local disease, nor metastatic disease.

**Conclusions:** In addition to minimal invasiveness, shorter length of stay, and decreased costs, our experience shows that laparoscopic distal pancreatectomy is safe and effective in the treatment of cystic neoplasms of the pancreas.

### 143

**ANTIBIOTIC PROPHYLAXIS OF PANCREATIC INFECTION IN PATIENTS WITH NECROTIZING PANCREATITIS: A META-ANALYSIS**


**Purpose:** Pancreatic necrosis develops in almost 20 percent of patients with acute pancreatitis. Late infection of the necrosis, infected necrosis, increases the morbidity and mortality of patients with necrotizing pancreatitis. In order to prevent infection of sterile necrosis, antibiotic prophylaxis is often used in the management of patients with necrotizing pancreatitis. However, the results of randomized, prospective studies have shown conflicting results. Opinions regarding the use of antibiotics vary.

**Methods:** We conducted a meta-analysis of the four randomized, prospective studies previously published in order to better evaluate the efficacy of antibiotic prophylaxis in patients with necrotizing pancreatitis. A pooled analysis based on the sample size, a weighted mean, was utilized. In the analysis, the absolute risk reduction (ARR), relative risk reduction (RRR) and number needed to treat (NNT) was calculated.

**Results:** In combining the four studies, 142 patients with necrotizing pancreatitis were treated with antibiotic prophylaxis, compared to 132 patients given saline placebo. Antibiotic regimens included: imipenem (500 mg tid), cefuroxime (1.5 grams tid), ofloxacin (200 mg bid) plus metronidazole (500 mg bid), and ciprofloxacin (400 mg bid) plus metronidazole (500 mg bid). Our meta-analysis shows that the ARR for pancreatic infection was 5% (CI −4.5% to 15%), pancreatic sepsis 13% (CI 2.5 to 24%), mortality 8% (CI 1.2−14.7%). The RRR for pancreatic infection was 22%, pancreatic sepsis 35%, mortality 62%. The NNT for pancreatic infection was 20, pancreatic sepsis 8, and mortality 13. Antibiotic prophylaxis of patients with sterile necrosis will prevent 1 episode of pancreatic infection in 20 patients treated, and 1 death in 13 patients treated.

**Conclusions:** We conclude that antibiotic prophylaxis of pancreatic infection in patients with necrotizing pancreatitis appears to be justified.

### 144

**ACUTE PANCREATITIS AS A MANIFESTATION OF HIV SEROCONVERSION**

Michael E. Herman, DO∗. Naval Hospital Jacksonville, Jacksonville, Florida.

Seroconversion for human immunodeficiency virus (HIV) antibody can be manifested in a variety of illnesses. Most commonly, a mononucleosis-like illness or severe pharyngitis is the presenting complaint. Described is a case of pancreatitis as the presenting illness in the individual’s seroconversion for HIV.

A 27-year-old healthy male presented with a complaint of nausea, vomiting, and fever for one week. The patient reported decreased oral intake and epigastric pain due to the vomiting. Physical exam was remarkable for right upper quadrant and epigastric tenderness. Initial laboratory data revealed a white blood cell count of 4,000, neutrophil count of 1,600 and platelets of 9,100. Abnormalities in the liver function tests included a total bilirubin of 1.4 mg/dL, AST of 175 IU/L, and LDH of 5717 IU/L. Amylase and lipase were 277 U/L and 2259 U/L respectively. No gallstones or ductal dilatation were noted on right upper quadrant ultrasound. Although the patient’s HIV-1 antibody test was negative two months prior to presentation, repeat studies were performed secondary to high-risk sexual behavior and mild neutropenia. The repeat HIV-1 antibody was negative but an HIV-1 P24 antigen was positive. Three weeks later, the HIV-1 antibody was positive and the HIV viral load was 64,000.

Acute pancreatitis is common in patients infected with HIV. Medications or lifestyle habits are often the cause of pancreatitis. Only a few cases of acute pancreatitis as the presenting illness during HIV seroconversion can be found in literature review. A mononucleosis-like illness with or without an aseptic meningitis is more commonly the manifestation of HIV seroconversion. We describe here a case of HIV seroconversion which presented as acute pancreatitis.

### 145

**THE RELIABILITY OF ENDOSCOPIC ULTRASOUND (EUS)-GUIDED FINE NEEDLE ASPIRATION (FNA) FOR DIAGNOSING SOLID PancreATIC LESIONS**

Sammy Ho, M.D., Robert I. Bonavera, M.D., Bonnie J. Pollack, M.D., James Grendell, M.D., Martin Feuerman, Ph.D., Frank Gress, M.D.". Winthrop University Hospital, Mineola, New York and Duke University Medical Center, Durham, North Carolina.

**Purpose:** The development of EUS-FNA has revolutionized our ability to differentiate benign from malignant pancreatic masses. The purpose of this study was to assess the diagnostic accuracy of EUS-FNA in patients with solid pancreatic lesions.

**Methods:** All patients referred for EUS evaluation of solid pancreatic mass between 1998 and 2002 were reviewed. Patient demographics and clinical history were recorded. Cytology was compared with operative histopathology in patients who underwent surgery. Patients who did not have surgery were followed clinically.

**Results:** A total of 302 patients (mean age 69, 172 M/130 F) underwent EUS-FNA for solid pancreatic lesions. FNA was consistent with pancreatic malignancy in 53% (160/302) while 39% (117/302) had no evidence of malignancy. In the remaining 8% (25/302), biopsy was inconclusive. Of the pancreatic cancer patients, 90% (144/160) had adenocarcinoma, 4% (6/160) had neuroendocrine tumors, and 6% (10/160) had other malignancies. In the group with a definitive FNA diagnosis, 27% (74/277) underwent surgery and operative histopathology was compared with FNA cytopathology. There were one false positive and four false-negative FNA diagnoses; and the sensitivity, specificity, PPV, and NPV were 92%, 97%, 98% and 89% respectively. The false-positive diagnosis was due to misinterpretation by the initial pathologist. In the 4 false-negative cases, 75% (3/4) had cytoclogic evidence of chronic pancreatitis. In patients with an inconclusive FNA, 32% (8/25) had surgery and 5 had adenocarcinoma. The remaining 70% (220/302) of patients who did not undergo surgery were followed clinically. The mean survival for patients with a positive, negative, and inconclusive FNA was 18, 48, and 31 months respectively.

**Conclusions:** 1. EUS-FNA accurately provides a cytologic diagnosis in most patients with solid pancreatic lesions. 2. Cytologic evaluation of pancreatic tissue in the setting of chronic inflammation can be difficult. 3. A false-positive diagnosis was uncommon and in this study was due to interpretation error. 4. A proportion of patients with inconclusive EUS-FNA may have underlying cancer and should be followed carefully.

### 146

**HEMOCONCENTRATION AND PANCREATIC NECROSIS: FURTHER VALIDATING THE RELATIONSHIP**

Timothy B. Gardner, M.D., Christopher A. Olenec, M.D., Todd A. Mackenzie, Ph.D., Douglas J. Robertson, M.D.". Dartmouth-Hitchcock Medical Center, Lebanon, New Hampshire and White River Junction VA Medical Center, White River Junction, Vermont.

**Purpose:** In the setting of acute pancreatitis an admission hematocrit ≥ 44% and a failure of hematocrit to drop at 24 hours have been reported as
useful markers to predict subsequent necrosis. Our aim was to validate the use of hemoconcentration as a marker to predict necrosis in adult patients presenting with acute pancreatitis.

**Methods:** Using ICD-9 codes, we retrospectively identified patients admitted to our medical center from 1990–2003 with a first diagnosis of acute pancreatitis. Charts were abstracted for admission and 24-hour hematocrit levels, as well as the development of necrosis based on CT imaging. We determined the sensitivity, specificity, positive and negative predictive values for different admission and 24-hour hematocrit levels in predicting the subsequent development of necrosis. We also developed linear regression models that controlled for severity and etiology to determine the optimal thresholds at which hemoconcentration would predict the development of necrosis.

**Results:** We identified 299 patients with a first episode of acute pancreatitis. We excluded 69 patients admitted in transfer leaving 230 patients for evaluation. 17 (7.4%) developed CT-conﬁned necrosis and of those with necrosis, 4 (1.7%) died during their hospitalization. Admission hematocrit (≥ 44%) and the failure of hematocrit to drop at 24 hours were poor predictors of subsequent necrosis with a sensitivity of 52.9%. Linear regression models did not reveal any admission hematocrit value which effectively predicted subsequent development of necrosis. The absence of hemoconcentration at admission and a drop in 24-hour hematocrit level were reliable in predicting that patients would not develop necrosis (NPV of 94.7% for hematocrit ≥ 44%). Results were similar when we compared a range of admission hematocrit values.

**Conclusions:** In this, the largest North American study to investigate the value of hemoconcentration, we conclude that hemoconcentration was not helpful in predicting necrosis. The absence of hemoconcentration, however, at admission and 24 hours was a reliable marker in excluding the subsequent development of necrosis. The absence of hemoconcentration has important clinical utility as an inexpensive and simple adjunctive test to avoid the cost and inconvenience of CT scanning in those with acute pancreatitis.

**147**

**UTILITY OF ENDOSCOPIC ULTRASOUND AND FINE NEEDLE ASPIRATION IN DIAGNOSING UNCOMMON Pancreatic TUMORS**

Ishaan S. Kalha, M.D., Sanjeev Wasan, M.D., Gregg Staerkel, M.D., Sandeep Lahoti, M.D., Jeffrey H. Lee, M.D.*. MD Anderson Cancer Center, Houston, Texas.

**Purpose:** To assess the efficacy of endoscopic ultrasound (EUS) and EUS-guided fine needle aspiration (EUS-FNA) in diagnosing uncommon pancreatic tumors.

**Methods:** The medical records and endoscopic database at MD Anderson Cancer Center from January 2001 to May 2004 were reviewed. EUS and computed tomography (CT) features of the tumors were examined. The accuracy and sensitivity of EUS fine-needle aspiration (EUS-FNA) were reviewed.

**Results:** Twenty-two patients were identified to have either pancreatic lymphoma (PL) (5) or neuroendocrine tumors (NET) (17). The presenting symptoms of PL were jaundice (3) and abdominal pain (2). The mean size of PL was 4.3 cm (range 3.6 to 5.2 cm). EUS features of PL included hypochogenicity (5/5), irregular margins (5/5), peripancreatic lymph nodes (4/5), and frequent vascular involvement (3/5) manifesting as loss of echoplane between the mass and superior mesenteric vein and artery and/or portal vein. The locations were the uncinate process (3/5) and the head (2/5). EUS-FNA of the mass, with an average of 3 passes (range 2–6), provided 4 positive and 1 inconclusive result. The diagnosis of one case was obtained by subsequent CT-guided FNA. CT gave a better appreciation of distant lymphadenopathy. The presenting symptoms of NET included abdominal pain (9), jaundice (2), hypoglycemia (1), fatigue (1), and no symptoms (4). The mean size of NET was 3.2 cm (range 0.37 to 9 cm). EUS features of NET included hypochogenicity (17/17), regular margins (16/17), peripancreatic lymph nodes (8/17), and infrequent vascular involvement (1/17). The locations were in the head (3), uncinate process (3), neck (1), body (3), tail (6), and duodenal wall (1). EUS-FNA of the mass performed in 14 of 17 patients, with an average of 3 passes (range 2–5), provided 14 positive results. The most consistent CT finding was that the tumors were hypervascular in nature. For both PL and NET, EUS-FNA had an accuracy 95%, sensitivity 95% with a positive predictive value 100% with no complications.

**Conclusions:** In this study of a small number of patients, PL and NET were seen to be hypoechoic on EUS. All PL was found in the head or uncinate process but NET was seen in various locations within the pancreas or duodenal wall. For PL the margins tend to be irregular and ill defined whereas for NET the margins tend to be regular and discrete. Vascular involvement was rare with NET but was more commonly seen with PL. EUS-FNA was safe, sensitive, and accurate in providing tissue diagnoses.

**148**

**ISOECHIC TUMOR EXTENSION (ITE): A USEFUL ENDOSONOGRAPHIC PREDICTOR OF VASCULAR INVASION IN AMPULLOPANCREATIC CANCER**


**Purpose:** In previous reports, 20–30% of ampullopancreatic adenocarcinomas that are thought to be resectable pre-operatively are found to be unresectable intra-operatively. One of the major reasons for unresectability in this group of patients is vascular invasion. Currently, there are no standardized endosonographic criteria to determine vascular invasion. Based on our pilot data, the presence of isoechoic tumor extension (ITE) may be such a criterion.

**Hypothesis:** ITE is an accurate endosonographic criterion of vascular invasion in ampullopancreatic cancer.

**Methods:** To test this hypothesis, we evaluated retrospectively, all patients in our medical center with ampullopancreatic cancer who were referred for pre-operative endosonographic staging, followed by surgical resection. Endosonographic vascular invasion was defined as the presence of extension of tissue, the same echotexture as the tumor, invading the vascular wall. Surgical histopathology was used as the gold standard comparison.

**Results:** Eleven patients were identified in the one year period between September 2002 and September 2003. Six males and five females; mean age was 69 years old. Vascular invasion, as evidenced by ITE, was noted to be present in three resection specimens; two were identified on EUS (sensitivity–67%). Vascular invasion was absent in eight surgical specimens; all these had vascular invasion ruled out by EUS (specificity–100%). Overall accuracy was 91%; positive predictive value was 100% and negative predictive value was 89%.

**Conclusions:** ITE may be a good endosonographic predictor of vascular invasion and possible resectability of ampullopancreatic cancer. Prospective studies with larger populations are currently underway, to test reproducibility.

**149**

**RELATIONSHIP BETWEEN PREOPERATIVE BILE JUICE CYTOLOGY AND MUCIN EXPRESSION OF SURGICAL SPECIMENS IN THE BILIARY TRACT CARCINOMA**

Yoshihiko Imoto, M.D., Naoki Muguruma, M.D.*, Tetsuo Kimura, M.D., Hiromi Tano, M.D., Tatsuzou Iigaki, M.D., Masako Kaji, M.D., Rika Aoki, M.D., Yasunori Sato, M.D., Hiroshi Miyamoto, M.D., Seisuke Okamura, M.D., Susumu Ito, M.D. The University of Tokushima Graduate School, Tokushima, Japan.

**Purpose:** To confirm a definitive diagnosis for biliary tract lesion, cytological diagnosis obtained from living body is useful, however, it is not always positive even in advanced stage. Mucin correlates closely with prognosis of the biliary tract carcinoma and MUC1 role as “anti-adhesion molecule” and MUC2 controls cell proliferation. The present study evaluate correlations
between preoperative bile juice cytology and mucin expression of surgical specimens in the biliary tract carcinoma.

Methods: Nineteen patients with biliary tract carcinoma (male:female = 10:9, gallbladder carcinoma 11 cases, cancer of the ampulla of Vater:1 case, cancer of the common bile duct:5 cases and hepatic hilar cholangiocarcinoma:2 cases) surgically treated in our hospital, whose bile juice cytology was evaluated before operation were allocated to this study. Immunohistochemical staining was performed using MUC1 and MUC2 monoclonal antibodies. The evaluation of immunoreactivity for each antibody was based on the extent of staining of cancer cells:0%=none, 1–10%=+; mild, 11–50%=++; moderate, 50–(+++; strong. Biliary cytology was classified 2 categories based on Papanicolaou classification: negative and suspicious as Group-N and positive as Group-P. In mucin staining, lesions showing MUC1 expression of ++ or over and MUC2 expression of + or below were classified as belonging to group A, and the remaining lesion as belonging to group B. Categoric data were analyzed using chi-square test and p values of <0.05 were considered significant.

Results: According to epithelial site, preoperative cytology highly proved positive (Group-P) in Group A, while it proved negative (Group-N) in Group B (p = 0.013). In the advanced site of carcinoma, it was also apparent that preoperative cytology tends to highly be positive (Group-P) in Group A, while it tends to be negative (Group-N) in Group B (p = 0.009).

Conclusions: These results suggest that positivity of bile juice cytology is affected by characteristics of mucin expression in the tissue. Based on the possibility that mucin expression correlates with the prognosis of each carcinoma, cytological positiveness suggest poor prognosis of the concerning carcinoma, which may be informative for predicting the courses and choosing postoperative adjuvant treatments in biliary tract carcinoma.

EUS FOR COMMON BILE DUCT DILATATION IN PATIENTS WITH NORMAL LIVER TESTS
Mark Lemert, M.D., Gordon Hunt, M.D., Walter Coyle, M.D., Mary Lee Krinsky, D.O., Thomas Savides, M.D.*. University of California, San Diego and Balboa Naval Medical Center, San Diego, California.

Purpose: Due to widespread use of noninvasive imaging studies, patients with normal liver tests are encountered with findings of common bile duct (CBD) dilation in the absence of culprit disease (choledocholithiasis and malignancy). The aim of this series is to investigate the diagnostic yield of EUS in the evaluation such patients with CBD dilation and normal liver tests.

Methods: A retrospective chart review of patients who underwent upper EUS at two academic referral centers from November 2000 to November 2003. Inclusion criteria: 1) evidence of CBD dilation by preliminary imaging [transabdominal U/S, CT scan], 2) no evidence of obstructing pancreaticobiliary disease on imaging, and 3) documented history of normal liver tests. The cutoff value for CBD dilation was ≥ 7 mm. Statistical analysis with a one-way ANOVA compared four groups with regard to CBD diameter: patients age ≥ 60, patients with a history of cholecystectomy (CCY), patients age ≥ 60 and a history of CCY, and patients age < 60 and without a history of CCY.

Results: Among the 53 patients who met criteria, the mean age was 63 (range 36–81), 75% were female, 64% reported abdominal pain, and 55% were status-post CCY. No cases of malignancy or choledocholithiasis were diagnosed. Abnormalities were found in 19% of cases. These included: periampullary diverticula (n = 5), cholelithiasis (n = 2), gallbladder sludge (n = 3), and gallbladder polyp (n = 1). EUS demonstrated normal CBD diameters in 15% of cases. Patients age < 60 without a history of CCY had a mean CBD diameter within normal limits (mean = 6.85). Patients age ≥ 60, a history of CCY, or both factors all had mean CBD diameters exceeding the clinical cutoff of 7 mm (mean = 11.42, 9.44, and 9.47, respectively).

One-way ANOVA revealed significant differences among the groups (F = 6.72, P = 0.001). Post-hoc analyses demonstrated that groups with one or more factors had significantly greater mean CBD diameters as compared to patients with age < 60 and without a history of CCY.

Conclusions: No patients with a history of isolated CBD dilation and normal liver tests were found by EUS to have evidence of choledocholithiasis or malignancy. Thus, investigation with more sensitive and invasive imaging modalities such as EUS may not be indicated in this clinical context. In our sample, patients with age ≥ 60 years and/or a history of a CCY had significantly greater CBD dilation.

A PILOT STUDY TO EVALUATE SECRETIN ADMINISTRATION DURING ENDOSCOPIC ULTRASOUND

Purpose: To determine the feasibility of the secretin stimulation test during routine EUS examination.

Methods: All patients with chronic pancreatitis referred for EUS evaluation have been offered enrollment into our study. With each patient, a test dose of SecreFloTM was given to assess for adverse reactions. Subsequently, a dose of 1 U/Kg was administered just prior to the start of the EUS and bicarbonate concentration was measured at 15 minutes and at 30 minutes. The samples were sent to our own laboratory on ice for analysis.

Results: Eleven patients were evaluated. The mean age of the patients was 50 (26–85). Eight were women and three were men. The mean bicarbonate concentration at 15 minutes was 53.9 (S. D. 18.87). The mean bicarbonate concentration at 30 minutes was 45.1 (S. D. 15.98). We recorded eleven possible EUS criteria (as per Catalano et al) with each patient. Two patients had only one EUS criteria for chronic pancreatitis and three had five. There does not appear to be any correlation between these extremes and the bicarbonate concentrations with these particular patients.

Conclusions: Secretin stimulation to assess for pancreatic insufficiency can be performed in the context of EUS evaluation without added time or discomfort. Unfortunately the sample size in our study is too small to comment on correlation between the secretin stimulation test and the number of EUS findings. The study does, however, begin an exploration into the role of secretin stimulation as an adjunct to EUS in the evaluation of chronic pancreatitis.

DIAGNOSIS OF INTRADUCTAL PAPILLARY-MUCINOUS TUMOR OF THE PANCREAS BY USING PERORAL PANCREATOSCOPY AND INTRADUCTAL ULTRASOUNOGRAPHY
Taro Hara, M.D., Takteo Yamaguchi, M.D.*, Akihiko Nakagawa, M.D., Tadayuki Shishido, M.D., Takeshi Ishihara, M.D., Takehide Asano, M.D., Hiromitsu Saisho, M.D., Chiba Cancer Center Hospital and Graduate School of Medicine, Chiba University, Chiba, Japan.

Purpose: Intraductal papillary mucinous tumor (IPMT) of the Pancreas has increasingly become interesting for its unique presentation. The differential diagnosis between malignant and benign tumors is extremely important in the determination of the therapy for IPMT. The aims of this study are to
determine the usefulness of peroral pancreatoscopy (POPS) and intraductal ultrasonography (IDUS) in IPMT for the differentiation of malignant from benign disease, and to evaluate the significance of these techniques as preoperative examinations.

Methods: One hundred and forty-nine histopathologically confirmed patients with IPMT underwent POPS and/or IDUS (hyperplasia in 9, adenoma in 52, carcinoma in situ in 40, and invasive carcinoma in 48 patient). POPS was performed in 104 patients, and IDUS in 89. Findings of POPS and IDUS were compared with histopathologically specimens. The postoperative follow-up data were analyzed.

Results: Protruding lesions were detected by POPS in 66 patients. They were classified into 5 groups. Fish-egg-like type with vascular images, villous type and vegetative type were considered to be malignant. By IDUS, lesions protruding 1mm or more were observed in 71 patients. Of the lesions protruding 4 mm or more, 75% were malignant. Combination of POPS and IDUS improved the differential diagnosis between benign and malignant IPMT. The 3-year disease-free survival rate were extremely high at 94%.

Conclusions: The combination of POPS and IDUS results in a considerably improved differential diagnosis between malignant and benign IPMT and is useful for determining an effective therapeutic approach. These techniques can contribute to improvements in postoperative results.

CLINICAL SIGNIFICANCE OF BIOCHEMICAL ANALYSIS OF PANCREATIC FLUID COLLECTIONS
Gavin C. Harewood, M.D., Klaus E. Monkemuller, M.D., Walter H. Curioso, M.D., Lucia C. Fry, M.D., Mel C. Wilcox, M.D., Destree E. Morgan, M.D., Todd H. Baron, M.D.*. Mayo Clinic, Rochester, Minnesota and University of Alabama, Birmingham, Alabama.

Purpose: To date, no study has correlated biochemical analysis of pancreatic fluid collection (PFC) contents with clinical and radiological characteristics. This study aimed to assess the predictive value of fluid analysis for discerning collection type (pseudocyst vs. pancreatic necrosis), presence of infection or communication with the pancreatic duct (PD).

Methods: Pancreatic fluid from 34 consecutive patients undergoing endotheraphy of PFCs was prospectively analyzed for seven variables: lactate dehydrogenase (LDH), total protein, albumin, glucose, amylase, lipase and specific gravity.

Results: Pseudocysts were present in 19 patients and pancreatic necrosis in 15; 12 patients had infection of the fluid collection, pancreatogram demonstrated PD communication in 17. In multivariate analysis, high intra-cystic levels of protein (OR, 6.2, 95% C.I., 1.3, 37.0), LDH (OR, 6.8 [2.3, 38.3]), albumin (OR, 7.8 [1.3, 67.4]) and low levels of glucose (OR, 0.2 [0.03, 0.9]) predicted PFC infection. The optimal threshold for protein was 1,000 g/dL, which achieved a sensitivity of 73% and specificity of 75% for detecting infection; optimal cut-off for LDH was 1,000 U/L (sensitivity 64%, specificity 85%), cut-off for albumin was 500 g/dL (sensitivity 75%, specificity 85%) (see figures). There were no statistically significant differences in biochemical fluid analysis with respect to fluid collection type (pseudocysts vs. necrosis) or PD communication.

Conclusions: Biochemical analysis of PFC fluid is clinically helpful in detecting infection. Our findings fail to support the utility of fluid analysis in distinguishing pseudocysts from pancreatic necrosis.[figure1][figure2]
related. Hypoalbuminemia is a strong prognosticator of poor outcome. Patients with AIDS and acute pancreatitis also utilize more health care resources than HIV negative individuals admitted for the same illness.

155
THE EXTENT OF ETIOLOGIC EVALUATION IN ACUTE IDIOPATHIC PANCREATITIS

Purpose: The diagnosis of acute idiopathic pancreatitis should be considered only after an evaluation to exclude other common causes of pancreatitis is unrevealing. We describe the extent of the diagnostic evaluation in patients admitted to our hospital with a first diagnosis of acute idiopathic pancreatitis.

Methods: Using ICD-9 codes, we retrospectively identified non-transfer patients with a first admission for acute pancreatitis to the generalist service at our academic medical center from 1990–2003 who were then discharged with a diagnosis of acute idiopathic pancreatitis. Apriori we decided that serum calcium and triglyceride levels, as well as a right upper quadrant (RUQ) ultrasound, would be the minimum work-up prior to diagnosing an idiopathic etiology. Charts were reviewed to determine the frequency with which these tests were performed. Both admission (within 24 hours) and hospital course data were identified. We also abstracted charts for more invasive tests occasionally used to evaluate pancreatitis such as ERCP.

Results: We identified 50 patients admitted with a first episode of pancreatitis who were given a discharge diagnosis of acute idiopathic pancreatitis. The mean age of our cohort was 59 years, 56% were female, and the severity of disease was mild to moderate with no deaths. Within 24 hours of admission, serum calcium was obtained for 41 (82%), triglycerides for 32 (64%), and RUQ ultrasound for 28 (56%). Within 24 hours, only 15 (30%) had completed all three tests and by the time of discharge, only 26 (52%) received this basic etiologic evaluation. All three tests were obtained for 82% of patients within 24 hours and 56% during hospitalization.

Conclusions: Acute idiopathic pancreatitis was diagnosed in almost half of our patient cohort without first obtaining a RUQ ultrasound, serum calcium and triglyceride level. Clinicians should make sure to perform a thorough evaluation before moving to this diagnosis. Completing non-invasive testing prior to ERCP is also advisable.

156
HISTOPATHOLOGICAL FINDINGS AND THEIR ASSOCIATION WITH CLINICAL SYMPTOMS IN PATIENTS UNDERGOING CHOLECYSTECTOMY AT A TERTIARY CARE TEACHING HOSPITAL
Aasma Shaukat, M.D., Kamil Obideen, M.D., Mohammad Webbi, M.D., Irfan Hisamuddin, M.D., Qiang Cui, Ph.D.∗. Emory University School of Medicine, Atlanta, Georgia.

Purpose: There is little data on histopathology findings post-cholecystectomy in the US, and whether there is an association between these and the presenting symptoms.

Methods: We conducted a retrospective chart review of all cholecystectomy cases at a large tertiary care teaching hospital in the last two years.

Results: Of the 274 cases reviewed, 156 (57%) were females and the median age was 57 years (range 18–94 years). 149 (54%) of patients had presented with biliary-type symptoms, while the remaining 125 (46%) had undergone cholecystectomy as part of another surgery such as Whipple's procedure or hepatic lobectomy. In 104 (38%) cases, cholecystectomy was performed laparoscopically. Of the 149 cholecystectomies for biliary-type symptoms 70 (47%) had cholelithiasis and cholecystitis, 37 (25%) had cholecystitis, 18 (12%) were histologically normal, 15 (10%) had cholelithiasis alone, 6 (4%) had cholestrolis and 3 (2%) had other findings. Patients with biliary-type symptoms that had a positive histopathological finding tended to be older (OR 1.03, 95% CI 1.002, 1.06; p-value 0.03) but there was no gender difference.

Conclusions: A significant proportion of patients with biliary-type symptoms (12%) had no gall bladder pathology. This group of patients may have an alternate diagnosis, such as biliary dyskinesia, sphincter of Oddi dysfunction or irritable bowel syndrome that needs to be explored further.

157
A STUDY OF BIOCHEMICAL PREDICTORS OF RETAINED COMMON BILE DUCT STONES AND NEED FOR ERCP IN GALLSTONE PANCREATITIS
Rajinder Parmar, M.D., Adnan Khidair, M.D., Irwin Grosman, M.D.∗. Long Island College Hospital, Brooklyn, New York.

Purpose: The aim of this study was to identify biochemical predictors of retained common bile duct stones in patients with gallstone pancreatitis so as to tailor the use of ERCP to patients with a high likelihood of retained common bile duct stones. A previous study reported that serum total bilirubin level of greater than 1.3 mg/dl on hospital day 2 was the best predictor of CBD stones.

Methods: A total of thirty patients with acute gallstone pancreatitis admitted to our institution between November 1999 and May 2004 were retrospectively evaluated. Only those patients who underwent ERCP were included in the study. The following data were collected: demographic information, comorbid illnesses, clinical presentation, laboratory data, imaging studies and the hospital course including findings on cholecystectomy.

Results: ERCP was performed on a mean of hospital day five. Three patients were excluded from the study as ERCP was unsuccessful due to failure to cannulate. Of the 27 patients reviewed, 13 (48%) had CBD stones on ERCP and 14 (52%) did not. The mean day 2 serum AST was 273.5 U/L in patients with CBD stones and 179.3 U/L in patients without CBD stones (p = 0.52). The mean day 2 serum ALP was 355.1 U/L in patients with CBD stones and 223.6 U/L in patients without CBD stones (p = 0.19). The mean day 2 serum ALT was 355.1 U/L in patients with CBD stones and 223.6 U/L in patients without CBD stones (p = 0.19). The mean day 2 serum ALP was 171.8 U/L in patients with CBD stones and 146.2 U/L in patients without CBD stones (p = 0.47). The mean day 2 serum total bilirubin was 3.01 mg/dl in patients with CBD stones and 2.1 mg/dl in patients without CBD stones (p = 0.39). 70% of the patients with CBD stones and 40% of patients with no CBD stones had a day 2 serum total bilirubin greater than 1.3 mg/dl. Multivariate analysis detected no significant differences in biochemical parameters between patients with or without CBD stones. The study was limited, however, by the small sample size.

Conclusions: In patients with gallstone pancreatitis, none of the biochemical parameters we evaluated proved to be an accurate predictor of retained CBD stones.

158
THE EFFICACY OF ENDOSCOPIC PANCREATIC STENTING FOR THE TREATMENT IN PATIENTS WITH CHRONIC PANCREATITIS
Katsushi Seza, M.D., Takeshi Ishihara, M.D., Takedo Yamaguchi, M.D.∗, Hiromitsu Saito, M.D. Graduate School of Medicine, Chiba University, Chiba, Japan.

Purpose: Endoscopic pancreatic stenting (EPS) is increasingly used to de-compress the pressure of the main pancreatic duct (MPD) in chronic pancreatitis (CP). The proper duration of the stent placement, however, has not been
fully investigated. The aim of this study is to evaluate the clinical benefits of EPS in patients with CP.

Methods: The medical records of 61 consecutive patients (male 43, female 18) from March 1993 to October 2003 are reviewed. They all had pancreatic pain and severe MPD stenoses in head or body of the pancreas. Forty-nine patients received 80 plastic stents (7F or 10F). The stents were removed when they were regarded as being dysfunction by ultrasoundography or when the single duration was over 12 months. New one was employed when ERCP showed no improvement of the MPD stenosis after the removal of the old one. We evaluated the stent survival time, which was defined as being well drained with no MPD dilatation and pain relief. We also evaluated adverse events such as stent occlusion and dislocation. As for long-term results (over 36 months), we compared the relapse of pain, MPD diameter and pancreatic exocrine function (bentiromide test) between two groups: EPSs group, including fourteen patients who received EPS and Non-EPS group, including twelve patients with MPD stenoses who had not employed EPS.

Results: 50% stent survival time of 10F-EPS was estimated as 320 days by Kaplan-Meier analysis and was significantly longer than that of 7F (82 days). Mild obstructive pancreatitis occurred in 2 patients at 64 days and 192 days. The relapse rate of pain in EPSs is 21% (3/14), which was lower than that of Non-EPS (50%:6/12). The MPD diameters in EPSs and Non-EPS changed from 6.1mm to 4.0 mm, 5.5 mm to 6.2 mm, respectively, with statistical significance. Pancreatic exocrine function was more preserved in EPSs than Non-EPS.

Conclusions: EPS had clinical benefits especially in pain relief and preservation of pancreatic exocrine function for severe MPD stenosis in CP.

159

THE VALUE OF RISK FACTORS AS PREDICTORS OF CHOLEDOCHOLITHIASIS IN COMPLICATED GALLSTONE DISEASE
Aldo A. Garza, M.D.*, Wendy K. Ayala, M.S., Cynthia A. Becerra, M.S., Hector J. Maldonado, M.D. University Hospital/School of Medicine. Universidad Autonoma de Nuevo Leon, Monterrey, Nuevo Leon, Mexico.

Purpose: The decision to submit a patient for ERCP because of suspected choledochocholithiasis can be difficult. Due to ERCP-associated morbidity, EUS and MRCP have been proposed to evaluate patients with a low or intermediate probability of common bile duct (CBD) stones. In this study, we apply previously described risk factors to patients undergoing ERCP for suspected choledocholithiasis, measuring their value as predictors of the disease.

Methods: According to our data, risk factors for CBD stones were: a) cholangitis, b) CBD ≥ 7 mm, c) AST/ALT > 3x within 48 hrs, d) WBC count > 11,000/mm³. We also included a direct bilirubin > 1 mg/dl and GGTP > 3x because of previous reports of their value. A retrospective analysis of the clinical, radiological and biochemical data of 238 patients undergoing ERCP for possible choledocholithiasis was done. We excluded patients with cholangitis due to their obvious need for ERCP. Once the presence or absence of CBD stones was documented with ERCP, we evaluated the preexisting data both individually and in combinations, obtaining their sensitivity, specificity, PPV and NPV for detecting CBD stones.

Results: A total of 238 Mexican patients were studied, excluding 51 with cholangitis. Most patients were women (76.3%); median age 49 years. The overall prevalence of CBD stones on ERCP was 53.3% (without cholangitis 48.6%). The presence of a CBD ≥ 7 mm as a single risk factor had a sensitivity of 72%, specificity of 51%, PPV of 58% and NPV of 66%. The combination of a dilated CBD and one or more of the other risk factors did not improve the statistical significance (see table).

Conclusions: Although a dilated CBD and abnormal LFT’s increase the risk of choledocholithiasis in patients with gallstones, we did not find them useful to categorize patients into a low risk group. In populations with high incidence of gallstone disease, ERCP remains the most cost-effective method to evaluate patients with suspected CBD stones. Other diagnostic tests such as EUS or MRCP should be considered only in patients with a high risk for ERCP-related complications or in those with mixed features of gallstone disease and pancreaticobiliary tumors.

Statistical Analysis of Risk Factors in Predicting CBD Stones

<table>
<thead>
<tr>
<th>Risk Factors (RF)</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilated CBD + 1 RF</td>
<td>77%</td>
<td>48%</td>
<td>57%</td>
<td>63%</td>
</tr>
<tr>
<td>Dilated CBD + 2 RF</td>
<td>70%</td>
<td>49%</td>
<td>57%</td>
<td>63%</td>
</tr>
<tr>
<td>Dilated CBD + 3 RF</td>
<td>76%</td>
<td>49%</td>
<td>59%</td>
<td>68%</td>
</tr>
<tr>
<td>Dilated CBD + 4 RF</td>
<td>50%</td>
<td>75%</td>
<td>29%</td>
<td>43%</td>
</tr>
<tr>
<td>Dilated CBD + 5 RF</td>
<td>30%</td>
<td>78%</td>
<td>21%</td>
<td>30%</td>
</tr>
</tbody>
</table>

160

PREDICTORS OF CANCER IN PATIENTS WITH SUSPECTED PANCREATOCBILIARY MALIGNANCY WITHOUT A TISSUE DIAGNOSIS
David A. Tessier, D.O., Andrew Catanzaro, M.D., Sachin Goel, M.D.*, Vic Velanovich, M.D. Henry Ford Hospital, Detroit, Michigan.

Purpose: The aim of this study was to identify predictive factors for malignancy in patients undergoing surgery for suspected cancer of the pancreaticobiliary system without a preoperative tissue diagnosis.

Methods: Patients were identified by ICD-9 and CPT codes for pancreatic cancer and pancreaticobiliary endoscopy respectively at a single tertiary referral center between 1/1998 and 5/2004. Information was collected retrospectively by chart review. Multivariate analysis of potential predictive factors was performed to estimate probability of malignancy in the absence of a preoperative tissue diagnosis.

Results: Of the 150 pts. undergoing surgery for documented or suspected pancreaticobiliary malignancy, 102 did not have a preoperative tissue diagnosis of cancer. Of these 102 patients, 50 (49%) were men. The average age was 61 ± 12 years. Pre-operative investigations performed were: CAT scan (98%) EUS (78%), ERCP (67%) and PTC (2%). Of the 102 patients, 75 had neoplastic disease at surgery. A Whipple procedure was performed in 71(69%) while 11(11%) underwent distal pancreatectomy. Nineteen(19%) were found to be unresectable at surgery. The mean follow up was 15 ± 14 months.

Average weight loss was greater for those with malignancy(13.5 vs. 4.8 lbs; p = 0.014) as was the mean bilirubin (6.1 vs. 3.3 mg/dl; p = 0.006). In multivariate analysis, a combination of weight loss greater than 20 lbs, bilirubin greater than 3 mg/dl and CA 19-9 greater than 100 U/ml had both a specificity and PPV of 100% for predicting malignancy regardless of bile duct abnormalities or mass lesions on EUS or ERCP. The PPV decreased to 87–94% when any two of these findings were present. The presence of a mass on CT or EUS alone had a sensitivity of 84%, however no other single finding had a sensitivity greater than 65%.

Conclusions: In patients suspected of having a pancreaticobiliary malignancy, weight loss, hyperbilirubinemia and an elevated CA 19–9 may be predictive of a final cancer diagnosis. Surgical exploration should be considered in these patients even in the absence of a preoperative tissue diagnosis.

161

METAL STENTS IN SURGICALLY RESECTABLE Pancreatic Cancer

Purpose: To compare the efficacy of metal versus plastic stents for biliary strictures in patients with surgically resectable pancreatic cancer.

Methods: The medical records at MD Anderson Cancer Center from September 2001 to May 2004 were reviewed. Fifty-five patients were identified to have either a metal biliary stent (13 patients-Group A) or a plastic biliary stent (42 patients-Group B) and subsequently went to surgery. These two
groups were compared with regards to number of stents placed prior to surgery, time period between the last stent and surgery, and operative and post-operative complications. **Results:** Of the 13 patients in Group A, 12 had pancreaticoduodenectomy performed and one had exploration only due to the peritoneal metastases discovered at the time of surgery. Of the 12 patients with pancreaticoduodenectomy, 10 had pancreatic adenocarcinoma, 1 intraductal papillary mucinous tumor and 1 ampullary cancer. Only 1 patient required an additional endoscopic retrograde cholangiopancreatography (ERCP) after initial metal stent placement until surgery. The average time between last stent placement and surgery was 106.5 days. Of the 42 patients in Group B, 35 had pancreaticoduodenectomy and 7 had either palliative surgery or exploration due to metastatic diseases discovered at the time of surgery. Of the 35 patients, 27 had pancreatic adenocarcinoma, 5 ampullary cancer, 1 neuroendocrine tumor, 1 microcystic adenoma, and 1 autoimmune pancreatitis. Sixteen patients (38%) in Group B required 3 or more ERCPs with plastic stents prior to surgery. The average time between last stent placement and surgery was 56.4 days. Pre-op chemoradiation was given to all 13 in Group A and 31 of 42 patients in Group B. There were no stent-related intra- or post-operative complications in both groups. Two of 13 patients (15%) with metal stents versus 39 of 42 patients (93%) with plastic stents, however, developed either cholangitis or cholestasis due to stent occlusion while waiting for surgery. **Conclusions:** Contrary to the belief that metal stents are contraindicated for patients with surgically resectable pancreatic cancer, our study demonstrated that metal stents provided a longer latency rate, fewer ERCP sessions, and fewer episodes of cholangitis without adding any intra- or post-operative complications. Therefore, metal stents should be considered for patients with resectable pancreatic cancer, especially if surgery is not immediately planned as more patients are now receiving pre-operative chemoradiation.

**162**

OLISTAT (LIPASE INHIBITOR) AS AN INEXPENSIVE TEST FOR THE DIAGNOSIS OF CHRONIC PANCREATITIS: A CASE REPORT

Gavin Chico, M.D., Vikas Khurana, M.D., F.A.C.G.∗. Overton Brooks VA Medical Center and David Raines Health Center, Shreveport, Louisiana.

**Introduction:** Chronic pancreatitis manifests clinically after a prolonged latency period. The initial symptoms are generally vague making the diagnosis difficult and only 5–15% of patients with chronic pancreatitis are diagnosed appropriately. Diagnostic tests for pancreatic anatomy, function or stimulation tests have significant limitations. With the exception of stimulation tests, these tests detect only overt pancreatic insufficiency. We present a case of serendipitous use of the lipase inhibitor (orlistat), as a provocative challenge test to diagnose chronic pancreatitis.

**Case Report:** A 54-year-old man with past history of diabetes mellitus, hypertension, reflux and hyperlipidemia, presented with abdominal pain and dyspepsia for several years. Work up including EGD, colonoscopy, enteroclysis, capsule endoscopy, CT scan abdomen, ultrasound, lab evaluations were non contributory. Since symptoms persisted, diclofenac and lansoprazole was initiated with some relief. Concurrently orlistat was started for weight loss. On follow up visit patient had lost weight but described a worsening of his gastrointestinal symptoms. Orlistat was discontinued and his symptoms returned to baseline. Considering worsening of his symptoms on orlistat, he was started on pancreatic enzyme supplements with complete resolution of gastrointestinal symptoms. RETROSPECTIVELY CT scan showed enlarged tail of pancreas (3.2 cm, nl 2 cm) and lobulation, suggestive of chronic pancreatitis.

**Discussion:** The diagnosis of chronic pancreatitis can be a challenge considering its long latency. Symptoms occur in chronic pancreatitis when the lipase production decreases below 40%. By using orlistat, a stress challenge state was created, worsening symptoms of pancreatic insufficiency by further decreasing lipase activity. The abdominal pain and dyspepsia improved with withdrawal of orlistat. Administration of pancreatic enzyme supplements led to resolution of the symptoms. This cost effective sequence can be utilized for testing patients with subclinical chronic pancreatitis.

**Conclusion:** We propose using the lipase inhibitor (orlistat) as a provocative challenge test to diagnose subclinical chronic pancreatitis. Further randomized studies need to be done to define the role of our approach in the diagnosis of chronic pancreatitis.

**163**

ZOLLINGER-ELLISON SYNDROME WITH NORMAL SERUM GASTRIN LEVEL

Zahid Rashid, M.D., Sirinivasan Dubagunta, M.D.∗, Farhan Aslam, M.D. Geisinger Medical Center, Danville, Pennsylvania.

**Introduction:** Zollinger-Ellison syndrome is characterized by gastric acid hypersecretion leading to refractory/recurrent peptic ulceration due to non-beta islet cell tumor. Diagnosis of Zollinger-Ellison syndrome is made by elevated serum gastrin levels or secretin stimulation test in appropriate clinical setting. We describe a case of Zollinger-Ellison that had near normal serum gastrin levels. Diagnosis was made with endoscopic ultrasound and confirmed by octreotide receptor scintigraphy and histopathology.

**Case Report:** 53-year-old white male with history of 40 lbs weight loss over four months and peptic stricture was referred for evaluation of abdominal pain, diarrhea and symptoms of gastrointestinal reflux despite being on omeprazole 40 mg twice daily. Abdominal exam did not show any evidence of fluid or masses. The patient underwent an esophageal gastroduodenoscopy, which showed diffuse ulceration of esophagus, erosions in the stomach, ulceration in the duodenal bulb and second part of the duodenum. Liver enzymes were elevated and a trans abdominal ultrasound showed dilated pancreatic duct. A CT scan obtained at the same time did not reveal any abnormalities. Serum gastrin level initially was 37 pg/ml and later rose to 161 pg/ml; normal (40–200 pg/ml). Patient refused secretin stimulation test because of fear of symptoms off proton pump inhibitors. An endoscopic ultrasound (EUS) was performed which showed a 25 mm × 30 mm mass in the head of the pancreas. Fine needle aspirate of that mass suggested endocrine tumor. Octreotide scan showed high uptake in the mid epigastric area consistent with gastrinoma.

The patient underwent a Whipple procedure and resection of low grade neuroendocrine tumor of the pancreas which stained positive for chromogranin, synaptophysin and pancytokeratin consistent with gastrinoma. The patient was discharged home after one week stay in the hospital. Currently patient is doing well without any complaints of gastrointestinal reflux, one-month post surgery.

**Discussion:** Our case illustrates the fact that normal serum gastrin levels do not rule out the diagnosis of Zollinger-Ellison syndrome.

When clinical suspicion of Zollinger- Ellison syndrome is high additional testing i.e. secretin stimulation test (which shows a paradoxical rise in the gastrin levels) or EUS should be done to confirm or refute the diagnosis. A EUS can be very helpful in such situations by not only establishing the diagnosis but also localization the tumor for surgery.

**164**

UTILITY OF ERC WITH BILE DUCT BRUSHINGS FOR THE DETECTION OF CHOLANGIOCARCINOMA IN PATIENTS WITH PRIMARY SCLEROSING CHOLANGITIS

Stephen L. Moff, M.D., Douglas P. Clark, M.D., Anirban Maitra, M.D., Akhilesh Pandey, M.D., Paul J. Thuluvath, M.D.∗. Johns Hopkins University School of Medicine, Baltimore, Maryland.

**Purpose:** Cholangiocarcinoma (CC) is a known complication of primary sclerosing cholangitis (PSC), with a lifetime risk of approximately 15–20%. In these patients, there are no reliable markers or imaging modalities to detect malignant changes or early CC when curative interventions may still be possible. In this study, we determined the yield of endoscopic retrograde cholangiography (ERC) with biliary tree brushings in the detection of pre-malignant changes and its impact on clinical outcomes.

**Methods:** Clinical features and outcomes were evaluated in 47 PSC patients who underwent 101 ERCs with bile duct brushings between January 2001 and 2004. Cytopathology examination of these specimens for the detection
of malignant changes was classified as unsatisfactory, benign, atypical (focal or marked), or malignant.

Results: Fifteen patients had at least one sample that was abnormal. Patients with abnormal findings were older (p = 0.03); otherwise the groups had similar characteristics including their other demographics, serum tumor markers, MELD and PSC risk scores, and standard measures of hepatic synthetic function. Three of 6 patients with marked atypia have undergone transplantation for these abnormal findings and of these, 2 had CC and 1 had no cancer detected in the explant. Of the 9 patients with focal atypia, 7 are doing well, 1 underwent transplantation for marked atypia seen on brushings from another hospital, and the other underwent transplantation for decompen-sated cirrhosis. Two patients with benign findings developed CC, while the other 29 have not.

Conclusions: ERC with bile duct brushings and cytopathology evaluation is a plausible method for the detection of malignant changes in patients with PSC. Long-term prospective studies are needed to confirm these findings and to determine the optimal screening protocol.

AN ENDOSCOPIC PanCREATIC FUNCTION TEST (ePFT) VALIDATES ENDOSCOPIC ULTRASOUND (EUS) CHRONIC PanCREATITIS (CP) CRITERIA
Darwin L. Conwell, M.D.*, Gregory Zuccaro, M.D., John J. Vargo, M.D., John A. Dumot, D.O., Frederick VanLente, Ph.D., Cathy O’Laughlin, Patricia Trolli, R.N. Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: Validate the current EUS CP diagnostic criteria (0–3 criteria normal), (4–5 criteria equivocal) and (> 5 criteria definite for CP) by comparing them to a “non-histologic” gold standard secretin-stimulated pancreatic function test (PFT).

Methods: 56 pts (25 M) referred for evaluation/treatment of chronic abdominal pain (CAP) w/no CP underwent both EUS and ePFT. Endoscopic Ultrasound protocol: 1) EUS images were obtained from both gastric and duodenal stations. EUS independently scored by a therapeutic endoscopist for 0–9 parenchymal/ductal criteria. Endoscopic Pancreatic Function Test (ePFT) protocol: 1) upper endoscopy, 2) IV synthetic porcine secretin (0.2 mcg/kg, ChiRhClin, Inc.) after test dose, 4) duodenal fluid aspirated every 15 minutes for 1 hour and autoanalyzed for (HCO3-).

Results: EUS results: 33 pts were normal, 13 pts equivocal, 10 pts definite CP. The mean peak (HCO3-) for each group: normal EUS: 83.7 (range 58–118), equivocal EUS for CP: 68 (range 30–88) and definite EUS for CP: 56 (range 19–84) mEq/L. Using a peak (HCO3-) of ≤ 84 mEq/L as diagnostic for CP, the referent values for EUS in the diagnosis of CP are shown in table.

Conclusions: 1) Endoscopic pancreatic function testing with secretin confirms that an EUS score > 5 is diagnostic of CP. 2) An EUS score ≥ 5 does not rule out CP; these pts may have a low peak (HCO3-) and “minimal change” CP. 3) EUS as a screening test for CP in pts with CAP is of questionable value due to its low sensitivity.

![Image](image-url)

FIRST DAY SERUM ALBUMIN, AN INDEPENDENT PREDICTOR OF MORTALITY IN PATIENTS WITH ACUTE ALCOHOLIC PanCREATITIS
Hafez Massoumi, M.D., Ajit Kokkat, M.D., Mario Ricci, M.D., Edward Norias, Ph.D., Nejat Kiyici, M.D., Hilary Hertain, M.D., F.A.C.G.*. Our Lady of Mercy Medical Center, Bronx, New York.

Purpose: Prognostic criteria have been described for acute pancreatitis. The aim of this study was to identify other useful predictors of mortality among patients with acute alcoholic pancreatitis.

Methods: Data was prospectively collected on 299 hospitalized patients with acute alcoholic pancreatitis from 1992–2000 with a mean age of 42.4 ± 12.4 years and mean length of stay of 11.6 ± 11.3 days. The sample included 208 males and 91 females. Eight patients died during hospitalization. CT scan grade (A-E), general chemistry lab data, month, season, and year of hospitalization were examined. These variables, their increasing/decreasing trends plus valuable set points during the initial 48 hours of hospitalization were evaluated in a series logistic regression model to predict death during hospitalization.

Results: Patients who died were older (p = 0.0018), had higher Ranson’s score (p = 0.0101), increased BUN (p = 0.0022), and a lower albumin (p = 0.0014) than patients who survived. Our study describes an independent 60-fold increased risk of death when albumin levels were less than 2.5 g/dL (p = 0.001) on the first day of hospitalization.

Conclusions: Serum albumin on admission is an independent predictor of outcome in acute alcoholic pancreatitis. It is not clear whether the low albumin level represents protein-calorie malnutrition or a decline as a consequence of acute pancreatitis.
A considerate overlap was observed between the 3 groups. No statistically significant differences were found between NBNA patients and those with either biliary or alcoholic forms of the disease. The serum lipase/amylose ratio in patients with alcoholic pancreatitis ranged from [0.049 to 1.48] and in those with NBNA pancreatitis from [0.041 to 0.83]. These differences were not statistically significant.

On admission amylose, was significantly lower in alcohol induced pancreatitis than in patients with biliary pancreatitis.

Conclusions: Even though amylose, was significantly lower in alcoholics than in patients with biliary pancreatitis, there was a wide range in the L/A ratio in all 3 groups and comparison of the median value between these groups were not statistically significant.

### Table 1. Summary of Results

<table>
<thead>
<tr>
<th>Pancreatitis etiology</th>
<th>Number of patients</th>
<th>Average Lipase</th>
<th>Average Amylose</th>
<th>Average lipase/amylose</th>
<th>Median</th>
<th>Standard dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETOH</td>
<td>76</td>
<td>129.0</td>
<td>567.0</td>
<td>0.39</td>
<td>0.288</td>
<td>0.41</td>
</tr>
<tr>
<td>Biliary</td>
<td>46</td>
<td>238.0</td>
<td>789.0</td>
<td>0.34</td>
<td>0.334</td>
<td>0.016</td>
</tr>
<tr>
<td>Nonbiliary, NonAlcoholic (NBNA)</td>
<td>37</td>
<td>153.0</td>
<td>369.0</td>
<td>0.41</td>
<td>0.383</td>
<td>0.26</td>
</tr>
<tr>
<td>Total</td>
<td>159</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prospective studies in literature have shown that the L/A ratio greater than 2/1 are more specific for alcohol induced pancreatitis. In our study we observed the highest L/A to be [1.7].
The lipase to amylase ratio does not appear to be sufficiently sensitive or specific to distinguish alcoholic from nonalcoholic pancreatitis. We conclude that a prospective study with a larger number of patients is needed to re-evaluate the clinical efficacy of this ratio.

Results: The mortality rate was significantly diminished in the F group (12.5%) compared to the CM (30%) and EM (28%) groups. Glucose and amylase levels were lower in the F group as compared to the CM and EM groups. Lipase level was significantly augmented post-test in the three series but primarily in the F rats. Transaminase and LDH were elevated in the three groups. The histological score of the pancreas (i.e. edema, necrosis and leukocyte infiltration) were lowered in the EM and F groups as compared to the CM group.

Conclusions: Female sex or the acute administration of estradiol to male rats is associated with a significant reduction of AP lesions. It has been shown that acute estradiol administration exerts an anti-inflammatory effect on induced closed duodenal loop AP. The mechanism is through potentiation of the normal cytoprotective effects elicited by endogenous secretin possibly by an enhanced response to injury of the immunologic system and the Selye stress axis.

**THE EFFECT OF NAFAMOSTAT MESILATE USED FOR THE PREVENTION OF PANCREATIC DAMAGE RELATED TO EST. A DOUBLE BLIND STUDY IN A SINGLE CENTER**
Takeshi Ishihara, M.D., Taketo Yamaguchi, M.D., Tsukio Tayauchi, M.D., Hiromitsu Saihso, M.D.*. Graduate School of Medicine, Chiba, Japan.

Purpose: To clarify the effectiveness of nafamostat mesilate used for the prevention of pancreatic damage related to endoscopic sphincterotomy (EST).

Methods: 85 consecutive patients (62 cholecodocholithiasis, 11 biliary stenosis, 9 bile duct carcinoma, 2 dyskinesia of Oddi’s sphincter and 1 gallbladder carcinoma: mean age 68.2; 38 women, 47 men) who were undergone EST were entered in this double-blind study. 44 patients were treated with nafamostat mesilate (30mg i.v. infusion during the procedure including EST), and 41 were given placebo (physiological saline). Blood samples and urine samples were collected 4 times: before the infusion of nafamostat mesilate, immediately, 4 hours and 24 hours after the procedures (including EST). Examinations of blood (amylase, WBC, CRP), urine (TAP: trypsinogen activation peptides) and blood concentration of nafamostat mesilate were measured. Complications related to EST were defined according to the consensus criteria (Cotton PB et al).

Results: Mild pancreatitis was occurred in 8 patients (2 nafamostat mesilate, 6 placebo) and severe pancreatitis in 1 patient (1 placebo). Hyperamylasemia were found in 40 (16 nafamostat mesilate, 24 placebo). Acute pancreatitis occurred more frequently in the placebo group than the nafamostat mesilate group. The frequency of hyperamylasemia had no significant difference between the two groups. As for TAP, however, significant increase of TAP was shown in the 4-hours samples of the placebo group by comparison with those of the nafamostat mesilate group. In the placebo group, TAP score of the 4-hours samples was significantly higher than that of pre-procedure samples.

Conclusions: Infusion of nafamostat mesilate significantly lowered the TAP score in 4-hours samples. These data suggest some prophylactic effect of interprocedure infusion of nafamostat mesilate on EST.

**ACUTE PANCREATITIS AND SEX. THE BENEFICIAL EFFECT OF THE FEMALE CONDITION AND OF ACUTE ESTRADIOL TREATMENT**

Purpose: The aim of the study was to elucidate, in rats, whether females or the acute administration of estradiol to males has a local or systemic effect in an experimental model of acute pancreatitis. This was prompted by our previous findings of females having a better response following injury of both the immune system and the Selye axis.

Methods: In 44 male and female Wistar rats, three groups were examined. There were 16 control males (CM), 18 estradiol males (EM) and 10 females (F). Under thiopental anesthesia a short-term (20 min), closed duodenal loop experimental model was constructed to induced AP. The CM and F groups were subjected to a subcutaneous injection of peanut oil 30 mins prior to test. The EM rats were injected with 50 microgram/kg estradiol benzoate 30 min prior to the test. Twenty-four hours after injections, the rats were sacrificed and a histopathologic score of the pancreas were obtained in the three groups.

**TISSUE DIAGNOSIS OF CHOLANGIOCARCINOMA**
Ashtar Chami, M.D., Qiang Cai, M.D., Ph.D.*. Emory University School of Medicine, Atlanta, Georgia.

Purpose: Diagnosis of cholangiocarcinoma was a clinical challenge in the past. In an era of high technology, such as the common availability of higher resolution of computed tomogram (CT), endoscopic ultrasound, etc, it is not known whether the diagnosis for this disease is improved. The aim of this study was to determine the most common diagnosis modality for cholangiocarcinoma at the present time.

Methods: After approved by Institutional Review Board at Emory University, a database of patients with cholangiocarcinoma was established. The database was obtained from the Department of Medical Records at Emory University hospital by using a computer program known as FOCUS (Emory University, Atlanta, GA). All patients with cholangiocarcinoma during the period of January 1999 to December 2003 were included in this database. All those patients’ medical record were reviewed by abstraction of the database using Powerchart (Cerner Corp, North Kansas City, MO) to obtain the modality for diagnosis.

Results: 52 patients with cholangiocarcinoma were identified in this period, 20 were male and 32 were female. Among those, 16 patients had diagnosis before they transferred to Emory. The other 36 patients had diagnosis at Emory. In those 36 patients, 22 patients had diagnosis before 2001. 12 patients had diagnosis after 2001. Before 2001, most of the patients (about 77%, 17/22), had diagnosis on surgical specimen, only 23% (5/22) had diagnosis on cytology from endoscopic retrograde cholangiopancreatography (ERCP) brushing or fine needle aspiration (FNA) guided by CT. In contrast to this, after 2001, more than half of the patients (about 60%, 8/14) had diagnosis on cytology specimens from ERCP or FNA guided by CT. About 40% (6/15) had diagnosis on surgical specimen. In general, 64% (23/36) patients’ diagnosis were made from surgical specimen, the other 36% (12/36) diagnosis were made from cytology from ERCP or FNA guided by CT.

Conclusions: Diagnosis of cholangiocarcinoma is still a clinical challenge, most of the patients had final diagnosis after obtained surgical specimen. Specific tumor markers may be needed to increase the diagnosis yield pre-surgery.
Endoscopic Pancreatic Function Test (ePFT) method were overt bleeding (47%), iron deficiency anemia with or without guaiac positive stool (41%), IBD (3%), and suspected small bowel tumor (9%). Investigations prior to CE included EGD (92%), colonoscopy (99%), push enteroscopy (41%), and SBFT (49%). Overall 85% of the CE’s had an adequate preparation to allow necessary interpretation. The average gastric emptying time was 33 minutes and the average small bowel transit time was 221 minutes. There were 40 normal and 60 abnormal studies. After CE, 51% were suggested to have further endoscopic evaluation (76% were endoscopies -8% of which were intraoperative).

Of the 60 abnormal studies 42 revealed AVMs (6 actively bleeding and 36 non-bleeding), 11 polyps/tumors, 3 ulcers and 2 strictures. 67% of the patients with AVMs did not have prior endoscopy revealing AVMs. These AVMs were found in 49% of patients with overt bleeding, 41% with IBD and 17% incidentally in the remaining indications. 55% of studies done to evaluate for tumors/polyps were positive, while 2 were found in work-up of IBD. 80% of SBFT done prior to CE were reported as normal. Of these, 51% had abnormal findings on CE the most common of which are AVMs and polyps.

87% of the studies reached the cecum upon termination of the capsule’s battery. Of the remaining 13 studies 69% had delayed transit. Laparotomy confirmed small bowel masses (although the capsules passed spontaneously). Previously non-detected strictures resulted in 2 capsule impactions. One capsule was endoscopically retrieved, while the other required laparotomy. No patients had any acute obstructive symptoms.

Conclusions: This study provides useful information regarding safety and utility of CE. In our population, 60% of patients were found to have some abnormality on capsule. Angiodyplasias were the most common cause of blood loss found. Our complication rate was 2%, but with no acute obstructions. In our experience, CE is more clinically useful than SBFT in evaluating the small bowel.

S58 Abstracts
AJG - Vol. 99, No. 10, Suppl.,

**Purpose:** Collection of hormone-stimulated duodenal fluid using a DT is considered the gold standard PFT; however this method is cumbersome and not widely available. We have developed an endoscopic test (ePFT) which eases collection of duodenal aspirates. Our aim is to compare peak duodenal fluid \( \left[ \text{HCO}_3^- \right] \) obtained by DT and ePFT methods after secretin stimulation.

**Methods:** Healthy subjects (HS) and CP pts were randomized to secretin DT or ePFT, then crossed over to the remaining test after a minimum 1-wk washout. An age/weight-based sedation bolus was used for each test. Drelling tube method; endoscopic placement of a DT was confirmed using fluoroscopy. After IV synthetic porcine secretin (0.2 mcg/kg, ChiRhoph-Clin, Inc.), duodenal fluid was collected in 15-min increments for 1 hour. Endoscopic Pancreatic Function Test (ePFT) method: 1) Upper endoscopy was performed using a 6-mm endoscope, 2) IV secretin, 3) duodenal aspirates were obtained every 5 min for 1 h and 4) fluid was sent for \( \left[ \text{HCO}_3^- \right] \) analysis on autoanalyzer.

**Results:** 6 HS and 4 CP pts have been randomized to date. All patients tolerated both procedures without complication. Median peak \( \left[ \text{HCO}_3^- \right] \) for DT and ePFT for the HS was 103 and 109 mEq/L, respectively (p = 0.31). Median peak \( \left[ \text{HCO}_3^- \right] \) for for the CP pts was 70 mEq/L for both tests (p = 0.88). There was a significant correlation in peak \( \left[ \text{HCO}_3^- \right] \) obtained by each method (r = 0.7, p = 0.03, Pearson) [figure1].

**Conclusions:** 1. The peak \( \left[ \text{HCO}_3^- \right] \) observed with each collection method are similar. 2. The peak \( \left[ \text{HCO}_3^- \right] \) obtained by the E-PFT shows a good correlation with peak \( \left[ \text{HCO}_3^- \right] \) obtained by a DT. 3. Patients are continuing to be enrolled into this prospective trial.

**SMALL INTESTINE/UNCLASSIFIED**

175

**A RETROSPECTIVE REVIEW OF CAPSULE ENTEROSCOPY AT ONE TERTIARY CARE INSTITUTION**

**Purpose:** Capsule Enteroscopy (CE) is increasingly being utilized to diagnostically evaluate the small bowel but its efficacy is not completely well established.

**Methods:** We reviewed the records of 100 patients who underwent CE and studied various parameters including demographics, indications, previous investigations, findings, recommendations, and complications.

**Results:** Our patient population was 51% male and 49% female. The average age was 61 years (17–91). The weight range was 50–140 kg. Elevated BMI did not hinder any CE performance. The indications for the procedure were overt bleeding (47%), iron deficiency anemia with or without guaiac positive stool (41%), IBD (3%), and suspected small bowel tumor (9%). Investigations prior to CE included EGD (92%), colonoscopy (99%), push enteroscopy (41%), and SBFT (49%). Overall 85% of the CE’s had an adequate preparation to allow necessary interpretation. The average gastric emptying time was 33 minutes and the average small bowel transit time was 221 minutes. There were 40 normal and 60 abnormal studies. After CE, 51% were suggested to have further endoscopic evaluation (76% were endoscopies -8% of which were intraoperative).

Of the 60 abnormal studies 42 revealed AVMs (6 actively bleeding and 36 non-bleeding), 11 polyps/tumors, 3 ulcers and 2 strictures. 67% of the patients with AVMs did not have prior endoscopy revealing AVMs. These AVMs were found in 49% of patients with overt bleeding, 41% with IBD and 17% incidentally in the remaining indications. 55% of studies done to evaluate for tumors/polyps were positive, while 2 were found in work-up of IBD. 80% of SBFT done prior to CE were reported as normal. Of these, 51% had abnormal findings on CE the most common of which are AVMs and polyps.

87% of the studies reached the cecum upon termination of the capsule’s battery. Of the remaining 13 studies 69% had delayed transit. Laparotomy confirmed small bowel masses (although the capsules passed spontaneously). Previously non-detected strictures resulted in 2 capsule impactions. One capsule was endoscopically retrieved, while the other required laparotomy. No patients had any acute obstructive symptoms.

**Conclusions:** This study provides useful information regarding safety and utility of CE. In our population, 60% of patients were found to have some abnormality on capsule. Angiodyplasias were the most common cause of blood loss found. Our complication rate was 2%, but with no acute obstructions. In our experience, CE is more clinically useful than SBFT in evaluating the small bowel.

176

**KNOWLEDGE ABOUT SOME ASPECTS OF CELIAC SPRUE IS INADEQUATE AMONG PROFESSORS OF GASTROENTEROLOGY**
Nirmal S. Mann, M.D.*, Joseph W. Leung, M.D. VA Medical Center; UC Davis, Martinez, California.

**Purpose:** Celiac sprue (CS) is being seen more frequently in the U.S. Its prevalence may be as high as 1:300 in Americans of North European ancestry. We wanted to evaluate the degree of information about some aspects of CS among professors of Gastroenterology.

**Methods:** A telephone survey was conducted. Only full professors of Gastroenterology at American Medical Schools were contacted. 91 professors were surveyed. None of the physicians contacted declined to participate in the survey; so the participation was 100%. They were asked about association of CS with diabetes mellitus, and association of CS with psychiatric illness e.g. schizophrenia. 8 points were assigned for each correct answer; so the maximum points could be 24 and minimum could be 0. A score of 16.0 or above was considered adequate. Mean score ± SEM was calculated; t-test was used. A p value of <0.05 was considered significant. The survey was conducted from Nov 2003 to May 2004.

**Results:** The mean score for the whole group was 10.2 ± 2.4 (range 0–24). There were 22/91 (24.1%) professors from top 10 medical schools (as listed in U.S. News and World Report May 2004) and were designated group I. There were 69/91 (75.9%) from other medical schools and were designated group II. The mean score of group I 8.3 ± 2.7 (range 0–24) was not significantly different (p = 0.05) compared to that of group II 10.6 ± 2.2 (range 0–24).

**Conclusions:** Knowledge about some aspects of CS is inadequate among professors of Gastroenterology; there was no difference in this respect between professors at top 10 medical schools and professors at other medical schools. For proper teaching of medical students, residents, and GI fellows there is need to enhance the awareness of some aspects of CS among the faculty.
Purpose: Overall reported yield of capsule enteroscopy (CE) in patients with obscure gastrointestinal bleeding is in the range of 50 to 85 percent. However when done as an initial diagnostic procedure of choice for evaluation of small bowel in a community setting, the yields are significantly lower (20 or 27% - Personal observation and communication). We tried to identify certain patient characteristics that might improve this diagnostic yield.

Methods: All patients that underwent CE for obscure gastrointestinal bleeding in a community gastroenterology practice were reviewed retrospectively. All patients had Guaiac positive stool or unexplained iron deficiency/blood loss anemia and a negative EGD and colonoscopy. A total of 47 consecutive patients were analyzed regarding nature of presentation, presence of anemia, history of blood transfusion and the presence or absence of a causative lesion on CE. Data was obtained by chart reviews, personal and telephone interviews.

Results: The diagnostic yield of capsule enteroscopy in the presence of anemia was 38% (13/34). In the absence of anemia the diagnostic yield of CE dropped to 0% (0/13). In patients with anemia, the yield was 52% (10/19) in those requiring blood transfusion and 20% (3/15) in those without transfusion. The diagnostic yield among patients with macroscopic and microscopic blood loss anemia was 38% (13/34). In the absence of anemia the diagnostic yield of CE dropped to 0% (0/13). In patients with anemia, the yield was 52% (10/19) in those requiring blood transfusion and 20% (3/15) in those without transfusion.

Conclusions: The highest yield of CE was noted among patients with anemia that had required blood transfusion (52%). Lowest yield of CE was noted among those patients without anemia related to their gastrointestinal bleeding (0%).

178

COMMONLY USED SUGARS INTERFERING WITH TESTING FOR INTESTINAL PERMEABILITY

Purpose: The most widely accepted method for the evaluation of intestinal barrier integrity is the measurement of the permeation of sugar probes following an oral test dose of sugars. The most-widely used sugar probes are sucrose, lactulose, mannitol and sucrulose. Measuring these sugars using a sensitive gas chromatographic (GC) method, we noticed interference on the area of the lactulose and mannitol peaks.

Methods: We tested different sugars to detect the possible makeup of these interferences and finally detected that the lactose interferes with lactulose peak and fructose interferes with mannitol peak. On further developing of our method, we were able to reasonably separate these peaks using different columns and condition for our assay. Sample preparation was rapid and simple and included adding internal standard sugars, derivitization and silylation. We used two chromatographic methods. In the first method we used Megabore column and had a run time of 34 minutes. This resulted in partial separation of the peaks. In the second method we used thinner and longer capillary column and was able to reasonably separate the lactose and lactulose peaks and the mannitol and fructose peaks with run time of 22 minutes.

Results: The sugar probes including mannitol, sucrose, lactulose and sucrulose and fructose and lactose were detected precisely, without interference. The assay was linear between lactulose concentrations of 0.5 and 40 g/L (r² = 1.000, p < 0.0001) and mannitol concentrations of 0.01 and 40 g/L (r² = 1.000). The sensitivity of this method remained high using new column and assay condition. The minimum detectable concentration calculated for both methods was 0.5 mg/L for lactulose and 1 mg/L for mannitol.

Conclusions: This is the first report of interference of commonly used sugars with test of intestinal permeability. These sugars are found in most of foods and dairy products and could easily interfere with the result of permeability tests. Our new GC assay of urine sugar probes permits the simultaneous quantitation of sucrulose, sucrose, mannitol and lactulose, without interference with lactose and fructose. This assay is a rapid, simple, sensitive and reproducible method to accurately measure intestinal permeability.

179

INFLUENCE OF UREASE ACTIVITY IN THE SMALL INTESTINE TO THE RESULTS OF 13C-UREA BREATH TEST
Yoshisasa Urita, Yoshihito Kikuchi, Kazuo Hike, Naotaka Torii, Eiko Kanda, Hidenori Karakata, Masahiko Sasajima, Kazumasa Mikot. Toho University, Tokyo, Japan.

Purpose: 13C-urea breath test (UBT) is an essential test to diagnose Helicobacter pylori (H. pylori) infection. One of the main disadvantages of UBT is possible interference by urease activity not related to H. pylori, as there is bacterial flora in the mouth and the intestine. A shorter time of breath sample collection may also be important for diagnostic value, especially for persons with rapid gastric emptying, and for avoiding false-positive results from the rapid transit of 13C-urea to the colon. The aim of this study is to evaluate the influence of urease activity in the small intestine to the results of UBT.

Methods: Duodenal 13C-urea breath test was performed in consecutive 200 subjects who underwent an upper endoscopy. An endoscope is inserted into the descending part of the duodenum and 20ml of sterile water, consisting of 100mg of 13C-urea, is sprayed through a biopsy channel. Breath samples are taken at baseline and at 10,20,30, and 60 min after ingestion of 13C-urea. 13C was measured as the 13CO2/12CO2 isotope ratio and was expressed as delta over baseline per mil. The histological examination was carried out in all subjects to detect H.pylori infection.

Results: Overall, 9 (4.5%) patients had delta over base-line values >10 per mil and 45 (22.5%) had the UBT values >3 per mil. If the result was considered as positive when the highest value was greater than 3 per mil after intraduodenal administration, 42 patients were positive in duodenal-UBT. One hundred sixteen of 200 subjects had evidence of Hp by histology. Of the 116 Hp-positive patients, after intraduodenal administration of 13C-urea, seven(6.0%) had delta over base-line values >10 per mil, 24(20.7%) >5 per mil, and 42(36.2%) >3 per mil. Of the 84 Hp-negative patients, only two subjects (2.4%) had delta over base-line values >10 per mil, and three(3.6%) >3 per mil. The maximum 13CO2 values were significantly higher in Hp-positive patients than those in Hp-negative patients. These suggested that various amounts of H.pylori flowed out from the stomach and came in contact with 13C-urea in the intestinal tract.

Conclusions: Unexpectedly, the urease activity in the small intestine was detected in 22.5% of all subjects in this study. Although it is unknown whether these bacteria with urease activity is related to digestive diseases, the results suggest that standard UBT may be strongly affected by small bowel bacterial overgrowth.

180

PREVALENCE OF INTESTINAL PARASITIC PATHOGENS AMONG HIV-POSITIVE INDIVIDUALS IN IRAN
Ali Jafari Mehr, M.D., Minoo Mohraz, M.D., Mostafa Rezaian, Ph.D., Ahmad Reza Meenar, M.S, Siavash Vaziri, M.D., Ali Moghadam Golmohamadi, M.D., Mohammad Reza Zali, M.D., F.A.C.G.*. The Research Center for Gastroenterology and Liver Diseases; Tehran University of Medical Sciences, Tehran and Kermanshah University of Medical Sciences, Kermanshah, Kermanshah, Islamic Republic of Iran.

Purpose: To determine the prevalence of intestinal parasites among HIV-positive individuals visited in different medical centers in Iran.

Methods: Single stool samples were collected and analyzed for various intestinal parasites from 206 HIV-positive individuals with different immune
status. The data were tested for statistical significance with $\chi^2$ and Mann-Whitney U tests.

**Results:** The overall prevalence of intestinal parasites was 18.4% (95% CI: 13.7, 24.3). In particular, the following parasites were identified: *Giardia lamblia* (7.3%), *Blastocystis hominis* (4.4%), *Entamoeba coli* (3.9%), and *Cryptosporidium parvum* (1.5%). The other parasites observed were *Strongyloides stercoralis* and *Hymenolepis nana* in two cases and *Dicrocoelium dendriticum* in one. Of the 38 patients who tested positive for intestinal parasites, 15 (39.2%) had diarrhea. Intestinal parasites were significantly more common among patients with diarrhea than those without ($P < 0.001$). Besides, CD4 counts were significantly lower among individuals with diarrhea than those without ($P < 0.001$).

**Conclusions:** This study highlights the importance of testing for intestinal parasites among Iranian HIV-positive patients especially those with low immunity presented with diarrhea.

181

**GLUCOSE BREATH TEST FOR DETECTION OF SMALL BOWEL BACTERIAL OVERGROWTH IN DIABETIC PATIENTS**

Yoshihisa Urita, Yoshinori Kikuchi, Kazuo Hike, Naotaka Torii, Eiko Kanda, Hidenori Karakata, Masahiko Susaizama, Kazumasa Miki*. Toho University, Tokyo, Japan.

**Purpose:** Glucose is readily absorbed in the proximal small bowel. In patients with gastrectomized patients, it was reported that 100% of the glucose ingested was absorbed before reaching the colon. Therefore, the fact that any peak of breath hydrogen (H2) and methane (CH4) excretion after ingestion of glucose is abnormal is the main advantage in terms of the interpretation of breath test using glucose. If bacteria exist in the small intestine, they will compete with the natural digestive process and metabolize the glucose before it can be absorbed. The aim of this study is to evaluate the prevalence of small bowel bacterial overgrowth in diabetic patients.

A standard 75 g oral glucose tolerance test (GTT) was performed in 56 subjects, 29 women and 27 men, aged 41–84 years. Subjects with previous gastric surgery were excluded. Patients treated with alpha-glucosidase inhibitors were also excluded in this study. The patients received 75 g (225 ml) of glucose solution in the sitting position after an overnight fast. Breath samples were collected at baseline and at 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, and 120 min after ingestion. Breath H2 and CH4 concentration was measured with breath analyzer TGA-2000 (TERAMECS, Kyoto). An increase of at least 10 ppm within a two-hour period is indicative of bacterial overgrowth. Venous blood samples were obtained before ingestion and at 30, 60, 90, 120 min and blood glucose and serum insulin concentrations were measured. In 6 (11%) of 56 patients, breath H2 concentrations were reached up to 10 ppm until 2 hours. Of the remaining 50 patients, 9 patients had a CH4 increase of more than 10 ppm. Overall, 15 (27%) patients were defined as small bowel bacterial overgrowth. The values of HbA1c were 7.2% higher in patients with diabetes than those without ($P < 0.001$). Besides, CD4 counts were significantly lower among individuals with diabetes than those without ($P < 0.001$).

**Conclusions:** Using hydrogen breath test, small bowel bacterial overgrowth was found in 6 (11%) of 56 patients, 29 women and 27 men, aged 41–84 years. Subjects with previous gastric surgery were excluded. Patients treated with alpha-glucosidase inhibitors were also excluded in this study. The patients received 75 g (225 ml) of glucose solution in the sitting position after an overnight fast. Breath samples were collected at baseline and at 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, and 120 min after ingestion. Breath H2 and CH4 concentration was measured with breath analyzer TGA-2000 (TERAMECS, Kyoto). An increase of at least 10 ppm within a two-hour period is indicative of bacterial overgrowth. Venous blood samples were obtained before ingestion and at 30, 60, 90, 120 min and blood glucose and serum insulin concentrations were measured. In 6 (11%) of 56 patients, breath H2 concentrations were reached up to 10 ppm until 2 hours. Of the remaining 50 patients, 9 patients had a CH4 increase of more than 10 ppm. Overall, 15 (27%) patients were defined as small bowel bacterial overgrowth. The values of HbA1c were 7.2% higher in patients with diabetes than those without ($P < 0.001$). Besides, CD4 counts were significantly lower among individuals with diabetes than those without ($P < 0.001$).

182

**DISAPPOINTING SENSITIVITY AND SPECIFICITY OFANTIBODY TO TISSUE TRANSGlutaminase FOR CELIAC DISEASE IN CLINICAL PRACTICE**

Alex Novogradsky, M.D., Ian Weisberg, M.D., Julian Abrams, M.D., Beverly E. Diamond, D.S.W., Peter H. Green, M.D.*, Columbia University Medical Center, New York, New York.

**Purpose:** Serologic testing is important in triaging patients for biopsy to diagnose celiac disease. Initial reports of comparable sensitivity and specificity of the antibody to transglutaminase (tTG) and endomysial antibody (EMA) resulted in replacement of EMA determination by tTG in many laboratories. However, sensitivity and specificity have not been confirmed in clinical practice or among different commercial laboratories in the United States.

**Methods:** Patients seen from 2000–2003, who had a duodenal biopsy for celiac disease and tTG performed at the time of diagnosis were studied. Biopsies were reported as normal, partial villous atrophy (PVA), subtotal villous atrophy or total villous atrophy (TVA). Celiac disease was defined pathologically as intraepithelial lymphocytosis and crypt hyperplasia with villous atrophy, PVA (crypt/villous ratio 1.3–1.1), TVA (crypt/villous ratio < 1:1). Mode of presentation (classical vs. silent) and degree of villous atrophy were compared with serologic results. The results were then compared among different commercial laboratories.

**Results:** Of 145 patients, 120 were diagnosed with celiac disease via biopsy. 93 (64%) had a positive tTG. In patients with celiac disease, mean age was 47 yrs, F 68%, M 32%, 41% presented with the classical symptom of diarrhea and 59% had silent disease (anemia, bone disease, screening, neuropathy and incidental recognition on EGD). Biopsies showed TVA in 60% and PVA in 40% of samples. Sensitivity of tTG was 69%, specificity 60%, PPV 89%, NPV 29% (p = 0.057). There was no association between a positive serology and site of presentation (sensitivity: 66.7% with diarrhea vs. 71% with silent disease). However, a strong association was noted between a positive tTG and degree of villous atrophy (sensitivity: 92% TVA vs. 35% PVA). When examined among different commercial laboratories (n = 5, data analyzed for 3 lab groups), the sensitivity varied from 50–85% and specificity ranged from 35–100%. The laboratory with the highest specificity had the lowest sensitivity, and vice-versa.

**Conclusions:** Sensitivity and specificity of the antibody to tTG is less than previously reported. Sensitivity depends on pathologic severity rather than mode of presentation. There is large variability in sensitivity and specificity of tTG among clinical laboratories in the United States. Reliance solely on a positive tTG for diagnosis may miss patients who have celiac disease and benefit from treatment.

183

**THE NATURAL HISTORY AND MANAGEMENT OF SMALL BOWEL MALIGNANCIES**

Beverly E. Diamond, M.S.W., Peter H. Green, M.D., H. Cody Shook, M.D., Fougansakum Ayoade, M.D., Scott Tenner, M.D., M.P.H.*. Downstate Medical Center, State University of New York, New York, New York.

**Purpose:** Improvements in imaging has led to an increased recognition of small bowel malignancies. Due to the subtle signs and symptoms that occur, diagnosis is often delayed until the disease has reached an advanced stage. Treatment varies, depending on the location, stage and pathology. We report our experience with a consecutive series of patients found to have small bowel malignancies.

**Methods:** A review of all patients’ charts admitted with small bowel malignancies over a 10 year period were studied. Patients were contacted for additional information if needed. Demographic, diagnostic and therapeutic information was collected. A database was created and variables subjected to multiple regression and ANOVA.

**Results:** Between 1993–2003, forty-two patients, mean age 70.9 (SD 10.9), range 31–87 years were identified as having small bowel malignancies. There were 34 male and 8 female patients, 75% caucasian. Twenty-six patients had adenocarcinoma, 6 carcinoid, 4 lymphoma, and 6 leiomyosarcomas. Presenting signs and symptoms included abdominal pain, iron deficiency anemia, unexpected weight loss and incidental finding on imaging. When subjected to multiple regression, outcome was not related to age, gender, race, family history, delay in diagnosis, delay in initiating treatment, pathology of the lesion, or stage of disease. However, patients treated with a combination of
surgery and chemotherapy were more likely to survive greater than 1 year (p > 0.05).

Conclusions: Although more common in the elderly, small bowel malignancies, especially lymphomas, can occur at any age. Males are more commonly affected. The most common malignancy is adenocarcinoma. Survival is not affected by demographics, family history, tobacco use, delay in treatment, stage of disease or pathology. Patients are best managed with a combination of chemotherapy and surgical intervention, regardless of the etiology.

184

TUBE FEEDING ADVANCE DIRECTIVE RECOVERING FROM ACUTE ILLNESS

Purpose: In approaching the end of life, many decisions need to be made. And that is usually not a good time to make such decisions because of the illness or the change of mentation. Advance directives are forms in which the individuals would express their wish while they are still healthy or alert. However, it is not clear whether the advance directive that an individual filled out before, would express the same wish while the individual is acutely ill. The objective of this study is to answering whether there is a difference in advance directive of tube feeding in patients who are recovering from an acute illness as compared with the advance directive of tube feeding while they were healthy before.

Methods: Patients at Convenant Village, a nursing in Northbrook, Chicago and in a Transition Care Unit (TCC) at ENH Hospital were interviewed. After an informed consent and a HIPPA form are signed, patients’ mental status was assessed with MMS. Only those patients with a normal mental status were included in the study. The general advance directive questions of intubation, cardiopulmonary resuscitation (CPR) and organ donation were asked. Then the question of feeding tube placement for nutrition was asked. A Vignette from J.G. Ouslander of 11 pictures of tube feeding were shown and explained to the patients. Then the question of feeding tube placement for nutrition was again asked to the patients.

Results: Total of 130 patients were interviewed: 107 from Convenant Village nursing home and 23 from TCC. Within the own group, the change from ‘yes’ to tube feeding before and after the presentation of the Vignette did not reach statistical significance in either group. However, there was a big difference between the group recovering from acute illness and the nursing home group, in favoring tube feeding, either before or after the Vignette presentation.

Conclusions: Patients recovering from acute illness tend to favor tube feeding possibly because they understand its importance. These findings also suggest that advance directive needs to be re-evaluated after a patient has undergone and recovered from a major illness since a major illness tends to change a patient’s perspective about the importance of feeding tube.

<table>
<thead>
<tr>
<th></th>
<th>ENH Hospital</th>
<th>Convenant NH</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD includes tube feeding</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Understanding definition of tube feeding</td>
<td>13</td>
<td>28</td>
<td>41</td>
</tr>
<tr>
<td>Want tube feeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>28</td>
<td>41</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>28</td>
<td>56</td>
</tr>
<tr>
<td>Want tube feeding in light of vignette</td>
<td>10</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>Yes</td>
<td>10</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>90</td>
<td>103</td>
</tr>
</tbody>
</table>
have an 18 cm piece of nasogastric tube that had perforated the duodenal bulb posteriorly and re-entered the jejunum (Fig. 1). Removal of the nasogastric tube led to complete resolution of pain.

Case 2, an 82 year old white male, developed epigastric pain. VCE showed an erythematous and stenotic area in the jejunum. A 4 cm splinter of wood was removed from that area by push enteroscopy.

Case 3, a 54 year old white male, presented with severe periumbilical pain and anemia. A CT scan showed intussusception in the mid small bowel. VCE detected a metallic pin lodged in the wall of jejunum that was thought to be the cause of a hematoma which in turn caused the intussusception. The patient is asymptomatic and the pin remains in place.

Case 4, a 70 year old white male, a duodenal Dieulafoy patient is asymptomatic and the pin remains in place.

A history of ingestion of a foreign body was negative in all cases.

Conclusions: Foreign bodies in small bowel can cause abdominal pain and anemia. VCE may be a valuable diagnostic tool in such cases. This series is the first to document the role of VCE in localizing foreign bodies in the small bowel.[figure1][figure2]

186
INCOMPLETE SMALL INTESTINAL TRANSIT AND THE RETAINED VIDEO-CAPSULE: A CLOUD WITH A SILVER LINING
Ritu M. Sachdev, M.D., David R. Cave, M.D.*. Caritas St Elizabeth’s Medical Center, Brighton, Massachusetts.

Purpose: Capsule endoscopy (CE) has emerged as a primary imaging modality for the small bowel for the diagnosis of obscure gastrointestinal bleeding, diarrhea and severe unexplained abdominal pain. Incomplete studies are common and a cause for concern. However, the diagnostic yield of incomplete studies has received little discussion.

Methods: We reviewed 282 consecutive CEs from 8/21/01 to 7/29/03 for with incomplete capsule transit through the small intestine without a visible cause and capsule retention at a structural abnormality. All CEs with failure to visualize the ileo-cecal valve were eligible for study. These data was analyzed to see if any diagnostic information was obtained. These were further categorized based on the findings as Group 1. Slow transit without obvious cause. Group 2. Retention at a stricture or mass Group 3. Failure to image beyond the pylorus.

Diagnostic yield
Category of retention Diagnostic yield
Group 1or Slow transit group 67%
Group 2 or Stricture/mass group 100%
Group 3 or Failure group 0%

Results: 64/282 (23%) videos showed incomplete examination of the small intestine.

Group 1: 27/64 (42%) had incomplete transit of the capsule. 18/27 had luminal abnormalities and 6 of these patients had active bleeding localized. 9 studies were negative. 1 patient underwent intra-operative enteroscopy for control of bleeding.

Group 2: 25/64 (39%) had capsule retention at a stricture (23) or a mass (2). 3/25 under went surgery because of the VCE findings. One patient did not have a stricture confirmed at laparotomy. 3/25 patients had a laparotomy to treat the cause of retention and remove the capsule. Prior to CE, two of these patients had had recurrent small bowel obstruction of unknown cause. The remaining 13 patients had changes in management based on capsule findings.

Group 3: 12/64 (19%) were failures. Capsules were retained in a Zenker’s diverticulum (1), in the esophagus (1), in the stomach (9), one was a technical failure. 6/12 patients had endoscopic placement of the capsule subsequently.

Overall, 44/64 (69%) incomplete CEs provided useful diagnostic data. Of these, 17/64 (23%) had subsequent surgical intervention. If those with complete failures are excluded, the diagnostic yield increases to 84% (43/52).

Conclusions: The diagnostic yield of incomplete CE is comparable to complete CE studies.

[11 patients had 2 studies and 2 patients had 3 studies each.]

187
TRENDS IN CLINICAL PRESENTATION OF CELIAC DISEASE FROM 1952–2004

Purpose: Screening studies have revealed celiac disease (CD) to be common in the US, however there is scant data on the mode of presentation. We analyzed the trends in clinical presentation over the last 52 years in a large cohort of biopsy-proven patients seen in one center.

Methods: Patients (n = 590) were divided into 6 groups, based on year of diagnosis (1952–2004). Groups were compared for trends in age at diagnosis, childhood diagnosis, duration of symptoms, mode of presentation (diarrhea, bone disease, anemia, incidental at EGD, screening) and presence of malignancy.

Results: There was a highly significant negative linear trend (p < 0.001) in presentation with diarrhea over time and a positive linear trend (p < 0.001) in asymptomatic patients detected by screening. There was no statistical significance over time in those presenting with bone disease, anemia incidentally at EGD. Diagnosis was at an older age since 1980 (p = 0.007) and there was a significant negative linear trend in the percentage of patients with a childhood diagnosis (p = 0.03) and malignancy (p = 0.02). When comparing those with and without diarrhea, there was no statistical difference in age (42.9 vs 43.7 yr, p = 0.59), gender (29.3% M vs 34.6% M, p = 0.59), presence of childhood CD (8.0% vs 9.8%, p = 0.43) or malignancies (9.8% vs 8.9%, p = 0.71). Lastly, over the 52 years there has been a markedly significant negative linear trend in duration of symptoms (p = 0.001).

Conclusions: These trends data reveal that patients are being diagnosed with CD for the first time as adults, at an older age and with a shorter duration of symptoms. Fewer present with diarrhea and more are detected through screening. The majority of patients now present as “silent” CD.

Clinical Presentation of CD Patients from 1952 to 2004

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>30.5</td>
<td>40.3</td>
<td>45</td>
<td>44</td>
<td>44</td>
<td>42</td>
</tr>
<tr>
<td>Childhood CD (%)</td>
<td>30</td>
<td>7</td>
<td>6</td>
<td>6.7</td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td>Diarrhea (%)</td>
<td>91.3</td>
<td>71.4</td>
<td>72.6</td>
<td>58.3</td>
<td>42.4</td>
<td>37.2</td>
</tr>
<tr>
<td>Incidental Dx (%)</td>
<td>0</td>
<td>0</td>
<td>6.1</td>
<td>5</td>
<td>9</td>
<td>4.6</td>
</tr>
<tr>
<td>Screening (%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>12.2</td>
</tr>
<tr>
<td>Bone Disease (%)</td>
<td>0</td>
<td>0</td>
<td>15.1</td>
<td>3.3</td>
<td>7.3</td>
<td>8.1</td>
</tr>
<tr>
<td>Anemia (%)</td>
<td>4.3</td>
<td>7.1</td>
<td>3</td>
<td>11.7</td>
<td>9.4</td>
<td>12.7</td>
</tr>
<tr>
<td>Malnangency (%)</td>
<td>21.7</td>
<td>0</td>
<td>15.2</td>
<td>10</td>
<td>10.4</td>
<td>5.2</td>
</tr>
<tr>
<td>Delay in Diagnosis (yrs)</td>
<td>11</td>
<td>10.6</td>
<td>6.4</td>
<td>4.6</td>
<td>4.2</td>
<td>4</td>
</tr>
</tbody>
</table>

188
GIVEX® PATENCY SYSTEM IS A NEW DIAGNOSTIC TOOL FOR VERIFYING FUNCTIONAL PATENCY OF THE SMALL BOWEL
Guido Costamagna, F.A.C.G.*; Cristiano Spada, M.D.; Gianluca Spera, M.D.; Maria Elena Riccioli, M.D.; Livio Biancone, M.D.; Francesco Pallone, F.A.C.G., J. Herreries, M.D., H. Lochs, M.D., S. Schreiber, M.D., N. Reddy, M.D., P. Rutgeerts, M.D., W. Selby, M.D. Catholic University; Tor Vergata University, Rome, Italy; Hospital Virgen de la Macarena, Seville, Spain; Medizinische Klinik, Berlin; Univers. Hospital Schleswig Holstein, Kiel, Germany; Asian Institute of Gastroenterol, Hyderabad, India; Univers. Hospital Gasthuisberg, Leuven, Belgium and Sydney Royal Prince Alfred Hosp., Sydney, Australia.
Purpose: Video capsule endoscopy (VCE) has recently been proposed for visualizing the small bowel (SB). SB strictures may interfere with capsule passage and contraindicate its usage. Traditional radiology does not always reveal SB patency for solids such as the VCE. Aim: to assess the ability of the Given® Patency System to verify functional SB patency in patients with suspected or confirmed SB strictures.

Methods: A multi-center trial was conducted in 7 sites. The Given® Patency Capsule is a non-video, single use capsule with dimensions identical to Given® Video Capsule. It is composed of lactose, remains intact in the GI tract for 40–100 hours, and disintegrates thereafter. The capsule contains a radio frequency ID tag enabling radiation-free detection of capsule presence in the GI tract with the Given® Patency Scanner. Patency capsules were ingested by 85 patients, 80 of them with SB strictures indicated by conventional radiology (61% with Crohn’s disease). The Patency Capsule presence in the GI tract was checked with the Patency Scanner. Its integrity, progression, and passage time were monitored with radiology. When patients tested positively for functional patency, they ingested a Given® Video Capsule.

Results: All patients swallowed the capsule smoothly. In 80 patients with radiology confirmed strictures, the capsule was excreted intact in 39 (49%), and non-intact in 41 (51%). In 5 patients with suspected intestinal stricture, the Patency Capsule was excreted intact. Twenty of the 85 patients experienced abdominal pain (5 mild, 10 moderate, 5 severe), resolved either with or without treatment. Thirty-three patients who tested positively for functional patency, ingested the Given® Video Capsule that passed naturally in all cases.

Conclusions: The Given® Patency system is a simple, radiation-free and effective method for assessment of functional patency of the small bowel. It can indicate functional patency for Given® Video Capsule passage even in cases where traditional radiology indicates stricture.

189

INCIDENCE OF UPPER GASTROINTESTINAL ULCERATION ASSOCIATED WITH INTRA-ARTERIAL YTTRIUM-90 MICROSPHERES
Sidney G. Smith, M.D., Richard S. Bloomfeld, M.D.*. Wake Forest University, Winston Salem, North Carolina.

Purpose: Yttrium-90 (Y-90) glass microspheres can be administered through the hepatic artery to deliver local radiation therapy in the treatment of both non-resectable primary and metastatic hepatic malignancies. Intra-arterial administration of radiation allows higher doses of radiation to be delivered directly to the tumor than could be achieved safely by external radiation treatment. Documented adverse events related to this treatment include upper gastrointestinal (GI) ulceration, which has been felt to be due to the aberrant distribution of the radioactive microspheres within the gastroduodenal circulation.

The purpose of our study is to determine the incidence of upper gastrointestinal ulceration in patients treated with intra-arterial Y-90 microspheres for either primary or metastatic hepatic malignancies.

Methods: We identified all patients who underwent hepatic arterial delivery of Y-90 glass microspheres at our institution over a one year period (January 2002 to December 2002). We retrospectively reviewed the medical records and communicated with the patient or a family member familiar with their medical course. A total of 47 patients received treatments from 1 to 4 times each. All patients had pre-treatment evaluation with hepatic arteriography and a technetium-99 labeled hepatic artery perfusion study. Complete medical follow-up was available for 35 patients.

Results: 9 of the 30 patients developed abdominal pain, nausea/vomiting, or upper gastrointestinal bleeding that required evaluation with upper endoscopy. 5 patients had severe upper GI ulceration on endoscopy that was felt to be due to treatment with Y-90 microspheres. In one patient, microspheres were identified on microscopic examination of tissue obtained from the ulcer base confirming that the etiology of the ulcer was extrabiliary. Conclusion: Intraarterial administration of Y-90 microspheres is associated with a significant risk of upper gastrointestinal ulceration, with an incidence of 16.7% (5/30) in our series.

190

SMALL BOWEL TUMORS DETECTED BY M2A® CAPSULE ENDOSCOPY
Gregory D. Schwartz, M.D., Jamie S. Barkin, M.D.*, “Given Imaging Tumor Study Group.” Mt. Sinai Med. Center, Univ. Miami School of Medicine, Miami Beach, Florida.

Purpose: Small bowel tumors (SBTs) are traditionally difficult to diagnose because of their endoscopic inaccessibility. This has been overcome by the use of the M2A® Capsule (Given Imaging, Yooqneam, Israel). The purpose of this report is to describe the largest series of pts with SBTs detected by capsule endoscopy.

Methods: Population: 72 pts (49 males and 23 females; mean age 59.6 years, range of age 20–85 years) from the Given Imaging clinical database diagnosed with 73 histologically confirmed SBTs, 1 cecal tumor, and 1 gastric tumor. 71% (51/72) of pts were referred for capsule endoscopy (CE) for obscure GI bleeding and 29% (21/72) were referred for anemia, polyps, and/or abdominal pain. These 72 patients had previously undergone 334 negative procedures (average of 4.6 per patient). This included 115 colonoscopies, 111 upper endoscopies, 32 small bowel follow through procedures, 24 enteroscopies, 17 CT scans, 16 enteroclysis procedures, 6 nuclear bleeding scans, 5 angiographies, 5 plain abdominal x-rays, 1 abdominal ultrasound, 1 Meckel’s scan, and 1 laparoscopy.

Results: There were 97% (73/75) small bowel tumors, 1% (1/75) cecal tumors, and 1% (1/75) gastric tumors. The 37 reported SBTs were located in the duodenum (4), jejunum (40), ileum (15), and not specified (14). Malignant tumors were found in 65% (49/75) and benign 35% (26/75). The most common malignant SBTs were adenocarcinoma 35% (17/49), carcinoid 31% (15/49), melanomas 10% (5/49), lymphomas 8% (4/49), sarcomas 8% (4/49) and other 8% (4/49). The most common benign SBTs were GIST 58% (15/26), hemangiomas 15% (4/26), hematomas 8% (2/26), adenomas 8% (2/26), and other 8% (2/26).

Conclusions: M2A® capsule endoscopy detected SBTs after patients had undergone an average of 4.6 negative evaluations. The most common indication for the M2A® CE was obscure GI bleeding (71%). The majority of SBTs were malignant (65%), consisting of adenocarcinomas, carcinoids, melanomas, lymphomas, and sarcomas. The benign SBTs (35%) were GISTs, hemangiomas, hematomas, and adenomas.

Summary: M2A® capsule endoscopy is the diagnostic procedure of choice for diagnosis of small bowel tumors.

191

CELIAC DISEASE: ELEVATION OF THE ESR AND ITS RESPONSE TO A GLUTEN-FREE DIET

Purpose: Celiac disease (CD) is an inflammatory disease of the small intestine. Because the erythrocyte sedimentation rate (ESR) is a marker of inflammatory disease, we evaluated whether there was a difference in ESR before and after diagnosis of CD and after treatment with a gluten-free diet (GFD).

Methods: A database at a CD referral center was analyzed. Biopsy-proven patients with CD who had ESR values measured prior to and after a GFD were assessed. Patients were divided into two groups based on ESR value prior to the initiation of a GFD: ESR ≥ 50 and ESR < 50. The mean change in ESR pre- and post-GFD was calculated for each group. In addition, hemoglobin (Hg) levels, small bowel biopsy and celiac antibody titers were also analyzed.

Results: Of 590 patients, 74 had both pre- and post-GFD ESR values. In this group as a whole, the mean ESR pre-diagnosis was 29.1 ± 35.6 and
post-diagnosis was 14.9 ± 17.4 (p = 0.001) with corresponding Hg values of 12.9 ± 1.2 g/dL and 13.2 ± 1.3 g/dL (p = 0.012). In the subgroup of 14 patients with ESR ≥ 50, pre-diagnosis ESR was 91.7 ± 35.8 (range 50–154) while ESR after GFD was 20.5 ± 18.9 (p = 0.0001). Corresponding Hg values were 11.7 ± 1.0 g/dL and 12.9 ± 1.6 g/dL (p = 0.02). In the remaining 60 patients with ESR < 50, mean pre-diagnosis ESR was 14.5 ± 12.0 and post-diagnosis ESR was 13.6 ± 17.0 (p = 0.725); corresponding Hg values were 13.1 ± 1.2 g/dL and 13.3 ± 1.3 g/dL (p = 0.093). The fall in ESR was accompanied by an improvement in histology and decrease in antibody titer.

**Conclusions:** This study indicates that CD is an inflammatory bowel disease with systemic inflammatory manifestations as evidenced by elevation of the ESR, including values > 100. The ESR decreases on a GFD concomitant with improvement in Hg level, histology and antibody titer. Therefore, CD should be considered in the differential diagnosis of an elevated ESR.

Pre and Post Diagnosis ESR Values and Hg Levels in Patients with CD

<table>
<thead>
<tr>
<th></th>
<th>Mean pre-ESR</th>
<th>Mean post-ESR</th>
<th>p’</th>
<th>Mean pre-Hg</th>
<th>Mean post-Hg</th>
<th>p’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (n = 74)</td>
<td>29.1 ± 35.6</td>
<td>14.9 ± 17.4</td>
<td>0.001</td>
<td>12.9 ± 1.2</td>
<td>13.2 ± 1.3</td>
<td>0.002</td>
</tr>
<tr>
<td>ESR ≥ 50 (n = 14)</td>
<td>91.7 ± 35.8</td>
<td>20.5 ± 18.9</td>
<td>0.001</td>
<td>11.7 ± 1.0</td>
<td>12.9 ± 1.6</td>
<td>0.02</td>
</tr>
<tr>
<td>ESR &lt; 50 (n = 60)</td>
<td>14.5 ± 12.0</td>
<td>13.6 ± 17.9</td>
<td>0.725</td>
<td>13.1 ± 1.2</td>
<td>13.3 ± 1.3</td>
<td>0.003</td>
</tr>
</tbody>
</table>

**192**

**RELATIONSHIP BETWEEN METHANE PRODUCTION AND BREATH HYDROGEN EXCRETION FOLLOWING INGESTION OF LACTULOSE**

Yoshisato Utita, Yoshinori Kikuchi, Kazuo Hike, Naotaka Torii, Eiko Kanda, Hidenori Karakata, Masahiko Sasaki, Kazumasa Miki*. Toho University, Tokyo, Japan.

**Purpose:** Breath hydrogen (H2) and methane (CH4) concentrations were used as a marker of colonic fermentation by gut flora in previous studies. Bacteria represent the sole source of gut H2, making this particular gas attractive for the identification of bacterial overgrowth states. In patients who had hydrogenic or methanogenic bacteria in the stomach, H2 or CH4 gases should be produced and consumed by their bacteria following ingestion of carbohydrates.

**Method:** A total of 82 consecutive patients (mean age 62.7 years, M/F = 50/32) admitted electively to our hospital for diagnostic nonemergency colonoscopy agreed to participate in this study. All patients were allowed to continue their usual diet until the day before the procedure and were not advised to avoid any liquids. After fasting overnight and collecting a 100 ml of breath sample, at 9:00 a.m. patients were told to ingest PEG, containing 12g lactulose, 50 ml every 5 minutes for 2 hours. During ingestion of PEG, breath samples were taken at 15-min intervals for 240 min. Breath hydrogen concentration was measured and expressed in parts per million (ppm).

**Results:** Subjects were defined as H2 producers if they increased their breath H2 by 10 ppm after ingestion of lactulose. In 18 (38%) of 47 H2 producers, breath CH4 concentrations were reached up to 10 ppm until 4 hours. In contrast, only one (3%) of 35 H2 non-producers increased their breath CH4 concentrations over 10 ppm. There was no significant difference in fasting breath CH4 concentration between two groups. Fasting breath CH4 concentration more than 10 ppm was found in one (2%) of 47 H2 producers and in 3 (9%) of 35 H2 non-producers. There was a positive correlation between the magnitude of rise in H2 and CH4 concentrations after ingestion of 12 g lactulose. The CH4 excretion curves were significantly higher in H2 producers at 60 min and later.

**Conclusions:** These data suggested that attention to CH4-producing status is not necessary in the interpretation of the lactulose H2 breath test.

**193**

**LIVER FUNCTION TESTS ABNORMALITIES AS PRESENTATION OF CELIAC DISEASE IN THE ADULT: THE GREAT IMITATOR STRIKES AGAIN**


**Purpose:** Celiac disease is a genetically inherited autoimmune disorder triggered by dietary gluten, that damages the intestinal villi in the proximal small intestine. It may run as a pleomorphic condition and misunderstandings about it result in critical delays in diagnosis. “Chronic hepatitis” has a disputable prevalence in celiac disease, but is uncommon as presenting feature in an adult with previously unrecognized celiac disease.

**Methods:** We present a clinical series of 4 cases (3 females, aged 30, 40 and 71, and 1 male aged 22) that presented to the liver outpatient clinic with persistent liver function tests (LFT) abnormalities.

**Results:** We describe their clinical features, endoscopic pattern, histology and serology, and their favorable evolution with LFT normalization after introducing a gluten free diet.

**Conclusions:** We conclude that although intestinal manifestations are considered classical symptoms, liver abnormalities may be the presenting feature and should remind the clinician that a hidden celiac disease has to be sought by appropriate tests and intestinal biopsy.

**194**

**BLEEDING MECKEL’S DIVERTICULUM DIAGNOSED BY CAT SCAN (CT) ANGIOGRAPHY**

Sadiya Sarji, M.D., Victor Scarmato, M.D., Seymour Katz, M.D.*. North Shore University Hospital-NYU School of Medicine, Manhasset, New York.

**Introduction:** Meckel’s diverticulum is the most common congenital anomaly of the gastrointestinal tract. Meckel’s diverticulum may cause complications such as perforation, hemorrhage, inflammation, intestinal obstruction or development of neoplasia. We report a case of recurrent hemorrhage from Meckel’s Diverticulum diagnosed by CT angiography.

**Case Report:** A 20-year-old male with Down’s syndrome presented with repeated episodes of melena and hematocritia for two months. There was no history of hematemesis, jaundice, or non-steroidal anti-inflammatory drug (NSAID) use. His only medication was a proton pump inhibitor (PPI), started empirically on his initial presentation with melena. Initial work-up included gastric aspirate, which was devoid of blood. Endoscopy, colonoscopy, small bowel x-ray, capsule study, scintigraphy and Meckel scans were all negative. The CT angiogram with multiphase reconstruction revealed an enhancing mass in the bowel suspicious for a gastrointestinal stromal tumor or a Meckel’s diverticulum with an enlarged feeding artery. A Meckel’s Diverticulum was found on laparotomy.

**Discussion:** The diagnosis of Meckel’s diverticulum is difficult and it is infrequently diagnosed before surgery. The Meckel scan is considered to be the technique of choice in children since most symptomatic diverticula in children contain ectopic gastric tissue. However, the accuracy falls dramatically in adults. To our knowledge, the CT angiographic appearance of Meckel’s Diverticulum has not been described previously. This case demonstrates the usefulness of CT angiography in the detection of Meckel’s diverticulum.

**195**

**UNDIAGNOSED CELIAC DISEASE: A RISK FACTOR FOR CANCER: A CASE SERIES**

Vikas Khurana, M.D., F.A.C.G.*, Gavin Chico, M.D. Overton Brooks VA Medical Center and DRCHC, Shreveport, Louisiana.

**Introduction:** Celiac disease is an immuno-inflammatory disease that occurs in children, adults and the elderly. Untreated celiac disease carries the risk of increased mortality from associated lymphoproliferative and gastrointestinal cancers. The purpose of this case series is to propose an association between malignancy and celiac disease in patients that present with them simultaneously.

**Case 1** A 77 year old man with a history of dermatitis herpetiformis and lymphoma presents with 2-year history of intermittent abdominal pain, vomiting and weight loss. Endoscopy showed a dilated stomach with narrowed duodenum and biopsy revealed villous atrophy. The antidiomysial antibody (AEAb) was 84 units (nl < 20 units). Exploratory laparotomy revealed...
an indurated duodenum constriction. The biopsy of the pancreas revealed adenocarcinoma. Patient underwent a Whipple’s resection with cure.

**Case 2** A 68 year old man with history of myasthenia gravis presents with one-year history of malodorous loose bowel movements and a weight loss. CT scan showed multiple liver lesions and biopsy revealed hepatocellular carcinoma. The upper endoscopy showed severe villous atrophy and AEAeb was 175 units. The diarrhea resolved on a gluten free diet, however the patient was deemed unresectable.

**Case 3** A 66 year old man with history of esophageal strictures presents with one year history of intermittent diarrhea and weight loss. CT scan showed right kidney infiltrating lesion. Fine needle biopsy revealed renal cell carcinoma. Endoscopy showed scapping and edema at the duodenal bulb with normal villi on biopsy. However, the AEAeb was elevated at 26 units. Patient underwent a radical nephrectomy and was begun on gluten free diet with good results.

**Discussion:** The diagnosis of celiac disease is often missed in the elderly because the symptoms are non-intestinal and are often attributed to their co-morbidities. An increased cancer incidence in celiac disease is due to lymphocyte proliferation, inflammatory cytokines and increased permeability to oncogenic factors. Treatment by gluten free diet reduces the risk of malignancy.

**Conclusion:** Celiac disease is associated with significant morbidity and an increased risk of cancer. An early diagnosis and prompt implementation of therapy can prevent short and long-term complications including malignancy. Heightened awareness and early diagnosis will have a significant impact on the health care of the elderly.

---

**196**

**CLINICAL UTILITY AND TOLERABILITY OF CAPSULE ENDOSCOPY IN AN INNER-CITY POPULATION IN THE UNITED STATES**

Gilbery Simoni, M.D., Robert S. Spira, M.D., F.A.C.G.*, Joseph R. DePasquale, M.D., F.A.C.G. Seton Hall University, School of Graduate Medical Education, South Orange, New Jersey and St. Michael’s Medical Center, Newark, New Jersey:

**Purpose:** To evaluate the utility of Capsule Endoscopy (CE) in an inner-city population.

**Methods:** Our study was performed at St. Michael’s Medical Center, a 325 bed teaching hospital in downtown Newark, NJ. We used the Given Imaging (M2A) capsule endoscopy system in 22 consecutive patients with suspected small bowel pathology. Seventeen (77%) patients were referred for evaluation of obscure gastrointestinal bleeding, 3 (14%) patients for assessment of the extent of small bowel involvement in Crohn’s disease, one (4.5%) patient for evaluation of recurrence and/or extension of colon cancer, and one patient (4.5%) for evaluation of chronic abdominal pain.

**Results:** Abnormal findings were present in 18 patients (82%). The cause of obscure gastrointestinal bleeding was determined in 15 out of 17 (88%) patients. Findings included 7 (41%) cases of angiodysplasia, 2 (12%) cases of jejunal or ileal ulcers and 4 (23%) cases of both angiodysplasia and erosions. One (6%) patient with history of colon cancer had small jejunal angiodysplasia and the CE of the one (6%) patient with chronic abdominal pain was normal. Duodenal diverticulum was found in 2 patients, in one of which the capsule was entrapped for more than 4 hours, and subsequently capsule passed spontaneously after 12–14 hours. Of the 4 (18%) normal studies, two patients were being evaluated for obscure GI bleed, one patient with chronic abdominal pain, and one patient for Crohn’s disease involvement of small bowel. There was no reported complications or adverse events associated with capsule endoscopy and it was well tolerated by all patients.

**Conclusions:** Our study demonstrates that CE is safe and well-tolerated diagnostic tool for patients suspected of having small bowel pathology in an inner-city setting. Further studies are needed for evaluation of cost-effectiveness of capsule endoscopy in this setting.

---

**197**

**FREQUENCY OF GASTROINTESTINAL SYMPTOMS IN AN ADULT CYSTIC FIBROSIS POPULATION**

Chad E. Paschall, M.D., Mary E. Kleinheinz, M.D., Frank R. Burton, M.D., Charlene M. Prather, M.D.*. St. Louis University, St. Louis, Missouri.

**Purpose:** The care of cystic fibrosis (CF) patients continues to improve with many surviving well into adulthood. Although gastrointestinal (GI) symptoms occur commonly in pediatric CF patients, there are no studies regarding the epidemiology, presentation, or severity of GI symptoms in the adult CF population. The aim of this study was to assess the frequency and severity of GI symptoms in an adult CF population.

**Methods:** A validated GI symptom questionnaire was administered to adult CF patients currently followed at the Saint Louis University Pulmonary Clinic. Subjects were recruited at their regularly scheduled quarterly medical screenings and asked to complete the questionnaire during that visit. The subject’s charts were also reviewed for additional information including severity of pulmonary disease, medication usage, and nutritional status.

**Results:** 29 subjects have completed the questionnaire thus far. 18 are male and 11 are female. Age range is 18 to 67 years (median 32). Range of BMI was 16.8 to 34.8 (median 22.0). 45% are currently on a PPI or H2 blocker. 72% are taking pancreatic enzymes and 21% are taking fiber or laxatives. 86% of the subjects reported at least one GI symptom. The most commonly reported symptom was abdominal pain with 83% reporting abdominal pain other than menstrual cramps within the last year. 71% of these patients reported having abdominal pain more than six times in the last year and 29% rated their abdominal pain as severe to very severe. Symptoms of gastroesophageal reflux disease (GERD) were also common. 55% reported symptoms of GERD. 50% of those with GERD symptoms experienced these symptoms at least once a week. Other frequent GI complaints included changes in bowel habit (59%), bloating (38%), weight loss (28%), and nausea (21%). Those patients with FEV1/FVC < 70 had an average of 2.5 GI symptoms and those with FEV1/FVC < 70 had an average of 3.4 GI symptoms (p = 0.15).

**Conclusions:** GI symptoms are very common in this adult CF population, including abdominal pain, alteration in bowel habits, and symptoms of reflux disease. There is a trend towards patients with more GI symptoms having worse lung function. Clinicians caring for CF patients should consider screening their patients for GI symptoms.

---

**198**

**THE SPECTRUM OF INFLAMMATORY CHANGES INVOLVING THE SMALL INTESTINE AS SEEN ON WIRELESS CAPSULE ENDOSCOPY: 18-MONTH EXPERIENCE IN A PRIVATE GI PRACTICE**


**Purpose:** The course, extent, and degree of many small bowel inflammatory diseases are unknown. Wireless Capsule Endoscopy (WCE) is a novel, non-invasive procedure to evaluate the entire small intestine, and may give us a better understanding of the natural history of these diseases.

**Methods:** A retrospective analysis was performed on 46 patients with inflammatory changes out of a total of 80 patients who underwent WCE with the M2A capsule between January 2003 and June 2004. There were 26 females and 20 males; average age 53 (range 11–86). All patients underwent EGD and Colonoscopy, most had Ileoscopy and Small bowel series, all within 1 year prior to their study. All studies were reviewed by 4 independent readers. Inflammatory lesions described included, erythema, edema, nodularity, ulcer, stenosis, and villous atrophy (scapping and mosaic pattern).

**Results:** 22 patients had Obscure GI blood loss (13 occult; 9 overt), 13 Indeterminate Colitis, 9 Chronic Abdominal pain & Diarrhea, and 2 polyposis. 14 patients reported NSAID use within the last month, but none 1 week prior to their study. Average small bowel transit (SBT) was 244 minutes.
The capsule reached the cecum in 43/46 cases. The capsule was retained in 1 patient (to date-4 months). In 9/13 patients with Indeterminate Colitis the diagnosis was changed to Crohn’s disease, 3 with diffuse involvement of the small intestine. In 7 patients, the diagnosis of Crohn’s was considered possible. 10 patients had findings attributed to NSAID use, 1 with diffuse involvement of the small intestine. 8 patients had findings consistent with Celiac Sprue (1 in the setting of Crohn’s), 3 with diffuse involvement of the small intestine. 12 patients had non-specific inflammatory changes. These findings prompted a change in medical management in 32/46 patients.

Conclusions: The extent and degree of inflammatory changes in the small bowel can now be easily evaluated. Findings on WCE led to a change in diagnosis and management in many patients. WCE should improve our understanding of the natural history of inflammatory bowel diseases.

**FINDINGS BY INDICATION**

<table>
<thead>
<tr>
<th>Indication</th>
<th>N = 46</th>
<th>Crohn’s Definite</th>
<th>Crohn’s possible</th>
<th>Nondiary Injury</th>
<th>Celiac Sprue</th>
<th>Non-Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBSCURE OCCULT</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>OBSCURE OVERT</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>I/C</td>
<td>13</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>ABDOMINAL PAIN/DIARRHEA</td>
<td>9</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>POLYPOSIS</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

199

**SMALL BOWEL DIVERTICULAR BLEEDING: AN INFREQUENT CAUSE OF OBSCURE-OVERT GASTROINTESTINAL BLEEDING**

Gregory S. Sayuk, M.D., Nirmal Veeramachaneni, M.D., Chandra Prakash, M.D.*. Washington University School of Medicine, St. Louis, Missouri.

**Purpose:** Obscure-overt gastrointestinal (GI) bleeding is diagnosed when routine upper endoscopy and colonoscopy fail to demonstrate the bleeding site in patients presenting with acute bleeding, and investigation of the small bowel is typically undertaken. During such investigation, small bowel diverticulosis may be encountered. Although small bowel diverticula are typically considered benign and incidental, we report a series of patients wherein bleeding was endoscopically localized to small bowel diverticula.

**Methods:** A review of the Washington University endoscopy experience over the past 12 years was performed to identify all patients with definitive endoscopic diagnosis of small bowel diverticular bleeding. Patient hospitalization records, including endoscopy and procedure reports were obtained and reviewed for demographic information, clinical presentation, endoscopy findings, laboratory test results, clinical course and outcomes.

**Results:** Three patients (1F:2M, median age 84 years, range 53–86 years) were identified wherein acute GI bleeding was endoscopically localized to small bowel diverticula. All patients presented with overt GI bleeding: one each with maroon stool and melena, and one patient with hematemesis and maroon stool. Two patients were on medications that affect coagulation (warfarin = 1, aspirin = 1). The diagnosis was made on enteroscopy in all instances, and multiple other endoscopic procedures had failed to identify the bleeding source. Bleeding diverticula were identified in the jejunum in two patients and duodenum in one patient. Stigmata of bleeding included spurring and oozing from within diverticula in two patients, and an adherent clot within a diverticulum in one patient. Endoscopic therapies (heater probe = 1, epinephrine injection = 2) were successful in achieving hemostasis in all patients, but recurrent bleeding necessitated surgical resection in one patient. All three patients survived to hospital discharge a mean of 11 ± 7 days after admission. Two patients died of unrelated causes 2 and 2.5 years after diagnosis, while the third is well 3 months after surgery. None had recurrent bleeding.

**Conclusions:** Small bowel diverticular bleeding is an unusual but potentially serious source of obscure-overt GI bleeding, and requires careful enteroscopy for diagnosis. Endoscopic therapy appears successful when the source can be definitively localized, though surgical resection may be necessary for recurrent bleeding.

200

**DOES THE PRESENCE OF PROXIMAL SMALL BOWEL ARTERIOVENOUS MALFORMATION PREDICT THE EXISTENCE OF DISTAL SMALL BOWEL ARTERIOVENOUS MALFORMATION?**


**Purpose:** Small bowel arteriovenous malformation (AVM) is a common cause of both occult and recurrent overt gastrointestinal bleeding. AVMs may be localized to either the proximal or distal small bowel or they may be found diffusely throughout the small bowel. Capsule endoscopy allows for the evaluation of the entire small bowel. The aim of this study was to evaluate whether the presence of an AVM in the proximal small bowel increases the likelihood of finding an AVM in the distal small bowel.

**Methods:** One hundred and one patients who underwent capsule endoscopy for the evaluation of either gastrointestinal bleeding or iron deficiency anemia from 3/03 to 4/04 at a tertiary care hospital in New York were evaluated. Patients were excluded if the capsule did not reach the cecum. Seventy patients (38F, 32M) were included in the study. AVMs were localized to either the proximal or distal small bowel based on the time relation with the initial small bowel image and the initial cecal image as well as the capsule position on the localization software.

**Results:** Small bowel AVMs were present in 31 (44.3%) patients. Twenty-seven of these patients had a proximal AVM. Five of the 27 patients (18.5%) with a proximal AVM had a coexisting distal AVM. In comparison, 4 of the 43 subjects (9.3%) without a proximal AVM had an isolated distal AVM (p = 0.22). Therefore, patients with proximal AVMs had a two-fold risk of having a simultaneous distal AVM (OR 2.2, 95% CI 0.53–9.12).

**Conclusions:** Patients with proximal small bowel AVMs have a clinical though not statistically significant risk of having a simultaneous distal small bowel AVM. A larger study is needed to evaluate if this clinical difference is significant.

201

**INTUSSUSCEPTION AS A CAUSE OF FEVER OF UNKNOWN ORIGIN**


Intussusception is a rare disease of the gastrointestinal tract. Typically associated with small bowel tumors, intussusception rarely presents without symptoms of abdominal pain, fever, nausea and vomiting. We report a case in which a patient with HIV developed a fever of unknown origin. After several days of persistent fever, a computed tomographic scan revealed ileocecal intussusception. The patient was a 47 year old female, with a history of HIV, who presented to the hospital with fever. The fever had been associated with chills, but there were no localizing signs or symptoms. She denied shortness of breath, headaches, visual disturbance, nausea, vomiting, diarrhea, and abdominal pain. On admission her temperature was 39 degrees C. Physical examination revealed no adenopathy, clear lungs, no murmur, and a soft, non-tender abdomen. Blood and urine cultures, and chest radiograph were normal. Intravenous gentamicin was begun. Five days after admission, with persistent fever, she progressively developed right lower quadrant abdominal pain associated with nausea and vomiting. Physical examination was now remarkable for marked tenderness in the right lower quadrant. Abdominal CT scan revealed ileocecal intussusception with a small fluid collection adjacent to the appendix. She underwent a laparotomy and an intussusception was removed. Pathology revealed changes consistent with a subacute event. The appendix was normal. Several enlarged lymph nodes were noted. Microscopic examination revealed non-specific inflammation. Post-operatively, she has remained well. This case represents the first case of intussusception involving the distal ileum.
presenting as a fever of unknown origin. The subacute nature likely led to a delay in the diagnosis as peritoneal signs were delayed. It is unclear if the underlying HIV was related.

202

LOCALIZING THE LESION BY CAPSULE ENDOSCOPY: NEWER TECHNIQUES IN IMPROVING ACCURACY
Waqar Qureshi, M.D., Field Willingham, M.D., Bhupinder S. Anand, M.D.*, Baylor College of Medicine and VA Medical Center, Houston, Texas.

Purpose: One of the challenges in improving the quality of information obtained by capsule endoscopy is accurate localization of an abnormality. The present study highlights techniques that help in accurate localization of small bowel lesions and the role this plays in patient management.

Methods: The present study employed localization software and capsule transit times from fixed anatomical landmarks in determining the location of abnormal lesions. An antenna array was applied in a predefined pattern to the abdomen. The antenna picks up radio-frequency signals from the capsule endoscope; the sensors closest to the M2A3M capsule (Given Imaging) receive the strongest signal. Three sensors with the strongest signals were used to triangulate the position of the capsule over the abdominal wall (in one of four quadrants). This information together with knowledge of how far the capsule traveled in time since passing a landmark such as the pylorus was used to determine the location of the lesion.

Results: Case 1: A 72 year old lady with 7-month history of intermittent melena, required transfusions every 6–8 weeks. Multiple upper and lower endoscopic examinations including enteroscopy (Pantex VS8 2900) and small bowel enteroclysis were negative. Capsule endoscopy revealed blood in the distal ileum about 3 hours from the pylorus and 37 minutes from the ileocecal valve. Localization software put the lesion in the left lower quadrant just left of midline. At laparotomy, an enterotomy performed through an enterotomy in the distal ileum quickly located a bleeding AVM. Case 2: A 68 yr old was referred for occult GI bleeding and anemia. Upper endoscopy, enteroscopy, colonoscopy and small bowel barium study were normal. Capsule endoscopy revealed a small tumor 7 minutes from the pylorus. Localization software put it in the right upper quadrant. At repeat endoscopy with a pediatric colonoscope, an ulcerated mass was identified and successfully resected surgically.

Conclusions: The localization software is useful adjunct in determining the site of a lesion in the small intestine. Lesions in the right upper and sometimes right lower quadrants can be reached by enteroscopes. The time elapsed after the capsule crosses the pylorus is a reliable indicator of whether a lesion can be reached by an endoscope. We believe that lesions within 30 minutes of the pylorus may be reached at enteroscopy. Further developments in the software technology are likely to improve the accuracy for localizing lesions seen by capsule endoscopy.

203

INCREASED RISK OF PAPILLARY THYROID CANCER IN CELIAC DISEASE

Purpose: Studies from Europe and the United States have consistently demonstrated that patients with celiac disease have an increased risk of non-Hodgkin’s lymphoma, small bowel and esophageal cancer. Various other cancers are increased in different studies. An increased risk of thyroid cancer has not, to date, been demonstrated. Our goal was to estimate the risk of thyroid cancer in a cohort of US patients with celiac disease compared with the general US population.

Methods: Clinical data of patients with biopsy proven celiac disease seen between July 1981 and April 2004 in a celiac disease center was analyzed. Standardized morbidity ratios (SMRs - ratio of observed to expected) and corresponding 95% confidence intervals (CI) were calculated, using data from the National Cancer Institute’s Surveillance, Epidemiology, and End Results Program (SEER).

Results: Three (0.5%) of 606 patients with celiac disease in our study developed papillary thyroid cancer; two were women. All were diagnosed with cancer a mean of 8 years after receiving the diagnosis of celiac disease. The standardized morbidity ratio for papillary thyroid cancer in these celiac patients was 22.52 (95% CI 14.90–34.04).

Conclusions: Patients with celiac disease are at a significantly increased risk for the development of papillary thyroid cancer. Papillary thyroid cancer as well as autoimmune thyroid disease occur more frequently in patients with celiac disease than in the general population.
in limited glucose and anabolic hormone peaks not only limited the total value of glucose absorption in small intestine but also, therefore GA combining chitosan could be a useful method for diet regimen in diabetes and obesity.[figure1]

205

SHOULD ROUTINE SMALL BOWEL BIOPSIES BE STANDARD OF CARE DURING UPPER ENDOSCOPY?
Rush University, Chicago, Illinois.

Purpose: There is a large discrepancy between the numbers of diagnosed cases with celiac disease (CD) and the prevalence of CD as assessed by serologic markers. Hence, underdiagnosis of CD has been reported and many experts suggest routine small bowel biopsies during upper endoscopy as a way to overcome this problem. To date, there is no data on the prevalence of celiac disease related changes on consecutive small bowel biopsies. Our aim is to describe the prevalence of histological changes in routine consecutive small bowel biopsies in patients presenting for a gastroenterology evaluation.

Methods: Retrospective chart reviews were conducted on all outpatient upper endoscopies performed by a single gastroenterologist in a tertiary care center between August 2002 and May 2004. The practice of this physician is to do routine small bowel biopsies during outpatient upper endoscopy. Endoscopies were identified through the billing database and were cross-checked with all small bowel biopsy records in the pathology database. Inpatients and patients undergoing upper endoscopy for suspected GI bleeding were excluded from the study.

Results: 319 consecutive upper endoscopies met the study criteria and all had small bowel biopsies performed. The total prevalence of CD related histological changes on routine small bowel biopsies were 16.9% (Marsh 1 = 11.8%, Marsh 2 = 5% n = 16; Marsh 3 = 0.3% n = 1; Marsh 4 = 0.6% n = 2). In 1% of these cases, the histological changes were attributable to the presence of H. Pylori, primarily leading to Marsh 1 and Marsh 2 changes. There was no statistically significant difference between H. pylori positive and negative patients for the presence of histological changes (p = 0.05 - χ2).

Conclusions: The histologic prevalence of CD in gastroenterology patients in this study exceeds the previously reported prevalence using antibody testing in the general population. This high rate in a tertiary practice suggests that routine small bowel biopsies should be considered standard of care among gastroenterologists doing upper endoscopy for indications other than GI bleeding. Further studies with larger patient populations are needed to confirm these results. Clinical outcomes such as response to gluten free diet on symptomatic patients with mild changes of CD (Marsh 1 and 2) need to be studied further.

206

SMALL BOWEL VOLVULUS: UNUSUAL PRESENTATION OF PROGRESSIVE SYSTEMIC SCLEROSIS
Yamini Maddala, M.D., Promila Banerjee, M.D., Abhisit Kulkarni, M.D.∗, Rad Agrawal, M.D.
Allegheny General Hospital-Drexel University, Pittsburgh, Pennsylvania.

Introduction: The gastrointestinal system is preceded by skin and joints in terms of frequency of organ system involvement in Progressive Systemic Sclerosis (PSS) and can severely impair quality of life. Dysphagia and heartburn are the most common symptoms while malabsorption or pseudo-obstruction are extremely rare.

Case: 51 yr old white male with history of hypothyroidism and hypertension presented with diffuse abdominal pain, distension, nausea, bilious emesis with a 10 pound weight loss for 2 weeks. Upon admission, an abdominal CT scan revealed dilated small bowel with pneumatisis cystoides intestinialis. The patient was taken for an exploratory laparotomy that revealed a small bowel volvulus twisted on its mesentery, which was reduced. Patient then continued to present with symptoms consistent with recurrent small bowel dilatation over the next 4 months with concurrent Raynaud’s phenomenon and digital ulceration. He was also found to have a pleural effusion with bilateral pulmonary infiltrates with honey comb appearance with restrictive pattern of lung disease on PFTs. Transaminases & aldolase were elevated consistent with myositis. The above findings along with positive ANA and anti-Scl 70 confirmed PSS. The small bowel dilatation was treated conservatively. Abdominal CT scans and small bowel follow through confirmed persistent small bowel loop dilatation without obstruction. Rotating course of antibiotics were given for a period of 1 month with out response. Patient was now thought to have chronic pseudo-intestinal obstruction. Octreotide & TPN was started with resolution of symptoms.

Conclusions: The esophagus is the most common organ involved in 90% of patients with small bowel involvement seen in 40% of PSS. This unique case depicts a rare triad of chronic intestinal pseudo-obstruction, small bowel volvulus, and pneumatosis intestinalis in the setting of PSS without esophageal manifestations. The occurrence of small bowel volvulus and pneumatosis cystoides intestinalis as an initial presentation of PSS is rare with only a few case reports reported so far.

207

HEALTH-RELATED QUALITY OF LIFE IN WOMEN WITH CELIAC DISEASE ON A GLUTEN-FREE DIET
Prasun K. Jalal, M.D.∗, Heather Kessler, M.D., Simony Bank, M.D.
Long Island Jewish Medical Center, New Hyde Park, New York.

Purpose: Celiac disease is being increasingly diagnosed in the community and gluten-free diet remains the mainstay of treatment. The aim of the study was to evaluate the effect of gluten free diet on health-related quality of life in women with celiac disease.

Methods: 15 women with celiac disease (mean age 55 yrs, range 30–76) on a strict gluten free diet (mean duration 6 yrs, range 1–14) were evaluated with Short Form 36 Health Survey (SF36). Three dimensions were measured: physical perceptions, social consequences and emotional states.

Results: All of the had improved physical and social problems, although showed less emotional satisfaction.

Conclusions: Patients tolerate gluten free very well with improved physical and social dimensions It is possible that other factors other than presence of celiac disease play a role towards emotional outcome in women with celiac disease.

LIVER

208

BENEFICIAL EFFECTS OF HERBAL SUPPLEMENTS IN TREATMENT OF HEPATITIS C
Permian Gastroenterology Associates, LLP and Texas Tech University Health Science Center at Odessa, Odessa, Texas.

Purpose: To evaluate the beneficial effects of herbs when taken along with Interferon based treatment protocols in treatment of chronic Hepatitis C.

Methods: A retrospective survey was conducted using pre formatted questionnaires. Patient population was chosen form a community based private practice setting. All patients who were treated with Interferon based protocols (IFN mono therapy, IFN plus Ribavirin and Peg-IFN plus Ribavirin) during the past five years were chosen. The information was gathered through personal interviews and phone calls. Hepatitis C RNA by PCR six months after completion of treatment was used as a criterion to determine sustained response to Interferon therapy. Effects of herbal supplements on subjective feeling of well being, ability to complete the therapeutic regimen as well as the patients perception of beneficial effect of herbs were determined. Patients perception of the severity of the side effects was determined on a scale of 1 to 10.

Results: 59 out of 92 (64%) patients admitted using herbal supplements on a regular basis. Majority of people who admitted taking herbs (93%) had felt that herbal supplements had helped them. Of patients admitted to
taking herbs 32% (19/59) had achieved sustained response on treatment with Interferon. However 45% (15/33) of people who had not taken any herbs during their treatment with Interferon had achieved sustained response. 91% (54/59) of the patients admitted to taking herbal supplements were able and complete the prescribed regimen of interferon successfully. Only 78% (26/33) of the people who had not taken the supplements were able and complete the prescribed regimen successfully. Severity of the side effect profile was 7.3 for patients who had taken the supplements and 6.7 for the patients who had not taken the supplements concomitantly.

**Conclusions:** Addition of herbal supplements had not improved the sustained response rate among the patients who were administered various IFN based treatment protocols. However administration of herbal supplements had improved the patient’s perception of well being and their ability to stick to their prescribed regimen. While the subjective assessment of the severity of the side effect was same in both groups, concomitant administration of herbal supplements decreased the drop out rate from the therapeutic regimen.

---

**ESOMEPRAZOLE PHARMACOKINETICS IN PATIENTS WITH CIRRHOSIS AND HEALTHY CONTROLS**

Sombat Treeprasertsuk, M.D., M.Sc., Kantiyanee Arachasantusik, M.Sc., Mayyuree Tantisira, Ph.D., Varocha Mahachai, M.D., F.A.C.G.*. Bangkok Hospital, Praram 9 and Chulalongkorn University, Praram 4, Bangkok, Thailand.

**Purpose:** To determine the pharmacokinetic properties of esomeprazole, a new proton pump inhibitor, which is mainly metabolized by the liver, in Thai cirrhotic patients of various etiologies and healthy controls.

**Methods:** The study population included two groups, including 12 cirrhotic patients with different Child Pugh’s classification (Child A = 4, Child B = 4, Child C = 4) and 12 healthy controls. Each group received 20 mg of esomeprazole OD. for 5 consecutive days. Serial blood samples were collected over 10 hours period on the first day (D1) after single dose and the fifth day (D5) of the study after multiple doses for measurement of plasma esomeprazole levels.

**Results:** All pharmacokinetic properties of esomeprazole, except T max, were higher in D5 than in the D1 in both groups. However, when compared between both groups, AUC and half-life in the cirrhotic patients were higher than those in the healthy group on both D1 and D5. AUC on D1 of the cirrhotic patients and healthy controls were 4.7 and 3.2 micromol.hr/l respectively. Cirrhotic patients had longer half-life of esomeprazole than healthy controls on both D1 (4.1 and 2.1 hr.) and D5 (4.1 and 2.4 hr.). Although, plasma levels of control group, these findings usually confined to the patients with severely impaired liver function.

**Conclusions:** Esomeprazole given 20 mg. OD. by oral administration for 5 consecutive days resulted in comparable pharmacokinetic parameters including AUC, half-life in cirrhotic patients and healthy controls. Plasma levels of esomeprazole were elevated in cirrhotic patients especially in Child C when compared with the control group. Dose adjustment should not be required except those with Child C cirrhosis and further study need to be done.

---

**USEFULNESS OF CONTRAST-ENHANCED ULTRASONOGRAPHY TO EVALUATE THERAPEUTIC EFFECTS FOR HEPATOCELLULAR CARCINOMA**

Naoki Hotta, Akiko Okumura, Tetsuya Ishikawa, Shinichi Kakumu*. Aichi Medical University School of Medicine, Nagakute, Aichi-gun, Japan.

**Purpose:** The recent advances of US devices in conjunction with the contrast agents much improved the sensitivity in evaluating the hemodynamics of liver tumors because of availability of wide-band Doppler US imaging. This technique is suggested to increase the reliability in assessing the efficacy of local therapy in HCC. We aimed to verify whether the contrast-enhanced ultrasound is useful to evaluate the tumor vascularity of HCC before and after radiofrequency ablation (RFA), comparing to the helical dynamic CT.

**Methods:** We performed contrast-enhanced US with Levovist using LOGIQ7 (GE Medical System, Milwaukee) and APLIO (Toshiba Medical Systems, Tokyo) with a convex array. Tumor vascularity of 109 HCC nodules in 66 patients infected with hepatitis C virus (HCV) was assessed before and after radiofrequency ablation (RFA) therapy by coded harmonic angiography (LOGIQ7) by advanced dynamic flow (APLIO) with a wide-band Doppler technology.

**Results:** All patients included here showed hypervascular enhancement of HCC on contrast-enhanced US and/or dynamic CT. The enhanced ultrasound could obtain as vascular and perfusion images of hepatic tumors. The tumor vascularity were able to assess in 5 of 109 nodules before RFA by the enhanced ultrasound. Five nodules showed insufficient enhanced ultrasound which located on the approximately 12 cm in depth from the body surface. The study for the therapeutic efficacy indicated that the tumor vessels disappeared in 103 of visible 109 nodules. The frequencies detecting positive enhancement in pretreatment and posttreatment were almost equivalent between vascular phase of enhanced ultrasound on US and early phase of helical dynamic computed tomography (CT), although 5 nodules gave different findings; 3 were positive only on US, and 2 were positive only on CT. Major complication of RFA procedure was noted in only one case associated with liver abscess, but it was cured by medical treatment. No other severe complications such as deterioration of ascites, jaundice or renal function were observed during and after RFA.

**Conclusions:** The results indicated that contrast-enhanced on US is a reliable tool to evaluate intratumoral vascularity both before and after RFA treatment in patients with HCC.

---

**PATIENTS WITH ELEVATED LIVER ENZYMES ARE NOT AT HIGHER RISK FOR HEPATOTOXICITY FROM LOVASTATIN THAN THOSE WITH NORMAL LIVER ENZYMES**

Raj Vuppalanchi, M.D., Evgenia Teal, Naga Chalasani, M.D.*. Indiana University School of Medicine, Indianapolis, Indiana.

**Purpose:** It is recommended that lovastatin not be used in patients with unexplained transaminasemia, however, studies evaluating its risk of hepatotoxicity in subjects with elevated liver enzymes are lacking. This study was conducted to test the hypothesis that patients with elevated liver enzymes are not at higher risk for lovastatin hepatotoxicity than those with normal liver enzymes.

**Methods:** Our study consisted of the following 3 cohorts of patients seen between 12/87 and 12/98. **Cohort 1:** 135 patients with elevated baseline enzymes (AST > 40 IU/L or ALT > 35 IU/L with no evidence of HBV or HCV or alcohol consumption) who received lovastatin. **Cohort 2:** 620 patients who received lovastatin but did not have elevated liver enzymes, and **Cohort 3:** 2644 age, gender and race matched patients with elevated liver enzymes (without HCV or HBV or alcohol consumption) who did not receive lovastatin. The effect of lovastatin on liver tests was assessed over a 12-month follow-up. “Significant elevation in liver biochemistries” was defined as the development of bilirubin > 3 mg/dl (regardless of their baseline transaminases) or elevation of AST and/or ALT > 5 times ULN in patients with normal enzymes or > 5-fold elevation from their baseline AST and/or ALT values in patients with elevated baseline enzymes. We also assessed the proportion of patients who developed AST or ALT > 3 ULN and bilirubin > 2 ULN during the follow-up (Hy’s rule).

**Results:** As shown in the table, during the f/u, AST, ALT or bilirubin values or the frequency of significant elevations in liver biochemistries or Hy’s rule were not significantly different between cohorts I and II (p = ns). A greater proportion of patients belonging to cohort III had significant elevations in liver biochemistries or Hy’s rule (p < 0.01 vs. other 2 cohorts).

**Conclusions:** Patients with elevated liver enzymes are not at higher risk for lovastatin hepatotoxicity than those with normal liver enzymes.
Liver Transplantation for Hepatitis B in USA

Cemalettin Cemci, M.D., Ahmet Gurakar, M.D.,* James Rose, M.D., Harlan Wright, M.D., Ted Bader, M.D., Robert R. Schade, M.D., Anthony Sebastian, M.D., FR.C.S., Bakr Nour, M.D., F.A.C.S., Integris Baptist Medical Center, Oklahoma City, Oklahoma and Medical College of Georgia, Augusta, Georgia.

Purpose: Although the prevalence of chronic Hepatitis B (Hep B) is reported to be low in the USA (<1%), it is a more common disease worldwide, with prevalence as high as 5–10%. In USA, its consequences are often underestimated, especially in view of the growing burden of Hep C. To evaluate the impact of Hep B on our health system, United Nations Organ Sharing (UNOS) Hep B data has been reviewed.

Methods: Liver transplantsations (LTx) performed in the USA with diagnosis of Hep B, between 1993–2003 were reviewed. The specific states selected for review were chosen among the areas that are receiving new immigrants and that have an active LTx programs in existence such as Texas, Pennsylvania, California, New York, and Florida. The data for Oklahoma, a state with no significant immigrant population, were also obtained. One, 3 and 5-year patient survival rates were analyzed.

Results: 2522 (5.07%) liver transplantsations were performed with the diagnosis of Hep B. The Hep B/overall Liver Tx ratio was 9.08%, 6.35%, 5.57%, 4.85%, 3.63%, in the states of California, New York, Florida, Pennsylvania, Texas, respectively and was found to be 5.81% in Oklahoma. Nationwide survival rate for LTx for acute liver failure due to Hep B for 1 year, 3 yr and 5 yr were 84.8%, 76.7% and 72.8%, respectively. Nationwide survival rate for LTx for chronic Hep B for 1 year, 3 yr and 5 yr were 87.3%, 80.9% and 77.7%, respectively. National survival for overall LTx in the same period, for 1 yr, 3 yr and 5 yr were 84.56%, 77.45%, 71.81%, respectively. Statistical significances were found only for 3 and 5 year survival rates for LTx for hepatitis due to chronic Hep B infection compared to overall survival rates.

Conclusions: Hep B is thought to have a minor health significance by many Gastroenterologists. With growing immigration, it may eventually have a higher impact on LTx. It is crucial to further educate gastroenterologist and primary care physicians caring for this specific group of patients, that oral anti-Hep B medications can greatly stabilize and improve liver disease due to Hep B and potentially lower the number of transplants needed for chronic Hep B. Current pediatric Hep B vaccination programs are anticipated to lower LTx due to acute Hep B which we have shown to have lower survival rate compared to LTx due to chronic Hep B.

Virologic Response Rates to Peg Interferon Alfa 2a and Ribavirin in Patients Who Failed Peg Interferon Alfa 2b and Ribavirin

Murat Aladag, M.D., Wael Refai, M.D., Ahmet Gurakar, M.D.*, Ted Bader, M.D., Ayaz Chaudhary, M.D., Robert Shade, M.D. Integris Baptist Med Ctr, Oklahoma City, Oklahoma.

Purpose: Whether patients with chronic hepatitis C who have failed previous treatment with Peg Interferon alfa 2b and Ribavirin should be retreated remains a challenge for clinicians. To determine the possible value of such retreatment therapy, we retrospectively reviewed our record to examine the early virological response (EVR) results in patients who had previously been initially treated with Peg Interferon alfa 2b plus Ribavirin with no response and who subsequently received Peg Interferon alfa 2a plus Ribavirin.

Methods: We found 8 patients so treated (1 male, 7 females). They ranged in age from 44 to 66 years with mean age of 53. Seven were genotype 1 and one genotype 2. Five patients had evidence of grade 1–2 fibrosis, 1 had grade 3 and 2 had early cirrhosis. All had previously been treated for 9 to 12 months with Peg Interferon alfa 2a at a dose of 1.5 mcg/kg per wk (except the 2 cirrhotics with genotype 1 who received 1 mcg/kg per wk) and Ribavirin 600 – 1000 mg per day. None had responded to treatment. After washout period of 3 months, these patients were subsequently treated with Peg Interferon alfa 2a with 180 mcg/wk (except 2 cirrhotics who received 135 mcg/wk) and Ribavirin 600 – 1000 mg. Early virologic response was determined at week 12.

Results: Only 1 patient achieved EVR with 2 log10 drop in viral load. (12.5 percent) This was a 57 year-old female, genotype 1, with early cirrhosis on biopsy.

Conclusions: In conclusion, in this small treatment Peg Interferon Alfa 2b Ribavirin treatment failure population, 1 of 8 patients had EVR to treatment with Peg Interferon alfa 2a and ribavirin. Larger studies are needed to determine the utility of treatment in this challenging population.

Experience with Alpha-1 Antitrypsin Deficiency Following Liver Transplantation

Wael H. Refai, M.D., Murat Aladag, M.D., Rose James, Ahmet Gurakar, M.D.*, Harlan Wright, M.D., Anthony Sebastian, M.D., Bakr Nour, M.D. Baptist Integris Med Ctr, Oklahoma City, Oklahoma.

Purpose: Alpha-1 Antitrypsin Deficiency is an inborn metabolic disorder with different clinical presentations starting usually at childhood or adulthood.

Single liver transplant center’s experience with presentation, complication and survival rates following orthotopic liver transplantation is retrospectively reviewed.

Methods: From 1994 to 2003, 10 patients with preoperative diagnosis of A1AT Deficiency have undergone orthotopic liver transplantation at Nazih Zuhdi Transplant Institute, INTEGRIS Baptist Medical Center in Oklahoma City, OK.

Five patients were males, 5 were females, Mean age was 42 where ages ranged from 2 to 61 years.

There were total of 2 pediatric cases; a 2-year-old girl with PiZZ phenotype and a 16 year-old boy with PiMZ phenotype. They were both referred with a 16 year-old boy with PiMZ phenotype. They were both referred with a 16 year-old boy with PiMZ phenotype. They were both referred with A1AT deficiency and had normal retransplantation.

There were total of 8 adult cases; 2 had late cirrhosis, 3 had evidence of cryptogenic cirrhosis. During the pre-transplant work up, PiMZ phenotypes were detected. None of the patients had evidence of pulmonary disease upon initial presentation.

Results: The Mean MELD score was 21.2 with a range of 7 to 34. Ascites was present in all cases before transplantation. Mean platelets count was 75000, signifying portal hypertension.

The 16-year-old boy needed a second orthotopic liver transplant 3 months after his first transplant because of hepatic artery thrombosis. All patients are currently alive. Mean survival is 3.8 years with a range of 4 months to 9 years. In all of the cases, diagnosis of A1AT Deficiency was later con-
firmed using PAS staining of the liver tissue obtained from the explanted organ.

Conclusions: 1) A1AT Deficiency is often considered as a pediatric disease process. We hereby have reported 8 adult cases with cirrhosis due Alpha-1 Antitrypsin Deficiency. Therefore, this metabolic disorder needs to be diligently searched among adult cirrhotic patients as well, especially in cases that have been previously labeled as cryptogenic cirrhosis. 2) In our center, one year patient and graft survival of such cases is similar to orthotopic liver transplantation due to other factors.

215

SPONTANEOUS RUPTURE OF GALLBLADDER IN CIRRHOTIC PATIENTS


Purpose: Spontaneous Rupture of the Gallbladder in Cirrhotic patients is a rare but life-threatening condition. We report four such cases admitted for Liver Transplant (OLT) evaluation between 7/2000 & 10/2003. All four patients were found to have had ruptured gallbladders confirmed by surgery.

Methods: Case 1: 53 y.o Caucasian male with End-Stage Liver Disease secondary to autoimmune hepatitis with Cirrhosis had severe decompensation history of DM. He was initially admitted for ascites management and SBP. Ascites culture grew Staph. aerus and the patient was treated appropriately. Two weeks later, during OLT Surgery, a gangrenous gallbladder was noted. Postoperatively, lower dose of immunosuppression was administered with wide antibiotic coverage, the patient did well and discharged home 2 weeks later.

The patient’s MELD Scores 21 and CHILD Class C.

Case 2: 53 y.o male with alcoholic liver cirrhosis was found to have a ruptured gallbladder two months before his OLT. Stones in the gallbladder that were originally noted in an earlier CT scan ordered during initial phase of liver transplant work up were absent in his most recent CT imaging, which was performed for evaluation of new onset abdominal pain. Diagnosis was also confirmed by pathology following the emergent cholecystectomy procedure.

The patient’s MELD Scores 21 and CHILD Class C.

Case 3: A 61-year-old cirrhotic male with a history of underlying hepatitis C & hepatocellular carcinoma was diagnosed with Chronic Cholecystitis. The Patient received chemoembolization of the tumor twice. Two months later, he was admitted with RUQ pain. Exploratory laparotomy revealed evidence of a ruptured gallbladder.

The patient’s MELD Scores 14 and CHILD Class B.

Case 4: 20-year-old female with fibrolamellar hepatocellular carcinoma was treated twice with chemoembolization prior to OLT. During the liver trans-plantation surgery, it was noted that she had a perforated gallbladder. The patient’s MELD Score 8 and CHILD Class A.

Conclusions: Since cirrhotic patients are considered immunocompromised, chronic/acute cholecystitis may not present with classical manifestations; therefore, possibly contributing to a to higher perforation rate in comparison with healthy individuals. Chemoembolization is considered additional risk factor for gallbladder rupture since the Gallbladder is usually vascularized by single cystic artery derived from right hepatic artery. We have also reported two incidental gallbladder ruptures during hepatectomy phase where both patients had undergone successful Orthotopic Liver Transplantation.

HEPATITIS C VIRUS (HCV) IN PATIENTS WITH HEMOPHILIA: SAFETY OF OUTPATIENT PERCUTANEOUS LIVER BIOPSY, SPECTRUM OF LIVER DISEASE, AND IMPACT OF HUMAN IMMUNODEFICIENCY VIRUS (HIV) COINFECTION


Purpose: Both HCV and HIV are common in hemophiliacs. Because of increased bleeding risks, little data are available on the safety of percutaneous outpatient liver biopsy (LBx) and histologic spectrum of disease in this population. Aims: To report our experience with percutaneous LBx in a cohort of hemophiliacs infected with HCV and describe the spectrum of disease and impact of HIV coinfection.

Methods: A retrospective review of consecutive patients with hemophilia and HCV was performed. All patients were positive for HCV RNA. Demographic, biochemical, and histologic parameters and data regarding administration of factor concentrates given both prior and following biopsy were recorded. All LBx were performed with a 16 gauge klatskin needle after factor replacement and histology was assessed by the Knodell histologic activity index (HAI) for inflammation (0–18) and fibrosis (0–4). Mild disease was defined as a fibrosis score 0–1 and advanced fibrosis as bridging fibrosis/cirrhosis (3/4).

Results: Twenty seven patients (all male, mean age 37, 22 hemophilia A, 5 hemophilia B) underwent successful percutaneous LBx without bleeding complication. HIV coinfection was present in 44% (mean CD4 382, all on HAART) and associated with higher AST, alkaline phosphatase (AP), lower platelets (PL), higher fibrosis scores, and more advanced fibrosis including all cases of cirrhosis when compared to HCV monoinfected despite similar demographic features and disease duration.

Conclusions: Outpatient percutaneous LBx can be safely performed in patients with hemophilia. The spectrum of liver disease included a significant proportion with advanced fibrosis which was much more common in those coinfected with HIV.

NEEDLE BIOPSY OF LIVER IS NOT A POPULAR PROCEDURE WITH GASTROENTEROLOGISTS

Nirmal S. Mann, M.D.*, Jay R. Patel. VA Medical Center, UC Davis, Martinez, California and Univ of Lublin School of Medicine, Lublin, Poland.

Purpose: It appeared to us that many gastroenterologists are not keen on doing needle biopsy of the liver. If true, it might impact adversely on the training of GI fellows. We wanted to find out, by telephone survey, the number of practitioners who are doing needle liver biopsies and the reasons for not doing it.

Methods: 105 digestive disease physicians were contacted by telephone. None of the contacted physicians refused to participate in the survey; so the participation was 100%. They were asked if they did needle biopsies of the liver and if not the reasons thereof; they were also asked if they be sent to the radiologists. They were also asked to identify themselves if they were
mainly gastroenterologists (Group I) or hepatologists (Group II) or practiced a combination of GI + hepatology (Group III).

**Results:** 55/105 (52.3%) said that they did not do liver biopsy. The reasons were: too stressful 40/55 (72.7%); fear of complications 46/55 (83.6%); inadequate reimbursement 48/55 (87.2%); had no training for it 14/55 (25.4%).

42/55 (76.3%) said all liver biopsies should be sent to radiologists. There were 65/105 (61.9%) in Group I and 47/65 (72.3%) in this group did not do liver biopsies. There were 14/105 (13.3%) in Group II and 1/14 (7.1%) did not do liver biopsy. There were 26/105 (24.7%) in Group III and 72/65 (26.9%) did not do liver biopsy.

**Conclusions:** Physicians who describe themselves mainly as luminal gastroenterologists are not doing liver biopsies and are routinely sending their patients to radiologists. This may impact on the training of GI fellows in the performance of liver biopsy.

---

**HISTOLOGICAL GRADING OF HEPATIC STEATOSIS BY PATHOLOGISTS DOES NOT CORRELATE WITH HEPATIC TRIGLYCERIDE CONTENT**

R. Vappalanchi, M.D., M. Matsamoto, M.D., O.W Cummings, M.D., T.M. Ullbright, M.D., R. Saxena, M.D., L. Li, Ph.D, D.W. Crabb, M.D., N. Chalasani, M.D.*. Indiana University School of Medicine, Indianapolis, Indiana.

**Purpose:** Excessive accumulation of triglyceride (TG) in the hepatocytes leads to macrovesicular steatosis and in some patients it is associated with steatohepatitis and cirrhosis. Traditionally, the severity of steatosis is graded based on the percent of hepatocytes containing fat on the biopsy (Grade 1: < 5%; Grade 2: 5%-33%; Grade 3: 33%-66%, Grade 4: >66%). One would intuitively think that higher grades of steatosis may carry higher risk of steatohepatitis, but the existing studies do not show a relationship between the steatosis grade and risk of steatohepatitis. This leads to the possibility that the steatosis grade may not reflect the hepatic TG content. We conducted a study to examine if the degree of hepatic steatosis as graded by pathologists correlate with TG content in human liver tissue.

**Methods:** Correlation was made between the pathologists’ grading of the hepatic steatosis and the TG content in liver tissue from 39 patients without hepatitis C or B or significant alcohol consumption (age: 46 ± 15 yrs, M: 49%). TG content of liver homogenate was determined by Triglyceride SL assay. The TG content was normalized with the protein content of the liver sample as measured by Protein Assay. Histological grading of the macrovesicular steatosis was done in a blinded fashion by 3 experienced hepatopathologists. Kappa statistics was used to assess the inter-observer agreement for histological grading and ANOVA was used to test the association between pathologists’ histological grading and the TG content.

**Results:** A statistically significant inter-observer agreement existed for histological grading of the steatosis by pathologists (pathologist 1 and 2: k 0.64 (0.41, 0.88) (p < 0.001); pathologist 2 and 3: k 0.61 (0.37, 0.86) (p < 0.001); pathologist 3 and 1: k 0.64 (0.40, 0.88) (p < 0.001). However, there existed no relationship between hepatic TG content and the steatosis grade as assessed by any of the pathologists.

**Conclusions:** Histological grading of macrovesicular steatosis by pathologists does not reflect the hepatic triglyceride content in human liver tissue samples. [Figure1]

---

**PANTOPRAZOLE REDUCES THE SIZE OF POST-BANDING ULCERS AFTER ELECTIVE ENDOSCOPIC VARICEAL BAND LIGATION: A RANDOMIZED, CONTROLLED TRIAL**


**Purpose:** Elective esophageal variceal ligation (EVL) is a commonly performed procedure done to decrease the risk of variceal hemorrhage. Side effects of elective EVL include hemorrhage, chest pain, dysphagia and odynophagia. Because gastric acid may exacerbate the residual ulcers seen after EVL and delay healing, proton pump inhibition may decrease the side effects associated with EVL. The aim of this study was to assess the efficacy of pantoprazole, a proton pump inhibitor, as an adjunct to elective EVL.

**Methods:** We performed a double-blinded randomized placebo controlled trial of pantoprazole in the setting of elective EVL. Subjects in the pantoprazole arm received pantoprazole 40 mg intravenously immediately after elective EVL and oral pantoprazole 40 mg for nine days following. Subjects in the control arm received identical-appearing intravenous and oral placebo medications. Subjects underwent repeat upper endoscopy 10–14 days after initial banding. Primary outcome variables included the size of the banding ulcers, number of ulcers present after controlling for the number of bands initially placed, and the subjects’ reports of dysphagia, chest pain, and heartburn symptoms.

**Results:** Forty-four subjects were randomized, and forty-two successfully completed the protocol. Four subjects, all in the placebo group, had adverse outcomes, including 3 who suffered variceal bleeding (2 after the initial banding session and 1 within 30 days following the second banding session), and one with sepsis. At 10 days post banding, the mean number of ulcers was similar in the pantoprazole and placebo groups. However, the ulcers in the pantoprazole group were on average half as large as those in the placebo group (3.7 mm vs 8.2 mm, p < 0.01). Chest pain, dysphagia and heartburn scores were not different between the two groups.

**Conclusions:** Subjects receiving pantoprazole therapy after elective EVL had significantly smaller post-banding ulcers on follow-up endoscopy than those receiving placebo. However, total ulcer number, as well as patient symptoms, were not different between the groups.

---

**DIAGNOSIS AND ENDOSCOPIC TREATMENT OF ANASTOMOTIC BILARY STRICTURES AFTER DECEASED DONOR LIVER TRANSPLANT: UPDATE OF A SINGLE CENTER EXPERIENCE**


**Purpose:** Biliary complications are a significant source of morbidity after deceased donor liver transplant (DDLT), affecting as many as 35% of all recipients. Anastomotic biliary strictures (ABS) are among the most common of biliary complications, yet methods of diagnosis and treatment vary
widely. The aim of this review is to determine sensitive methods of diagnosis of ABS and to evaluate the benefit of Endoscopic Retrograde Cholangiopancreatography (ERCP) in treatment of ABS.

**Methods**: Retrospective review of all patients diagnosed with ABS after DDLT at Mayo Clinic Hospital since the transplant program opened in 1998.

**Results**: From 1988–2004, 170 patients underwent DDLT at Mayo Clinic Hospital. ABS were diagnosed by ERCP in 22/170 patients (12.9%), a median of 2.3 mos. after DDLT. Liver tests were abnormal in all patients with ABS: alkaline phosphatase (95%), bilirubin and AST (86%), and ALT (77%). Ultrasound was insensitive, revealing dilated bile ducts in only 8/22 patients (36%). 19/22 patients with ABS completed therapy; two died of unrelated causes during treatment and one continues treatment. ERCP therapy was effective in 17/19 (89.5%); surgery was performed in 2/19. Patients underwnt ERCP a median of three times. ERCP therapy included balloon dilation (17/19) and temporary biliary stenting (16/19) with a median of 2 stents (range 1–4), over a median duration 3.5 mos (+/- 4.8). Treatment success was defined by patent anastomoses with effective biliary drainage on fluoroscopy, and by improved liver enzymes. Recurrent ABS occurred in 3/19 (15.8%): 2/3 responded to repeated ERCP therapy. ABS treated successfully remained patent at median follow-up of 21.5 months after last ERCP.

**Conclusions**: ABS develop in a significant minority of patients after DDLT. ABS uniformly cause abnormal liver enzymes, but the majority do not cause bile duct dilation on ultrasound. ERCP with dilation and stenting is highly effective therapy for ABS, generally resulting in sustained patency of strictures. Recurrent strictures occur infrequently and also can be treated by ERCP.

### Results of Effective ERCP Therapy for ABS

<table>
<thead>
<tr>
<th>Stricture Diameter (mm)</th>
<th>Alk phos (U/L) Pre/Post Rx</th>
<th>Bilirubin (mg/dl) Pre/Post Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>2.6</td>
<td>568/220</td>
</tr>
<tr>
<td>Confidence Interval</td>
<td>0.8/0.9</td>
<td>134/50</td>
</tr>
<tr>
<td>Difference: p Value</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

222

## AFRICAN AMERICAN (AA) SUSTAINED VIRAL RESPONSE (SVR) TO PEGYLATED INTERFERON + RBAVARIN (PEG + RBV) IS SIMILAR TO OTHER RACIAL GROUPS WITH CHRONIC HCV – GENOTYPE 1. RESULTS FROM AN OPEN ACCESS TREATMENT PROGRAM

Savita Srivastava, M.D., Maria Bertagnolli, R.N., James H. Lewis, M.D.*, Georgetown University Hospital, Washington, District of Columbia.

**Purpose**: The SVR for non-PEG IFN-based regimens for chronic HCV has been significantly lower among AA vs.Caucasians, a finding attributed to the high % of geno-1 infections in the AA population. To determine whether such differences in SVR are still present since the introduction of PEG + RBV regimens, we analyzed SVR rates among racial groups treated with PEG + RBV according to genotype.

**Methods**: Consecutive patients of multiethnic and racial background attending a university liver clinic eligible for Tx received either Peg alfa2a or 2b + RBV 1–1.2g based on wgt for 24–48 wk depending on genotype. HCV RNA titers were analyzed a 6, 6 or 12 mo, and 6 mo post-Tx. Non-responders (NR) were unable to clear virus by wk 12.

**Results**: Among the first 175 pts eligible for PEG + RBV, 69 received Tx [20 AA (geno 1 in 95%); 49 non-AA (geno 1 in 55%)]. Of the 106 pts not tx’d (35% AA and 65% non-AA), all except one Cau. male were geno 1, and most either had mild hepatitis on biopsy, normal ALT, a psychiatric condition, other potential contraindications, or had perceived low efficacy of Tx and were expectancy awaiting newer Tx options. ETR and SVR data are presented in Table 1 for the 69 pts who have completed Tx.

**Conclusions**: The SVR among AA vs non-AA with geno 1 is very similar and significantly higher than that found in our prior open access study of non-PEG + RBV (Hepatology 2000; 32: 351A). It matches that seen in a multicenter trial of PEG+RBV in geno 1 pts (Hepatology 2003; 38: 190A).

### Table 1. ETR and SVR data based on genotype and race. N = 69

<table>
<thead>
<tr>
<th>Race</th>
<th>Geno 1 ETR</th>
<th>Geno 1 SVR</th>
<th>Non-Geno 1 ETR</th>
<th>Non-Geno 1 SVR</th>
<th>Overall ETR</th>
<th>Overall SVR</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>26% (5/19)</td>
<td>100% (1/1)</td>
<td>33% (6/12)</td>
<td>68% (8/12)</td>
<td>20% (11/55)</td>
<td>49% (10/20)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>54% (13/24)</td>
<td>92% (12/13)</td>
<td>68% (25/37)</td>
<td>51% (19/37)</td>
<td>26% (4/15)</td>
<td>38% (7/19)</td>
</tr>
<tr>
<td>Others</td>
<td>66% (2/3)</td>
<td>78% (2/3)</td>
<td>44% (4/9)</td>
<td>75% (9/12)</td>
<td>52% (1/2)</td>
<td></td>
</tr>
</tbody>
</table>

**Purpose**: Portal hypertension (PHTN) is a common complication of liver cirrhosis. Cirrhotic patients with PHTN often develop esophageal varices (EV) and as are at high risk for varical bleeding. The Serum-Ascites Albumin Gradient (SAAG) predicts the presence or absence of portal hypertension with 97% accuracy. The aim of this study is to evaluate any correlation between SAAG values and upper gastrointestinal endoscopic (EGD) assessment of presence and grade of EV.

**Methods**: Charts of 312 patients hospitalized with a diagnosis of liver cirrhosis between April 2002 and July 2003 were reviewed. Patients with ascites, who underwent abdominal paracentesis with SAAG measurement and EGD with assessment of the presence and grade of EV were included.

**Results**: Twenty-seven patients satisfied the inclusion criteria. EV were present in 23 of the 27 patients. These patients had a mean SAAG of 1.9 gm/dl (Range = 1.1–3.4 gm/dl). The 4 patients without EV had a mean SAAG of 1.15 gm/dl (Range 1.1–1.4 gm/dl). SAAG in these patients differed significantly from those with varices (P = 0.017). The size of EV did not correlate with the level of SAAG (p = 0.50). All the patients with SAAG equal or greater than 1.6 gm/dl (16 patients) had varices but only seven out of eleven patients with SAAG less than 1.6gm/dl had varices: sensitivity = 70%, specificity = 100%, positive predictive value (16/16 = 100%), and negative predictive value (4/11 = 36%). SAAG value did not correlate with prothrombin time (P = 0.62) or platelet count (P = 0.74).

**Conclusions**: Patients with liver cirrhosis and EV have significantly higher SAAG values than those without EV. All patients with SAAG value of 1.6 gm/dl or higher have EV. These patients may benefit from pharmacological therapy as a primary prophylaxis for varical hemorrhage. SAAG measurement appears to be a less invasive and more cost effective method to predict the presence of EV in patients with liver cirrhosis and ascites. SAAG value less than 1.6 gm/dl does not exclude the presence of EV and should be followed by an EGD. These observations are based on a small number of patients and further investigation is warranted.

### UNDER-REPORTING OF ENERGY INTAKE IN PATIENTS WITH NON ALCOHOLIC STEATOHEPATITIS (NASH)

M. H. Khan, M.D., R. Vuppalanchi, M.D., N. Chalasani, M.D.*. Indiana University School of Medicine, Indianapolis, Indiana.
Purpose: Self-reported dietary instruments are often used to conduct nutritional research; however, patients with certain disease states (e.g., diabetes) may under-report their energy intake. NASH is a common chronic liver disorder that occurs predominantly in individuals with obesity. There is an interest to determine if abnormal nutrient intake plays a role in the pathogenesis of NASH. However, it is unknown if self-reported dietary instruments accurately describe the energy and nutrient intake in individuals with NASH.

Objective: Our study was conducted to assess the accuracy of self-reported energy intake in patients with biopsy-proven NASH.

Methods: Thirty three individuals with biopsy proven NASH and 20 age, gender and BMI matched healthy individuals participated in this study. Each subject was asked to maintain a dietary diary for a period of 3 days each week for 3 weeks prior to taking part in the study. Based on the entries made into the dietary diary, the daily intake of total calories was analyzed using the Nutrition Data System for Research (version V4.02/30) (reported energy intake, REI). Each subject subsequently underwent indirect calorimetry to determine the basal metabolic rate (BMR). Using the Goldberg equation (TEE = BMR × n, where n was 1.35 for our patient population) we calculated the minimal “total energy expenditure” required for weight maintenance (TEE) (none of our participants reported significant weight change in the preceding 4 months).

Results: These data show that a significant number of obese patients with or without NASH under-report their daily energy intake. More importantly, patients with NASH appeared to have higher degree of under-reporting than the obese controls.

Conclusions: More research is needed to clarify the significance of these findings and to determine the validity of using self-reported dietary instruments in conducting obesity/NASH related nutritional research.

Results

<table>
<thead>
<tr>
<th></th>
<th>NASH (n = 33)</th>
<th>Controls (n = 20)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>REI (Kcal/d) (Mean ± S.D.)</td>
<td>1920 ± 578</td>
<td>2070 ± 506</td>
<td>0.3</td>
</tr>
<tr>
<td>BMR (Kcal/d) (Mean ± S.D.)</td>
<td>1783 ± 314</td>
<td>1612 ± 316</td>
<td>0.07</td>
</tr>
<tr>
<td>TEE (Kcal/d) (Mean ± S.D.)</td>
<td>2407 ± 424</td>
<td>2173 ± 424</td>
<td>0.04</td>
</tr>
<tr>
<td>Proportion with REI less than TEE (%)</td>
<td>33% (11/33)</td>
<td>15% (3/20)</td>
<td>0.1</td>
</tr>
<tr>
<td>Proportion with BMR less than TEE (%)</td>
<td>93% (28/33)</td>
<td>60% (12/20)</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Reported energy intake (REI); basal metabolic rate (BMR); total energy expenditure (TEE)

224

IS RECURRENT CHRONIC HEPATITIS C VIRUS LIVER DISEASE AFTER ORTHOTOPIC LIVER TRANSPLANTATION INEVITABLE?

Alastair D. Smith, M.B., Ch.B., Don C. Rockey, M.D.*. Duke University Medical Center, Durham, North Carolina.

Purpose: Chronic hepatitis C virus (HCV) liver disease is the commonest indication for orthotopic liver transplantation (OLT) in the USA. Important recurrent chronic liver disease is very common, but there appears to be a small number of patients who do not exhibit evidence of recurrent HCV liver disease, in some cases years after OLT. We hypothesized that certain clinico-epidemiologic factors might play a role in this phenomenon, and performed a case-control study to try and identify those factors important in the development of recurrent HCV liver disease.

Methods: We identified all patients who underwent OLT for chronic HCV liver disease at our institution between 1/1991 and 5/2004, including those whose serum aminotransferase concentrations remained normal in follow-up. Control subjects transplanted during the same year for HCV liver disease were matched to cases. Specific variables were evaluated: age, gender, race, viral genotype, primary calcineurin inhibitor (PCT), anti-viral therapy, graft survival, and death.

Results: 117 patients underwent OLT for chronic HCV liver disease during the study period. Seven white subjects with no evidence of recurrent HCV liver disease were identified. All were white, six were male, their median OLT age was 46 years (range 44–59), and median follow-up was 64 months. Four were infected with genotype 1, one with genotype 3, and the genotype was not known in two subjects. PCT therapy comprised CyA (5), and tacrolimus (2). One patient died nine years after OLT, of a non-liver related illness. 28 control patients were identified (matched 4:1 with cases, by year of OLT), of whom 23 were white, four were black and one was Asian; seven were women. Their median OLT age was 46 years (range 16–65). Viral genotypes were as follows: 1 (seventeen); 2 (three); 3 (two); 4 (one), and five were unknown. PCI comprised CyA (17), and tacrolimus (11). All controls demonstrated histologic evidence of recurrent chronic HCV liver disease a median of 10 months (range 1–95) post OLT. 18 received anti-viral therapy, resulting in four SVRs. Four patients died; two underwent re-OLT for recurrent HCV liver disease.

Conclusions: Subjects without evidence of recurrent chronic HCV liver disease had better graft function, and overall survival than those with evidence of recurrent HCV liver disease. However, there were no clinical features that distinguished between the two patient groups. More study is required to understand why a small subgroup of patients fails to develop recurrent chronic HCV liver disease after OLT.

225

CLINICAL PRESENTATION AND DISEASE BURDEN IN HEPATITIS C PATIENTS REFERRED TO A PRIVATE PRACTICE GASTROENTEROLOGY GROUP: A FIVE YEAR EXPERIENCE (1997–2002) WITH 670 PATIENTS


Purpose: The vast majority of care for Hepatitis C (Hep C) patients occurs in private practice settings and not in tertiary care academic medical centers. There is little data relating to evaluation, care and treatment of Hep C patients in this setting. The aim of this study is to report a five-year experience of consultative care for 670 Hep C patients.

Methods: Retrospective chart review was utilized to assess indications for referral, demographics of referred patients and extent of disease burden.

Results: Demographics: 59% male, mean age of 47.0 yrs (SD +/- 10.0 yrs, range 17–90 yrs) with 80% Caucasian, 15% African-American and 2% Hispanic. Mean weight 186 lbs (SD +/- 43.4 lbs) and mean BMI 28.4 kg/m² (SD +/- 5.7 kg/m²). 99% of patients had health insurance.

The patients were referred for gastroenterology consultation for the following reasons: positive Hep C antibody test (37%), positive Hep C antibody test and abnormal liver enzymes (60%), Hep C viremia (2%), decompensated Hep C (1%).

660/670 patients (98.5%) had at least one alanine aminotransferase level (ALT) available. 19% had normal ALT levels at the time of the initial visit. 15% of patients with at least three ALT levels had persistently normal results. 80 patients were found to be repeatedly PCR negative. 366 patients had viral loads available; 39% had viral load > 800,000 IU/ml. 273 patients underwent genotyping; 53% were genotype 1a, 21% 1b, 11% 2, 9% 3 and 2% 4. 327 patients underwent liver biopsy: > 99% showed inflammation; 54% demonstrated mild, 24% showing moderate and 20% with severe inflammation. 72% of the biopsies showed hepatic fibrosis; the degree was as follows: 25% mild, 19% bridging fibrosis and 28% cirrhosis. BMI was strongly correlated with advanced fibrosis while age, race, gender and viral load were not.

Conclusions: The majority of patients referred had minimal Hep C specific evaluation prior to the initial consultation. While the biochemical and virologic features are similar to data from previous University based cohorts, the high percentage (47%) of biopsied patients with advanced fibrosis needs to be confirmed in other community based cohorts. This high rate of significant fibrosis suggests a more severe course of Hep C than is typically assumed to be present in community based cohorts.
PREVALENT OF HEPATITIS A INFECTION IN NAHAVAND, IRAN: A POPULATION-BASED STUDY
Shaheen Ansari, M.D., Ali Jafari Mehr, M.D., AmirHoushang Mohammad Alizadeh, M.D., Manijeh Habibi, M.S., Ali Ardalan, M.D., Mitra Ranjbar, M.D., SeyedMehdol Mohamad Arabi, Ph.D., Mohammad Reza Zali, M.D., F.A.C.G.*. Research Center for Gastroenterology and Liver Diseases., Tehran and Sina Hospital, Hamedan, Hamedan, Islamic Republic of Iran.

Purpose: To determine the seroprevalence of anti-HAV in Nahavand, Iran.
Methods: Six urban regions of Nahavand were considered as strata and in each stratum 304 inhabitants (≥5 years) were recruited through systematic randomized sampling. Subjects were tested for anti-HAV using ELISA. Data was analyzed applying multivariate logistic regression
Results: The overall HAV seroprevalence was 82.4% (95%CI: 80.6-84.3), however 53.4% (95%CI: 48.1-58.7) of children were seropositive. Based on multivariate adjustment, only age (OR = 8.56; 95%CI: 6.11-12.00) emerged as risk factor. No statistically significant association was observed between HAV seropositivity and family size (>4/≤4) or education level.
Conclusions: It seems that HAV infection is not highly endemic especially among children in urban areas of Iran. Considering shifting epidemiology, vaccination strategies should be revised.

ASSOCIATION OF THE CTLA-4 G ALLELE POLYMORPHISM AT POSITION 49 IN EXON 1 WITH THE SUSCEPTIBILITY TO AUTOIMMUNE HEPATITIS (AIH) IN IRANIAN POPULATION

Purpose: The aim of this study was to assess the frequency of A-G poly-morphism with salting-out method was performed on blood samples and the G-A
Methods: Determination of CTLA-4 genotypes was investigated in 66 patients and 60 healthy controls.
Results: The frequencies of AA, AG, and GG genotypes were 57.57%, 33.33% and 9.09% in patients and 57.01%, 39.47% and 3.50% in healthy controls, respectively. The CTLA-4 G and A allele frequency were 25.7 and 74.3 in patients and 23.3 and 76.7 in healthy controls, respectively. Data showed there were similar distribution of the CTLA-4 genotypes in patients and healthy controls (p>0.05).
Conclusions: This study demonstrates that susceptibility to AIH in Iranian population may not be influenced by CTLA-4 G allele polymorphism at position 49. This polymorphism may either have a recent founder population or be associated with AIH only among the Caucasians.

C77G MUTATION IN CD45 GENE AND AUTOIMMUNE HEPATITIS: A CONTROVERSIAL DEBATE
Fatemehsadat Esteghamat, M.S., Aziza Hekmatdoost, M.D.*, Mohammad H. Sanati, Ph.D., Babak Noorinayer, M.D., Soheila Hajiallasgar, M.D., Mohammadreza Agha, M.D., Maryam Zafarghandi, M.D., Mohammad R. Zali, M.D., F.A.C.G. Research Center for Gastroenterology and Liver Disease; Khatham University and Research Center For Biotechnology and Genetic Engineering, Tehran, Islamic Republic of Iran.

The aim of this study was to evaluate the frequency of C77G polymorphism in CD45 gene in patients with autoimmune hepatitis type I and age and sex matched healthy controls.
In this study we investigated the frequency of this mutation in a case-control study between 70 patients with AIH (2:1 female/male ratio) with clinically definite and/or laboratory supported diagnosis and 140 healthy blood donors matched by sex and age. Extracted genomic DNA was amplified by PTPRC exon 4 specific primers, and the PCR product was digested by MspI restriction enzyme.
Mean age of cases and controls were 31.2 ± 7.8, and 32.9 ± 11.6 respectively. None of the cases was hetero or homozygote for this mutation; however one of the controls was heterozygote for C77G mutation.
We conclude that there is no association between C77G polymorphism and AIH at least in Iranian patients; however, there is no data on the frequency of this polymorphism in our population. It appears that either polymorphism is a rather new one or the founder population for this polymorphism restricted to Caucasian to Germany.

COMPARISON OF ESOPHAGEAL BAND LIGATION WITH ENDOSCOPIC SCLEROTHERAPY IN PATIENTS WITH BLEEDING ESOPHAGEAL VARICES

Purpose: Comparison of EBL with EST in management of cirrhotic patients with actively bleeding EV.
Methods: 523 cirrhotic patients (diagnosed on basis of biochemical parameters, ultrasonography and/or liver biopsy) with esophageal varical (EV)bleeding were evaluated. These patients underwent Endoscopic Band Ligation(EBL) or Endoscopic sclerotherapy(EST) Both groups were comparable for age, gender, etiology of cirrhosis and laboratory parameters. Outcomes were compared in the two groups.
Results: 227 patients (61%) males underwent EBL compared with 98 (62%) males who had EST. Mean age in EBL group was 52 ± 12 years and 50.4 ± 11 years in EST group. In EBL group there were 13 (6%)75 (33%)139 (61%) in child class A/B/C respectively, while in EST group 12 (12%)46 (47%)40 (41%) in child class A/B/C. Main cause of cirrhosis in the two groups was hepatitis C.
Endoscopic findings were: EV alone in 159 (70% andEV with gastric varices (GV) in 68 (30%) in EBL group, while in EST group there wereEV alone in 53 (54%) andEV with GVin 45 (46%). Distribution of grades of EV in two groups were: GradeII EV in 29 (13%), gradeIII in 108 (47%), gradeIV in 90 (40%) patients in EBL group and gradeII 32 (33%), gradeIII in 50(51%), and gradeIV in16 (16%) in ESTGroup. The outcomes in the two groups are shown in table.
Conclusions: EBL was better than EST in terms of lesser number of packed RBCs used, rebleed within24 hrs and rebleed after discharge despite having advanced grade of GOV. The two modalities of treatment have same hospital stay and mortality.

<table>
<thead>
<tr>
<th>Variables</th>
<th>EBL group (n = 227)</th>
<th>EST group (n = 98)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packed RBC units used</td>
<td>3.0 ± 2.3</td>
<td>3.9 ± 3.3</td>
<td>0.004</td>
</tr>
<tr>
<td>Rebleed within 24 hrs</td>
<td>15/227 (6.6%)</td>
<td>13/98 (13.3%)</td>
<td>0.04</td>
</tr>
<tr>
<td>Rebleed after &gt;24 hrs of hospital stay</td>
<td>24/225 (10.7%)</td>
<td>06/95 (6.3%)</td>
<td>0.22</td>
</tr>
<tr>
<td>Rebleed after discharge</td>
<td>42/220 (19.1%)</td>
<td>36/94 (38.3%)</td>
<td>0.02</td>
</tr>
<tr>
<td>Hospital stay (in days)</td>
<td>4.5 ± 4.4</td>
<td>4.6 ± 3.3</td>
<td>0.84</td>
</tr>
<tr>
<td>Discharged home</td>
<td>221/227 (97.4%)</td>
<td>89/98 (90.8%)</td>
<td>0.21</td>
</tr>
<tr>
<td>Died</td>
<td>06/227 (2.6%)</td>
<td>06/98 (6.1)</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Table: showing outcomes in the two treatment groups.
230
THE EFFECTIVENESS OF PEGYLATED INTERFERON AND RIBAVIRIN IN HEPATITIS C PATIENTS IN A COUNTY HOSPITAL SYSTEM: HARBOR-UCLA CIRRHOSIS AND HEPATITIS C/INTERFERON EFFECTIVENESS (HUCHIE) STUDY GROUP

Jeremy R. Herman, M.D., Tony Lee, M.D., Hanson Lee, M.D., Sartaj Arora, M.D., Mehrdad Vosoghi, M.D., Eric R. Lee, M.D., Shahid H. Sial, M.D., Viktor E. Eysselein, M.D., Benedict L. Garrett, M.D.*. Harbor UCLA Medical Center, Torrance, California.

Purpose: The efficacy of pegylated interferon and Ribavirin for the treatment of Hepatitis C has been well documented in the literature. However, the effectiveness of this treatment has been understudied in the county-hospital system, particularly in regard to the large Hispanic and multi-ethnic populations we treat at Harbor-UCLA Medical Center. Our investigation attempts to quantify the effectiveness of treatment among ethnic groups and viral sub-types.

Methods: A retrospective chart review process was employed to evaluate virologic response (end of treatment, and sustained virologic responses) in all patients identified by pharmacy and division records treated with pegylated interferon 2a or 2b and ribavirin in the clinic within the past two years. The data is evaluated on an intention-to-treat basis. Multiple variables potentially influencing the sustained virologic response rates are being evaluated

Results: Overall response rates as a group were significantly lower than the published literature (59.1% vs. 73.3%). Genotype-1 also responded significantly less than the published literature (48.4 vs. 66%). Interestingly, non-Genotype-1 patients responded at comparable rates (84.6 vs. approximately 91%).

Conclusions: The effectiveness of pegylated interferon and Ribavirin in our L.A. County population is significantly less than that seen in well designed, tertiary care studies. Potential causes leading to the difference may be that the quality of health care delivery is inferior, or that patient socio-economic factors are at play. Interestingly, the sub-group of non-genotype-1 patients responded comparably to published studies. Further sub-group analysis appears to reveal low response rates in Hispanics, particularly with genotype-1 and cirrhosis. On going data analysis will help shed light on the healthcare delivery and patient variables leading to these differences in effectiveness we have found.

Response Rates to Peg-Inf/Rib in the L.A. County System

<table>
<thead>
<tr>
<th>Group</th>
<th>ETR</th>
<th>SVR</th>
<th>Failed</th>
<th>Total</th>
<th>Response Rates (%)</th>
<th>published rates***</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients</td>
<td>24</td>
<td>2</td>
<td>20</td>
<td>44</td>
<td>59.1%</td>
<td>73.3%</td>
<td>p = 0.06</td>
</tr>
<tr>
<td>Genotype-1</td>
<td>15</td>
<td>0</td>
<td>16</td>
<td>31</td>
<td>48.4%</td>
<td>66%</td>
<td>p = 0.05</td>
</tr>
<tr>
<td>Non-Genotype-1</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>13</td>
<td>84.6%</td>
<td>91%</td>
<td>p = 0.48</td>
</tr>
</tbody>
</table>

*ETR = end of treatment response, SVR = sustained virologic response. ***S1 Hadzynata, Annals of Int. Med., March 2004

231
DIFFERENCES IN PATIENT CHARACTERISTICS AND SYMPTOMS IN PATIENTS WITH HCC AND NO KNOWN RISK FACTORS COMPARED TO THOSE WITH KNOWN RISK FACTORS

Jon D. Dorfman, M.D., Richard Schulick, M.D., Michael A. Choti, M.D., Jean-Francois H. Geschwind, M.D., Ilah Kamel, M.D., Ph.D., Paul J. Thuluvath, M.D., F.R.C.P.*. The Johns Hopkins University School of Medicine, Baltimore, Maryland.

Purpose: Hepatocellular carcinoma (HCC) is a common primary liver cancer with an uneven worldwide distribution. This uneven distribution pattern has been attributed to differences in the prevalence of known risk factors such as hepatitis B (HBV), hepatitis C (HCV), and aflatoxin. However, there is a subgroup of patients who present in the United States without any known risk factors. The objective of our study was to examine the clinical characteristics of this subgroup and compare it to those with known risk factors.

Methods: For this study, we used our HCC database of patients seen at our institution between January 1, 1995 to December 31, 2001. Of the 306 patients in the database, 63 (21%) had no known risk factors (HCV, HBV, alcohol, hemochromatosis or cirrhosis from any cause) (Group 1). The rest (n = 243) had one or more risk factors (Group 2).

Results: The median age was similar in both groups, but there was a disproportionate number of younger (< 30 yrs old, p < 0.01) and older (> 80 yrs, p < 0.01) patients in group 1. In addition, there were more women (33% versus 18%, p < 0.05) and Caucasians (81% vs. 52%, P < 0.001) in group 1 as compared to group 2. There were fewer Asians (2% vs. 11%, p < 0.05) and African Americans (13% vs. 27%, p < 0.05) in group 1. Abdominal pain (70% vs. 37%, p < 0.001) was more common and gastrointestinal bleed (0% vs. 11%, p < 0.05) and ascites (4% vs. 17%, p < 0.05) were less common in group 1 when compared to group 2. Other signs and symptoms were statistically similar in both groups. Group 1 had larger tumors (median size 9.4 cm vs. 5.7 cm) at the time of presentation on imaging studies (ultrasound, magnetic resonance imaging or CAT scan). There was no difference in the site (right, left or bilateral), or unifocality versus multifocality between the groups. Six (10%) patients in group 1 had fibrolamellar variant of HCC compared to none in group 2 (p < 0.005).

Conclusions: Our study shows that HCC patients without known risk factors are more likely to be Caucasian and female. They are more likely to present without symptoms associated with liver disease, to have significantly larger tumor burden at presentation and to have fibrolamellar variant of HCC. Absence of cirrhosis and larger tumor burden may explain the differences in these presenting symptoms.

232
EFFECTIVENESS OF PEGYLATED INTERFERON AND RIBAVIRIN IN HISPANIC PATIENTS WITH HEPATITIS C AND ADVANCED FIBROSIS: HARBOR-UCLA CIRRHOSIS AND HEPATITIS C/INTERFERON EFFECTIVENESS (HUCHIE) STUDY GROUP

Jeremy R. Herman, M.D., Tony Lee, M.D., Hanson Lee, M.D., Sartaj Arora, M.D., Mehrdad Vosoghi, M.D., Eric R. Lee, M.D., Shahid H. Sial, M.D., Viktor E. Eysselein, M.D., Benedict L. Garrett, M.D.*. Harbor UCLA Medical Center, Torrance, California.

Purpose: There is little data addressing treatment of Hispanic patients with Hepatitis C and advanced fibrosis in a county hospital setting. Since a great number of our patients are not financially eligible for liver transplantation, we began treating our compensated cirrhotic patients in the Fall of 2002, in accordance with the NIH Consensus Conference published at that time. We set out to evaluate the effectiveness of treatment with pegylated interferon and Ribavirin in our Hispanic patients with advanced fibrosis.

Methods: A retrospective chart review process was employed to evaluate virologic response in all patients identified by pharmacy and division records treated with pegylated interferon 2a or 2b and ribavirin in the clinic within the past two years. The data is evaluated on an intention-to-treat basis. Multiple variables potentially influencing the sustained virologic response rates are being evaluated.

Results: Hispanic patients with genotype 1 and advanced fibrosis had a response rate to pegylated-interferon/Ribavirin of 15.4%, significantly decreased from the published literature. 0/11 patients with genotype-1 attained an SVR; two patients currently have an ETR. Non-genotype-1 patients had a response rate of 71.4%, comparable to the published literature. Our overall response rate was not significantly different from the published literature (35% vs 43%, NS).

Conclusions: Our data call into question the effectiveness of treating Hispanics with advanced fibrosis and genotype 1 in a county hospital setting. Non-genotype-1 Hispanic patients appear to benefit as expected from pegylated interferon and Ribavirin. The quality of health care delivery does not appear to explain the differences seen in our data. Ongoing evaluation of our
data will help clarify the importance of the quality of healthcare delivery, race, genotype, and degree of advanced liver disease in this understudied population.

Response Rates to Peg-Inf/Rib in Hispanics with Advanced Fibrosis

<table>
<thead>
<tr>
<th></th>
<th>ETR</th>
<th>SVR</th>
<th>Failed</th>
<th>Total</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Patients</td>
<td>5</td>
<td>2</td>
<td>13</td>
<td>20</td>
<td>7/20 (35%)</td>
</tr>
<tr>
<td>Genotype 1</td>
<td>2</td>
<td>0</td>
<td>11</td>
<td>13</td>
<td>2/13 (15.4%)</td>
</tr>
<tr>
<td>Non-genotype 1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>5/7 (71.4%)</td>
</tr>
</tbody>
</table>

ETR = end of treatment response; SVR = sustained virologic response.

234

ABSTRACT WITHDRAWN

235

SEROPREVALENCE OF HCV IN HEALTH CARE WORKERS OF LOK NAYAK HOSPITAL, NEW DELHI

Purpose: HCV is a parenterally transmitted virus that can pose an occupational hazard to the health care workers (HCWs). In India, very scanty information is available regarding the prevalence of HCV infection in health care workers. With this background in mind, the present study was designed to determine the seroprevalence of HCV infection amongst the health care workers in Lok Nayak Hospital, New Delhi.

Methods: A total of 100 health care workers employed in Lok Nayak Hospital, New Delhi were included in this study during the period from May 2003 to June 2003. The subjects were classified according to their duration of job and according to the unit where they were working at the time of this study. The sera samples were tested for Anti-HCV antibodies by using the commercially available third generation ELISA kit.

Results: The mean age of the subjects was 34.62 ± 5.04 yrs. The seroprevalence of HCV infection in the HCWs was found to be 4% (4/100). The average duration of occupational exposure among the subjects was 4.10 ± 2.64 yrs. The duration of occupational exposure was not found to be a significant factor for the seroprevalence of HCV among the subjects (p > 0.05).

The seroprevalence of Anti-HCV antibodies was found to be 8.33% (2/24) amongst the HCWs in hemodialysis units, 5.56% (1/18) in the HCWs from blood bank and 4.0% (1/25) in the HCWs in the hematological laboratories. None of the subjects from dental units and biochemical and other laboratories tested positive for Anti-HCV antibodies.

Conclusions: Our results indicate that the seroprevalence of HCV in health care workers (4.0%) is considerably higher than that reported in the general population. This difference is probably due to increased parenteral exposure to infected blood/blood products. The study adds to the prevailing evidence for HCV as an occupational hazard to health care workers. In turn, there seems to be a need to better educate the health care workers about the prevention of transmission of HCV. Also, health care workers should form the priority target group for any preventive strategies to be formulated against the spread of HCV.

236

ACUTE HEPATITIS IN OKINAWA, JAPAN—ANALYSIS OF 277 CASES
Susumu Shinoura, M.D., Yoshiki Shimabukuro, M.D., Kaoru Kimachi, M.D., Yoshihide Keida, M.D.*, Yutaka Yamaguchi, M.D. Okinawa Chubu Hospital, Gushikawa, Okinawa, Japan.

Purpose: To establish the clinical and laboratory features of acute hepatitis diagnosed and treated at 500-bed teaching hospital in Okinawa, Japan.

Methods: “Acute hepatitis” was defined as a case with the following. (1) A case without previous history of jaundice, abdominal girth, variecal bleeding or PSE. (2) A case without previous laboratory, serological or pathological diagnosis of chronic hepatitis or cirrhosis. (3) A case of acute or subacute presentation of symptoms as jaundice, general fatigue or darkened urine. (4) A case with elevated ALT, AST or Alkaline phosphatase above twice normal.

277 patients with acute hepatitis during phase I(1989–1993) and phase II(1999–2003) were examined retrospectively.

Results: 150 patients were in the phase I (75 males and 80 females) and 122 patients were in the phase II (55 males and 67 females). Among phase I there were 13(8.7%), 5(3.3%), 29(19.3%), 36(24%) and 39(26%) patients with acute hepatitis B, C, drug induced liver damage, liver damage with other medical problems and unknown etiology, respectively. Among phase II there were 5(4.1%), 16(13.1%), 9(7.3%), 21(17.2%), 29(23.8%) and 16(13.1%) patients with hepatitis A, acute hepatitis B, autoimmune hepatitis, drug induced liver damage, liver damage with other medical problems and unknown etiology, respectively. “Other medical problems” including, sepsis (21 cases- 35.6%), shock (8–13.6%), malignancy (6–10.1%) pneumonia (5–8.5%) and ischemic heart disease (4–6.8%).

13.6% of hepatitis A, acute hepatitis B and etiology unknown acute liver damage (EUALD), maximal ALT was significantly higher in hepatitis A and acute hepatitis B than EUALD. Hepatitis A vs Hepatitis B vs EUALD = 3664.3 vs 2290.8 vs 704.4, p < 0.05 and maximal T-bili was significantly higher in hepatitis A and B than EUALD (hepatitis A vs Hepatitis B vs EUALD = 6.5 vs 13.9 vs 3.8, p < 0.05).

Conclusions: Acute hepatitis experienced by us revealed features as; 1. Total number of cases in phase II was less than in phase I. 2. There were significant cases of drug induced liver damage and liver damage with other medical problems both in phase I and II. 3. Acute hepatitis with unknown etiology seems to be milder elevation of T-bili than ALT in hepatitis A or acute hepatitis B.

237

A RANDOMIZED PROSPECTIVE CLINICAL TRIAL COMPARING PEGYLATED INTERFERON ALPHA 2a/RIBAVIRIN VERSUS PEGYLATED INTERFERON ALPHA 2b/RIBAVIRIN IN THE TREATMENT OF CHRONIC HEPATITIS C
Sunita Sinha, M.D., Prasanna Pulur, M.D., Vishal Patel, M.D., George Hage-Nassar, M.D., Scott Tenner, M.P.H.* Downstate Medical Center, State University of New York, New York.

Purpose: Pegylated Interferon in conjunction with ribavirin is the most effective method of treating patients with Chronic Hepatitis C. Currently, two interferons are approved by the Food and Drug Administration (FDA) to be used with ribavirin, pegylated interferon alpha2a/ribavirin (PIRα) and pegylated interferon alpha2b/ribavirin (PIRβ). A series of consecutive patients with untreated (naive) Chronic Hepatitis C were invited to participate. After informed consent was obtained, patients were randomized to receive either PIRα or PIRβ. PIRα was given as pegylated interferon alpha 2a (PEG-asys) 180 ug SQ weekly with ribavirin 1000–1200 mg. PIRβ was given as a weight based dose 1.5 mg/kg with ribavirin 1000–1200 mg. Ribavirin was given as equivalent weight based dosages in both arms of the study. The end points of the study were undetectable hepatitis C (HCV) RNA. Subjective and laboratory complications were recorded.

Results: Forty-two patients were enrolled in the study. 24 patients received PIRα; 18 patients received PIRβ. There were no significant differences in age, gender, race, genotype, 13/42 patients had genotypes other than genotype 1. At 6 months, 14/24 (58%) of the PIRα patients had undetectable RNA compared to 10/18 (56%) of the PIRβ patients (p = 0.22). Multivariate analysis did not reveal any significant differences in response according age, weight,
JAUNDICE IN PREGNANCY - A STUDY OF ETIOLOGY AND MATERNAL/FETAL OUTCOMES

Purpose: Jaundice in pregnancy has always been a challenging issue regarding its etiology and outcome. Hepatitis E has a 20% mortality. Other pregnancy related disorders also carry a very high mortality unless promptly delivered. A retrospective study was done to determine the etiology as well as maternal and fetal out-comes in pregnant patients with jaundice.

Objectives: 1. To determine etiology of jaundice in pregnancy. 2. To determine the maternal and fetal out-comes in pregnant patients with jaundice.

Methods: A retrospective study was conducted in the department of Medicine, in which case records of admitted pregnant females with jaundice from March 2003 to January 2004 were reviewed.

Results: A total of 12 pregnant patients were found to have jaundice. Etiology was established in only 33.4% of patients i.e. 4/12. 3 (25%) of these patients were found to have hepatitis E and one had hepatitis C (8.3%). 25% of total patients went into fulminant hepatic failure and overall maternal mortality remained 16.6% (2/12). There was no maternal mortality amongst the 3 patients with Hepatitis E. However one of them (33%) had intratrunkal death whereas overall fetal loss was 42% (4 intratrunkal deaths and one termination of pregnancy on medical grounds). Etiology of jaundice could not be determined in the two maternal deaths in our study.

Conclusions: 1) Jaundice in pregnancy remains an elusive disorder with etiology being determined in a relatively small number of patients; this could be due to the use of relatively insensitive assays for HEV and HAV in our part of the world. 2) Hepatitis E is one of the most commonly diagnosed conditions in pregnant patients with jaundice. 3) In our setting, jaundice in pregnancy leads to a very poor fetal outcome as well as significant maternal mortality. 4) This study highlights the need for early diagnosis and management of jaundice in pregnancy to avoid adverse outcomes.

CLINICAL SIGNIFICANCE OF EXPRESSION OF NUCLEAR FACTOR KAPPA B (NF-k B) IN FULMINANT HEPATITIS

Purpose: To study the expression of NF-k B (p50 & p65) in fulminant hepatitis patients and its correlation with the clinical and biochemical profile and the final outcome

Methods: The study group included a total of 60 subjects. The case group included 25 cases of fulminant hepatic failure. The control group included 20 healthy voluntary (replacement and altruistic) blood donors without any history or clinical feature suggestive of high risk behavior. The control group also included 10 healthy pregnant females (for comparison with pregnant FHF patients) and 5 surgical cases of non-liver disease from which control liver tissue was obtained after an informed consent.

Results: The mean age of the FHF patients was 28.04 ± 4.71 years and male- female ratio was 1.5:1. 12 out of 25 patients were pregnant. Hepatitis E virus was detected in 19/25 (76%) of the cases and hepatitis B and C were responsible for 16%(4/25) and 8%(2/25) of FHF respectively. HEV was the most common cause of FHF in pregnant patients - 10/12 (83.3%). There was 76%(19/25) mortality among FHF cases. 60% patients with FHF showed high level of expression of p50 component contrary to complete absence of expression of p65 in majority of cases 52%(13/25). Exactly similar pattern was also observed in post-mortem liver biopsy tissue of FHF cases. On the contrary the control (voluntary healthy blood donors) showed normal expression for both p50 and p65 in majority of cases. Comparable results were also obtained from control liver tissue. The patients (n = 6), who recovered after the treatment showed moderate expression of p50 suggesting it as the major component, while p65 showed either low (majority) to moderate expression.

RECOVERY POSITIONS: DOES POSITIONING REALLY MATTER?
Chris B. Hyan, M.D.*, Valerie J. Beutel, R.N., B.S.N. Naval Hospital Jacksonville, Jacksonville, Florida and Naval Medical Center San Diego, San Diego, California.

Purpose: Percutaneous liver biopsy (PLB) is a valuable procedure used in the diagnosis, prognosis, and treatment of liver diseases. No standardized recovery posture exists and no studies have yet been performed to assess patient preference of these different recovery positions. The goal of this study was to compare and contrast patient acceptability of the three commonly used post-PLB recovery postures: supine (S), right-side (R), and combination of right-side followed by supine (RS).

Methods: Ninety adult patients were enrolled and randomized into three-arms of this prospective study. R and S patients remained in their respective recovery positions for the entire 4-hour recovery period while RS patients changed posture at 2 hours. A validated Visual Analogue Scale (VAS) was given to patients to grade the pain/discomfort experienced during recovery intervals as well as to grade the overall acceptability of the recovery position. The means of the VAS scores among the three study arms were contrasted by a one-way analysis of variance with multiple comparisons.

Results: The three groups were matched in terms of age, gender, number of previous PLB, use of local anesthetic, and pre-biopsy anxiolytic and post-biopsy narcotic requirements. Immediately following PLB, more pain was experienced by patients randomized to R with mean VAS score of 26.5 (out of 100), compared to 14.2 (p = 0.026) and 12.1 (p = 0.009) for RS and S patients, respectively. After 2-hour mark of recovery, the only statistical difference in pain was found between groups RS and S, 23.7 versus 11.6 (p = 0.025). However, at the end of recovery, there was no difference in VAS scores among the three groups. When patients graded the overall acceptability of the recovery position, RS was the least acceptable. The mean acceptability score was 89.2 out of 100 for the RS arm, as opposed to 94.5 for S (p = 0.047) and 94.8 for R (p = 0.046); no difference was noted between R and S arms (p = 0.921). Aside from pain, study patients experienced no other complications.

Conclusions: Currently, post-PLB recovery positions differ widely among institutions and are mostly physician-dependent. This study is the first to scrutinize these differing techniques and investigate their impact on patient’s overall post-PLB experience. When three commonly practiced post-PLB recovery positions, RS, R, and S, are compared, RS was the least acceptable position. Patients should be placed in recovery position R or S during post-PLB period.

Conclusions: That p65 subunit is essential for normal functioning of NF-kB complex and its absence causes increased apoptosis and degeneration of liver cells leading to severe liver damage and death in FHF patients.

PROSPECTIVE ASSESSMENT OF FIBROSPECT II HEPATIC TO DETECT FIBROSIS IN PATIENTS WITH CHRONIC Hepatitis C

Atif Zaman, M.D., Hugo Rosen, M.D.*, Esther Oh, Kenneth Ingram, PA, Katie Smith. Oregon Health & Science University, Portland, Oregon and Prometheus Laboratories, San Diego, California.

Purpose: The degree of liver fibrosis in patients with Hepatitis C (HCV) provides important prognostic information. Currently the only method available to obtain this information is by performing a liver biopsy. Liver biopsies are invasive, associated with complications, and are costly. There has been recent interest in developing a panel of serum markers that can reliably predict the presence of fibrosis, and thus obviate the need for a liver biopsy. Aim: To prospectively validate a panel of serum fibrosis markers (FIBROSpect II) that has been recently developed.

Methods: A panel consisting of 3 fibrosis markers (hyaluronic acid, TIMP-1, alpha-2-macroglobulin) had previously been selected to differentiate no/mild (Metavir fibrosis F0-F1) from moderate/severe (F2-F4) fibrosis. A regression algorithm with the 3 markers (FIBROSpect II) was further developed from a larger retrospective cohort (n = 696) of chronic hepatitis C at 4 centers, to reliably predict the presence/absence of severe fibrosis (Oh et al. Gastroenterology 2004; 126(4): S1639). In the current study, serum was obtained from 108 consecutive HCV (15% with HCV/ETOH) patients seen in a Hepatology clinic at a single center at the time of liver biopsy, which was shipped frozen for FIBROSpect II testing at Prometheus Laboratories (San Diego, CA). The Metavir fibrosis score was determined by a single pathologist and was categorized as ‘no/mild’ or ‘moderate/severe’ fibrosis for analysis. The performance of FIBROSpect II was assessed by comparing the panel results to the biopsy.

Results: The prevalence of ‘moderate/severe’ fibrosis in the study group was 36.1%. The diagnostic value of the serum marker panel as assessed by area under the ROC curve was 0.826. Performance characteristics were as follows: sensitivity 71.8%, specificity 73.9%, positive predictive value (PPV) 60.9%, negative predictive value (NPV) 82.3%, accuracy 73.1%.

Conclusions: This study further validates the very good performance characteristics of a panel of serum fibrosis markers that has been recently developed. In this group of HCV patients with a prevalence of ‘moderate/severe’ fibrosis that is typically seen in practice (about 35%), the PPV and NPV were very good. This panel of fibrosis markers has the potential to offer a non-invasive test to determine hepatic fibrosis in patients with HCV.

Biopsy+ (F2-F3) | Biopsy- (F0-F1)
--- | ---
FIBROSpect II+ | 28 | 18
FIBROSpect II- | 11 | 51
Total | 39 | 69

CENTRAL RETINAL VEIN THROMBOSIS DURING PEGYLATED INTERFERON ALFA AND RIBAVIRIN THERAPY FOR Hepatitis C

Pilar Gancedo, M.D., Isabel Laires, M.D., Jorge Correia, M.D., Jose M. Estevens, M.D.*. Hospital do Barlavento Algarvio SA, Portimão, Portugal.

Purpose: Ocular complications associated to interferon alfa (IFN) and ribavirin therapy are unusual, being the most common ischemic retinopathy, retinal hemorrhage, cotton-wool spots and arteriolar occlusion. They are usually asymptomatic and disappear after the withdrawal of treatment. Though, there are severe and irreversible ophthalmologic complications in spite of the cessation of therapy.

Methods: CASE REPORT

A 65 year-old white female was diagnosed of chronic hepatitis C virus infection, being unknown the date and mode of transmission. She had an irrelevant medical history, denying hypertension, diabetes, alcohol consumption or abuse of drugs or any other medication. Laboratory data showed abnormalities on liver function tests: AST 122, ALT 102. Other liver tests were normal. Serological antibody tests for hepatitis B and HIV were negative. Coagulation tests showed thrombocytopenia (98,000). HCV viral load was 259,000 ui/ml with 3a genotype. A search for autoantibodies and thyroid abnormalities was negative. A liver ultrasound showed a fatty liver and splenomegaly. A liver biopsy was performed but the specimen was not suitable for histological examination. Treatment with pegylated interferon alfa-2b (120 mcg) and ribavirin (1000 mgr) was started. There was an improvement on liver function tests: AST 65, ALT 54 and HCV-RNA (97.7 ui/ml). No other laboratory abnormalities were detected. Over the fourth month of treatment, the patient presented a sudden blurred vision of the left eye. Seven days later she was admitted in the hospital with a total visual loss of this eye. The ophthalmologic examination showed a central retinal vein thrombosis (CRVT). IFN and ribavirin were discontinued without clinical improvement.

Results: The retinal abnormalities associated to IFN and ribavirin therapy are uncommon. Nevertheless, we present a case of irreversible CRVT. The patient did not have hypertension, diabetes, hypercholesterolemia or other risk factors for the development of this disease. The age of the patient could be a risk factor. The CRVT is a severe complication but rare in patients who are receiving IFN and ribavirin therapy. The pathophysiologic mechanism is not clearly understood. An ophthalmologic examination should be performed at least in patients with risk factors for ocular diseases before starting IFN and ribavirin treatment. All the diagnosed cases must be communicated for a good understanding of this clinical entity.

SELECTIVE EMBOLIZATION OF THE SPLENIC VEIN IN PATIENTS WITH Hepatic ENCEPHALOPATHY AND SPLENO-RENAL SHUNT

Shinichi Mezawa, M.D., Hisato Homma, M.D.*, Shinichi Katsuki, M.D., Takehide Akiyama, M.D., Sho Takahashi, M.D., Kenichiro Hirata, M.D., Katsuhiro Kogawa, M.D. Tokaidai Hospital, Sapporo, Hokkaido, Japan.

Purpose: Obliteration of portal-systemic shunts by surgery or interventional radiology is effective for intractable portosystemic encephalopathy but is often associated with complications such as retention of ascites and a worsening of esophageal varices because of postoperative elevation of portal venous pressure. Recently selective embolization of the splenic vein has been attempted in some of such cases because postoperative elevation of portal venous pressure was not as high as shunt obliteration. The purpose of this study was to evaluate the effect of this procedure for the treatment of hepatic encephalopathy.

Methods: Selective embolization of the splenic vein was performed on six patients with hepatic encephalopathy with a spleno-renal shunt. The proximal splenic vein was obliterated between the shunt and the superior mesenteric vein with coils by using a percutaneous transhepatic catheter or transjugular approach.

Results: After the procedure, the mesenteric blood hepatopetally flowed into the liver, and the splenic veinous blood flowed into the inferior vena cava via the spleno-renal shunt. The clinical symptoms of hepatic encephalopathy improved in all patients. Worsening of hepatic function was not observed in any cases. Recurrence of hepatic encephalopathy was observed in two cases because of the development of another porto-systemic shunt; this was easily remedied by percutaneous transhepatic embolization of the shunt. The difference of portal pressure between before and after the procedure was 4.1 mmHg. Neither retention of ascites nor a worsening of esophageal varices was observed.

Conclusions: We conclude that this procedure can be an effective and safe treatment option for hepatic encephalopathy with a spleno-renal shunt.
MORBIDITY AND MORTALITY ASSOCIATED WITH HEPATIC SARCOIDOSIS


Purpose: Sarcoidosis is a multi-system granulomatous disease which primarily affects the African American population. The second most commonly affected organ is the liver. Despite this, the natural history of hepatic sarcoidosis remains ill-defined. The specific aims of this study were to better define the natural history, morbidity and mortality associated with hepatic sarcoidosis.

Methods: A total of 102 patients who had granulomas documented on liver biopsy, and other clinical features consistent with sarcoidosis, were identified by searching the Hepatology and Pathology databases followed by detailed chart review. 12 patients with hepatic granulomas from other causes and clinical features not consistent with sarcoidosis were excluded. Extrapulmonary manifestations, liver chemistries, histology, co-existent liver disorders and all complications and treatments of liver disease were recorded.

Results: The mean age of these patients was 42 years, 61 were female and 67 African American. The most common extrapulmonary manifestations of sarcoidosis were pulmonary (30%), skin (12%) and ocular (8%). The most common concomitant liver disorders included HCV (13%) or alcohol (6%). The mean AST, ALT, ALP and BILI at presentation were 63, 64, 327 IU/L and 1.3 mg/dl. Liver biopsy demonstrated portal fibrosis in 63%, bridging fibrosis in 24% and cirrhosis in 11%. 11 patients developed upper GI bleeding of which 9 was from varices; 3 additional patients had varices without bleeding. Of the 13 patients with varices only 31% had cirrhosis confirmed by liver biopsy. Three patients underwent surgical shunting and 3 TIPS for treatment of variceal hemorrhage. 8 developed complications of end-stage liver disease and underwent liver transplantation (LT) of whom 3 died within 1 year. 2/5 patients who survived more than 1 year following LT developed histologic confirmation of recurrent sarcoidosis. 17/102 patients died over a mean of 6.4 years follow-up (range: 1–15 years). Except for cirrhosis, neither liver chemistries nor hepatic fibrosis predicted complications, need for LT, or death.

Conclusions: Approximately 15% of patients with hepatic involvement from sarcoidosis develop liver related morbidity and mortality. Esophageal varices, with or without bleeding, developed in 13% of patients; more than half of whom did not have cirrhosis. However, only 8% developed end-stage liver disease and required LT. Sarcoidosis recurred in approximately 40% of patients following LT.

ULTRASOUND GUIDED AND BLIND LIVER BIOPSIES AT A TERTIARY REFERRAL CENTER: A RETROSPECTIVE COMPARISON OF OUTCOMES AND COMPLICATIONS

Youngrin Kim, M.D., Adrienne Groman, M.S., Ashok N. Shah, M.D., Parvez S. Mantry, M.D.*, University of Rochester School of Medicine, Rochester, New York.

Purpose: An increasing number of centers in the United States use ultrasound (us) guidance for performing liver biopsies. As a large tertiary referral center in upstate New York, we analyzed our own data with respect to the different types of liver biopsies performed over the last few years.

Methods: We studied the charts of patients who underwent 475 core needle liver biopsies in 5 years and reviewed the following: demographic data, indications, mean core size, number of passes, adequacy of sample size, immediate and delayed complications.

Results: 304 procedures were ultrasound guided biopsies. Male: female ratio was 1.5:1. Mean age was 49 years. One third of all the biopsies were done to rule out rejection post liver transplant. 52/304 (17%) were for lesion guided biopsies of liver masses and 22/304 (7%) were on living donors for the liver transplant program. The mean core size was 1.62cm; the mean number of passes needed was 2.35.

The sample was deemed adequate by the pathologist in 295/304 (97%) biopsies and there was no documented information on 5 patients. There were 9 immediate complications (3%) including abdominal pain being most frequent (50% of these) with others including bleeding and vasovagal reaction. There was one serious delayed complication, where bleeding led to formation of retroperitoneal hematoma and finally multi-organ failure led to death. 171 procedures were blind liver biopsies. The sex distribution was 2:1 male. Mean age was 44 years. 88% of these biopsies were done for evaluation of viral hepatitis. The mean core size was 1.1cm and the average number of passes was 1.2.

Adequate samples were obtained in 143/171 (84%) procedures. There were 2 immediate complications- pain and a vasovagal reaction both of which responded to conservative measures. There were no delayed complications.

Conclusions: We present a retrospective comparison of ultrasound guided and blind percutaneous liver biopsies at a tertiary referral center. There was a significant difference in the mean core size of the blind and us guided liver biopsies, -551 with 95% confidence interval,(p-value < .0001) but not in the proportion of complications, -018 with 95% confidence interval between the two biopsies, (p-value = .161) making the us guided biopsy superior. An increase in the number of passes in the blind percutaneous group may help increase the core size without increasing the complication rate, but more prospective studies are needed in this direction.

UPPER GASTROINTESTINAL DISORDERS IN PATIENTS WITH HEPATITIS C: CORRELATION WITH ENDOSCOPY AND PATHOLOGY

Michael Kader, M.D., Parvez S. Mantry, M.D.*, Uma Sundaram, M.D. Strong Memorial Hospital, Rochester, New York.

Purpose: Patients with chronic hepatitis C (CHC) undergo upper endoscopies to screen for portal hypertension as well as for gastrointestinal symptoms. The potential source of chronic gastrointestinal blood loss can have serious implications in the face of Ribavirin therapy. We decided to retrospectively determine the prevalence and distribution of upper GI tract pathology in a cohort of Hepatitis C patients undergoing upper endoscopy.

Methods: We examined the charts of 114 patients with CHC who underwent upper endoscopies for a number of reasons and analyzed various characteristics. Of 114 patients,79 were male and 68% were Caucasians. The viral load over 500k in 73% and genotype1 in 89%. The mean ALT was 125. 24% of the patients admitted to the use of NSAIDs daily. The indication for endoscopy was dyspepsia/GERD in about half and anemia screening for portal hypertension in the other half.

Results: Endoscopy findings were - gastritis(68%), ulcers(17%), portal gastropathy(19%), varices(13%), and Barrett’s esophagus and esophagitis (4%). (total> 100% because of overlapping findings). Histologically, chronic gastritis was the most common pathology seen in 61% patients and 13% of this cohort was positive for H. Pylori none of whom presented with dyspeptic symptoms.

Of the 40 patients who had signs of portal hypertension, there was no correlation with fibrosis scores on liver biopsy. The average hematoctrit and transferrin saturation (t.s) of these patients was 39% and 35% respectively; there were 17 patients with a t.s < 20%. Of these 3 patients were on treatment and had gastric ulcers(1) or erosive gastritis (2). Of the other 17 patients with iron deficiency anemia 12 patients had gastric/duodenal ulcers (only 2 were H.Pylori positive). 2 patients had portal gastropathy.

Conclusions: Endoscopic and histologic gastritis is fairly common in patients with CHC. This may potentially contribute to the anemia well known to occur during combination therapy in these patients but needs prospective evaluation. Also there seems to be no correlation of portal hypertension with fibrosis scores. Upper endoscopies seemed to have a high yield in patients...
with anemia but our cohort did have a somewhat higher risk for GI pathology (NSAID use, smoking). Larger prospective studies are needed to further validate this observation.

247

EVALUATION OF HYPERAMMONIA IN PATIENTS WITH CHRONIC HEPATITIS C VIRUS INFECTION

Patients with chronic hepatitis C virus infection can develop portal hypertension leading to portal-systemic encephalopathy. Presence of this complication can exclude patients from treatment. Portal-systemic hepatic encephalopathy is diagnosed clinically and at times in combination with elevated plasma ammonia level.

Mr. “X” is a 47 year caucasian male with chronic hepatitis C virus infection was referred by his primary care physician for management of portal-systemic hepatic encephalopathy. Patient was diagnosed with hepatitis C virus infection in 1994 and had history of IVDA and blood transfusion in 1984 after MVA complicated by splenectomy. In June 2003, while at work, patient became confused and disoriented and was seen in emergency room of nearby hospital. Patient was suspected to have hepatic encephalopathy as serum ammonia level was 130. He was treated with lactulose and had an uneventful recovery in next 12 hours and was discharged home.

A month later patient was seen at my office a month later. Patient complained of excessive fatigue and RUQ discomfort. He has history of bipolar disorder and chronic pain syndrome. Medications included Zoloft, Ritalin, Methadone and lactulose. Until two weeks ago patient had been on Valproic acid which was stopped by psychiatrist. On examination, had anicteric sclera, liver 11 cm on percussion, alert and oriented with no focal deficit and asterixis absent. Blood tests showed only mild elevation of transaminases with normal bilirubin, albumin, platelets and INR.

Patient was suspected to have hyperammonic encephalopathy secondary to Valproic acid. During work up, liver spleen scan did not show increase colloid uptake in bone marrow compare to the liver and had periportal fibrosis only liver biopsy. He underwent standard treatment had ETR.

Other than portal-systemic hepatic encephalopathy, hyperammonia is generally seen in urea cycle defects. There are five urea cycle enzymes present in the liver are responsible to process ammonia obtained from amino acid. Among them, most important is the Ornithine transcarbamylase enzyme. More commonly, Valproic acid also causes hyperammonemia and hyperammonemic encephalopathy. In addition, Valproic acid also causes hepatitis, elevated liver function tests and hepatic failure. Hyperammonia is suspected to be caused by inibition of ornithine transcarbamylase enzyme and considered to be an idiosyncratic reaction. These effects of valproic acid can be completely reversed on stopping the drug.

248

FULMINANT HEPATIC FAILURE SECONDARY TO HEPATIC AMYLOIDOSIS
Michael Y. de Jesus, M.D., Manish K. Dhawan, M.D., Jose Oliva, M.D.*; Margaret Miszal, M.D., Radheshyam M. Agrawal, M.D., E.A.C.G. Allegheny General Hospital, Pittsburgh, Pennsylvania.

An 81 year-old Caucasian male presented to our hospital with symptoms of generalized weakness. Physical exam showed jaundice and palpebral ptosis. The inpatient evaluation was marked with features of progressive intrahepatic cholestasis. Work-up included radiographic imaging, liver biopsy, and ultrastructure evaluation with electron microscopy, revealed a diagnosis of hepatic amyloidosis.

Hepatic amyloidosis is found in approximately 15% of patients with multiple myeloma. This patient was found to have multiple myeloma by protein electrophoresis and confirmed by bone marrow histopathology. The patient ultimately succumbed to complications of hepatic failure within nineteen days of presentation.

Hepatic amyloidosis is typically asymptomatic. It rarely manifests as hepatic failure. Based on data collected by Ales et. al. (Southern Medical Journal Vol. 94, No. 10), this appears to be the fourth reported case of hepatic failure secondary to multiple-myeloma associated hepatic amyloidosis.

When progressive hepatic failure occurs in association with amyloidosis the prognosis remains poor. Therapeutic options are limited. Despite treatment with cytotoxic chemotherapy, survival rarely exceeds two years.

249

PEGYLATED INTERFERON/RIBAVIRIN AND INTERFERON/RIBAVIRIN THERAPY FOR CHRONIC HEPATITIS C IN A PRIVATE PRACTICE GASTROENTEROLOGY GROUP: A FIVE YEAR EXPERIENCE WITH 670 PATIENTS

Purpose: Multiple randomized trials have shown the efficacy of Interferon/Ribavirin (I/R) and Pegylated Interferon/Ribavirin (PI/R) therapies in patients with chronic Hepatitis C (Hep C). There are few studies assessing the effectiveness of therapy in a “real-world” private practice setting.

Methods: Retrospective chart review was utilized to assess the efficacy/tolerability of Hep C therapy and the baseline features of treated patients.

Results: 670 patients were seen in consultation for “Hep C” during the study period; 590 (88.1%) were viremic. Demographics of combination therapy patients: 61% male, mean age 45 +/- 7 yrs, 18% African American, 33% cirrhotic, 21% genotype 2 or 3. The degree of fibrosis and elevated liver enzymes were predictive of patients receiving treatment; age, race and genotype were not. During the study, 168 patients received 196 courses of Hep C therapy. 29 of these patients received Interferon Monotherapy (IM) (excluded from effectiveness results). 139 patients received 164 courses of Hep C therapy with I/R (98 courses) or PI/R (66 courses). 25 of these patients had failed IM in the past. Sustained virologic response (SVR) and sustained biochemical response (SBR) were achieved in 48% and 41% respectively in patients treated with PI/R (Table).

For patients treated with P/R, medication doses were decreased in 27% of cases.

Caucasian race, genotype non 1 and lower BMI were associated with a SVR; age, cirrhosis and gender were not. SVR with P/R based on genotype 1 or 4 vs. 2 or 3 was 29% and 77% respectively.

Conclusions: Combination therapy for Hep C was generally safe and moderately well tolerated in a large group of private practice Hep C patients. While the sustained virologic response rates are below those in large randomized trials, this may be explained by the higher proportion of African-American patients, patients with increased BMI and patients who failed previous therapy.

Future health policy decision regarding Hep C therapy should be based on data from effectiveness studies rather than efficacy trials. Additional studies must define the effectiveness of therapy in “real-world” patients cared for by community-based physicians.

Response to Combination Therapy

<table>
<thead>
<tr>
<th>Therapy</th>
<th>SBR</th>
<th>SVR</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/R</td>
<td>48/98 (49%)</td>
<td>33/98 (34%)</td>
</tr>
<tr>
<td>PI/R</td>
<td>32/66 (48%)</td>
<td>27/66 (41%)</td>
</tr>
</tbody>
</table>

250

LIVER TRANSPLANT AN UNCOMMON CAUSE OF ESOPHAGEAL VARICES
Esophageal varices are commonly associated with portal hypertension secondary to liver cirrhosis. The shortage of liver donors has fostered the institution of living-donor transplantation (LDT). The risks of LDT have not been systematically collected or reported since the first donor in 1989. However, the available evidence suggests that right hepatic lobe donation appears to be safe. To date there has been no report of esophageal varices occurring due to LDT in the donor. We report the first case of a patient without liver disease who underwent a LDT who subsequently developed esophageal varices.

Pt is a 55yo female referred to the Gastroenterology Clinic for anemia and occult positive stools. Pt was on high dose naproxen sodium for a sprained ankle and presented to the ER with lightheadedness. She was tlt negative, lavage negative, denied history of peptic ulcer disease, hematemesis, melena, hematochezia, abdominal pain, previous esophagogastroduodenoscopy (EGD) and colonoscopy. Pt was noted to be anemic with a hematocrit of 23.9 (baseline 38). She was instructed to stop her naproxen sodium, discharged on iron pills and colace, and given a Gastroenterology consult.

Pt had no other past medical history. Surgical history was significant for being a LDT of the right lobe in Jun01. She was a non-smoker and non-drinker. She had no history of hepatitis or cirrhosis. Family history was non-contributory. A month later she was evaluated by Gastroenterology. Initial laboratories to include a complete blood count, liver associated enzymes, basic chemistry panel, and coagulation panel were normal. Pt underwent a colonoscopy and EGD. The colonoscopy was normal. The EGD revealed three columns of Grade II esophageal varices without any stigmata of recent bleed and portal-hypertensive gastropathy. There were no gastric varices. A computed tomographic (CT) scan of the liver revealed a regenerated liver with a volume of 1092 cc. and carvernous transformation of the portal vein with filling defects in the collaterals representing thrombosis.

Esophageal varices have not been previously reported as a complication of LDT. The most common perioperative complications include infection, hepatic arterial thrombosis, biliary strictures, and bleeding complications. Mortality rate of the donor has been calculated at 0.2%. The long-term complications have mainly included quality-of-life issues for the donor that include body image and abdominal discomfort. Generally LDT is considered to be safe and without serious long-term sequelae.

**Purpose:**
The purpose of the study was to determine the safety and efficacy of interferon therapy on psoriasis in hepatitis C patients treated with interferon. Psoriasis, as an autoimmune condition, has been considered a contraindication to interferon therapy in chronic hepatitis C.

**Methods:**
A retrospective review of 100 charts of patients with Hepatitis C at an outpatient tertiary liver clinic was performed. 6 patients were identified who had psoriasis and received interferon therapy. A systematic chart review was performed; age, sex, and biopsy results were obtained. The type and duration of therapy was also reviewed including the response to treatment and psoriatic flares during treatment.

**Results:**
Of the 6 patients, 4 were male and 2 were females. The majority of patients had advanced liver disease, either bridging fibrosis (2) or cirrhosis (3). Treatment duration ranged from 24 to 96 weeks with either conventional interferon 3/week or pegylated interferon, or both. 3/6 patients had a sustained virologic response (SVR) with therapy. While 2 patients had a worsening of their psoriasis, it had little impact on their treatment since they were able to complete a full course of treatment. One patient who had a SVR has actually had complete resolution of his psoriasis while on treatment that has not reappeared 6 months after stopping treatment.

**Conclusions:**
Interferon therapy for Hepatitis C patients did not have a clinically significant impact on their psoriasis. Patients were able to tolerate the standard duration of therapy and obtain a SVR in 33% of those treated. Patients with psoriasis and Hepatitis C, especially those with advanced histologic liver disease, should be considered for interferon therapy in order to prevent progression to cirrhosis and its deadly consequences. Psoriasis should not be considered a contraindication to interferon therapy in patients with hepatitis C.

### Table 1.

<table>
<thead>
<tr>
<th>AGE</th>
<th>SEX</th>
<th>Biopsy</th>
<th>Rx type</th>
<th>Duration of Rx</th>
<th>Response to Rx</th>
<th>Psoriasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 M</td>
<td>Grade 3</td>
<td>IFN alfa-2b 3MU TIW + RBV</td>
<td>48</td>
<td>Relapse</td>
<td>Stable</td>
<td></td>
</tr>
<tr>
<td>36 M</td>
<td>Grade 2</td>
<td>IFN alfa-2b 3MU TIW</td>
<td>46</td>
<td>SVR</td>
<td>Stable</td>
<td></td>
</tr>
<tr>
<td>68 F</td>
<td>Grade 1</td>
<td>IFN alfa-2b 3MU TIW + RBV</td>
<td>44</td>
<td>NR</td>
<td>Stable</td>
<td></td>
</tr>
<tr>
<td>49 F</td>
<td>Grade 2</td>
<td>IFN alfa-2b 3MU TIW + RBV</td>
<td>40</td>
<td>NR</td>
<td>Stable</td>
<td></td>
</tr>
<tr>
<td>40 M</td>
<td>Grade 2</td>
<td>IFN alfa-2b 3MU TIW + RBV</td>
<td>40</td>
<td>NR</td>
<td>Stable</td>
<td></td>
</tr>
</tbody>
</table>

**RBV = ribavirin, IFN = interferon, PEG = pegylated**

252

**PERCUTANEOUS LIVER BIOPSY: IS SIMPLE BEDSIDE TECHNIQUE USING A PORTABLE ULTRASOUND SAFE AND EFFECTIVE IN AN OUTPATIENT SETTING?**

*Sushil Ahlawat, M.D., Raja Moh-Ud-Din, M.D., Christian Ngouega, M.D., Louis Korman, M.D.*, Georgetown Univ Med Ctr and VA Medical Ctr, Washington, District of Columbia.

**Purpose:**
To compare the safety and efficacy of a simple bedside technique of percutaneous liver biopsy in an outpatient setting using an inexpensive portable ultrasound device (SiteRite 3, 3.5MHz) with the traditional percussion guided technique.

**Methods:**
The traditional percutaneous liver biopsies were performed over consecutive six months (August 2001 to January 2002) in 36 patients. The liver biopsy site was identified using percussion over the intercostal spaces in the anterior axillary line and a Tru-Cut type needle was used to perform liver biopsy. The ultrasound guided approach to identify liver biopsy site was used over consecutive 3 months in 30 patients from August 2002 to October 2002. The liver biopsy site for the ultrasound guided approach was identified using the portable ultrasound device.

**Results:**
Out of a total of 66 patients that underwent liver biopsies over 9 months, conventional percussion technique was used in 36 patients (Group A) and an ultrasound guided approach in the remainder 30 patients (Group B). A successful liver biopsy defined by the pathologist as an adequate specimen for interpretation was obtained in 92 percent of patients in Group A compared to 97 percent in Group B. More than one pass to obtain a good core specimen was required in only one patient in Group A compared to 2 patients in Group B. Following liver biopsy, 11 percent of patients developed abdominal pain in Group A versus 6 percent in Group B. Two patients developed subcapsular hemotoma following liver biopsy in Group A; however, none in the Group B. Hospitalization because of liver biopsy related complications was required in 2 patients in Group A compared to none in Group B. No patient in either group required blood transfusion or surgical intervention for post biopsy complications and no death was encountered.

**Conclusions:**
In our experience a simple bedside technique using an inexpensive portable ultrasound appears to be safe and effective method of performing outpatient liver biopsy compared to the conventional percussion guided technique of liver biopsy. However, large prospective studies are needed to confirm our observations.
Post liver biopsy outcome

<table>
<thead>
<tr>
<th></th>
<th>Group A (conventional technique), n=36</th>
<th>Group B (ultrasound guided technique), n=30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful biopsy</td>
<td>33</td>
<td>29</td>
</tr>
<tr>
<td>≥ one pass</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Subcapsular hemotoma</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

253

TREATMENT OUTCOMES OF TRANSCATHETER ARTERIAL CHEMOINFUSION (TACI) IN PATIENTS WITH UNRESECTABLE HEPATOCELLULAR CARCINOMA (HCC)
Bo Joon Choi, M.D., Ajaz Ahmed, M.D., Mahmood Razavi, M.D., Daniel Sze, M.D., Nicole Simpson, M.D., Ruel T. Garcia, M.D., Emmet B. Keeffe, M.D., Mindie H. Nguyen, M.D., M.A.S.∗... Stanford University, Palo Alto and Liver and Digestive Health Medical Clinic, San Jose, California.

Purpose: Transcatheter arterial chemoembolization (TACE) is a common therapy for unresectable HCC, but it carries a 5–16% risk of serious complications. TACI without embolization may have similar efficacy and fewer side effects, but few studies have examined outcomes of TACI.

Methods: We performed a retrospective study of 295 consecutive cases of TACI in 150 patients in 1/99–9/02 at a U.S. hospital. All received a mixture of cisplatin, doxorubicin and lipiodol and were observed overnight. They were evaluated clinically at 2 weeks, radiologically at 3 months, and received additional TACI if there were residual or new tumors. Response to TACI is categorized as complete response (CR, no residual viable tumor), received additional TACI if there were residual or new tumors. Response to TACI is categorized as complete response (CR, no residual viable tumor), partial response (PR, partial uptake with residual viable tumor), and no response/progression of tumor (NR). We used multiple logistic regression to estimate odds ratio relating tumor response and age, sex, severity of liver disease and tumor staging.

Results: Mean age= 58.4±12. Most were White (27.3%) or Asian (61.3%). Most were male (77.3%), had cirrhosis (72%), and had either chronic hepatitis C (45.2%) or B (38.4%). Mean MELD score = 31.7%: 18.7%: 42.4%; Okuda I:II:III 51.5% 25.0% 23.5%.

Conclusions: TACI is an effective and safe treatment for unresectable HCC, but side effects, but few studies have examined outcomes of TACI.

254

CYTOPROTECTIVE EFFECTS OF NITRITE DURING ISCHEMIA-REPERFUSION OF THE LIVER
Sathya Jagannohan, M.D., Mark Duranski, Andre Dejam, Ph.D., Mark T. Gladwin, Ph.D., Christopher G. Kevil, Ph.D., William Langston, Ph.D., David J. Lefer, Ph.D.∗... LSU Health Sciences Centre, Shreveport, Louisiana and NIDDK, NIH, Maryland.

Purpose: Nitrite (NO2−) has been identified as an important circulating storage form of nitric oxide (NO) and is bioactivated by deoxyhemoglobin and other deoxygenated tissue heme proteins in ischemic tissues. We hypothesized that conversion of nitrite to NO during ischemia would protect against hepatic ischemia-reperfusion (I/R) injury.

Methods: Using C57BL/6 mice, sodium nitrite, and saline were injected intraperitoneally following hepatic ischemia. This was followed by reperfusion for 5 hours for analysis of liver enzymes and 24 hrs for pathological analysis.

Results: Nitrite administration resulted in a dose dependent reduction in AST levels, and necrosis equal to sham controls, with peak effect at a concentration of 24 μM (Figure). [figure]∗ p < 0.05 vs 0μM and † p,0.01 vs 0μM. Consistent with hypoxia dependent nitrite bioactivation, nitrite was reduced to NO, S- and N-nitrosated proteins within 30 mins of reperfusion. The NO scavenger, PTIO, completely inhibited the effects of nitrite. eNOS deficiency or heme-oxygenase-1 inhibition did not attenuate the cytoprotective effects of nitrite therapy. In contrast, sodium nitrate(24 μM) did not protect the ischemic liver.

Conclusions: These data demonstrate a remarkable function for the relatively simple inorganic anion nitrite as a potent inhibitor of liver I/R injury. Cytoprotection conferred by nitrite treatment appears to be mediated through NO and formation of other nitrosylated compounds. Nitrite could be used as a novel therapeutic agent in treatment of ischemic liver, shock, liver surgery and transplantation.

255

HYPERAMMONEMIC ENCEPHALOPATHY 48 YEARS AFTER URETERTOSIGMOIDOSTOMY
Aman K. Singh, M.D., Karen Szauter, M.D., Eric Walser, M.D., Roger Soloway, M.D.∗... University of Texas Medical Branch Galveston, Galveston, Texas.

Encephalopathy can be seen in patients who have undergone ureterosigmoidostomy for various congenital bladder malformations. The pathogenesis involves splitting of urea by the colonic flora and diffusion of ammonia into venous collateral circulation bypassing the liver. We report a case of a patient with hyperammonemic encephalopathy 48 years after ureterosigmoidostomy, reversed after embolization of the portosystemic shunt.

Case Report: A 50-year-old man was admitted to our institution with 10 days of confusion, and progressively worsening stupor. The patient had a history of bladder extrophy and had undergone ureterosigmoidostomy at age 2. Other medical problems included Hepatitis C, but he had no stigmata of chronic liver disease. Initial work up revealed: Alb: 3.9g/dL, AST: 45U/L, ALT: 43U/L, T Bil: 0.3mg/dl, PT: 13 sec, PLT: 184K/m2, and ammonia: 321μmol/L. A liver biopsy showed Grade 2, Stage 3 disease with no evidence of cirrhosis and a portal pressure of 7mmHg. Reversal of the ureterosigmoidostomy was considered but not attempted due to large veins in the surgical field. An abdominal CT scan revealed a large portosystemic shunt from the inferior mesenteric vein to the iliac veins due to prior surgery for bladder extrophy. Multiple 10mm coils were used to occlude the shunt completely. His ammonia level decreased dramatically to 20μmol/L.
after the procedure. Patient remains clinically stable without evidence of encephalopathy for the last seven months.

**Discussion**: In patients with urectosigmoidostomy, there is increased production of ammonia in the colon from ureolysis due to increase in gram negative bacilli and an increased absorption of ammonia into the portal circulation. Patients are also believed to have increased portal caval shunting from the surgery. Studies have shown that reversal of the urectosigmoidostomy, broad spectrum antibiotics and the use of lactulose have been tried to control patient symptoms. In our patient, we believe the symptoms were due to the combination of the increased colonic bacteria as well as his large portosystemic shunt.

We believe that this is the first case reported of improvement of hyperammonemic encephalopathy by embolization of the portosystemic shunt.

**256**

**NON-ORGAN-SPECIFIC AUTOANTIBODIES IN CHRONIC HEPATITIS C: CLINICAL SIGNIFICANCE AND IMPACT ON TREATMENT WITH INTERFERON AND RIBAVIRIN**

Deepika Laxmi Koya, M.D., Ellen W Shaw, M.D.*. Abington Memorial Hospital, Abington, Pennsylvania.

**Purpose**: Non-organ-specific auto-antibodies (NOSA) like antinuclear antibody (ANA) and antismooth muscle antibody (SMA), which are well recognized, as diagnostic markers of type 1 autoimmune hepatitis, are frequently associated with chronic hepatitis C infection. The interpretation of these autoimmune markers is highly important for proper decision making in therapy as interferon therapy leads to exacerbation of autoimmune hepatitis while corticosteroids enhance viral replication in patients with chronic hepatitis C. The aim of our study was to evaluate whether the presence of these NOSA in a cohort of HCV infected patients influenced their response to treatment with INF + ribavirin and also to compare the clinical, biochemical and histological profile of HCV related disease in auto-antibody positive and auto-antibody negative patients.

**Methods**: This was a retrospective chart review of chronic hepatitis C patients who were treated with a combination therapy of INF + ribavirin or Pegylated INF + ribavirin. 85 patients were selected based on the inclusion and exclusion criteria. The auto-antibodies studied were ANA, ASMA, AMA; a significant titer of each was 1:40 or higher. There were 16 patients positive for at least one of these antibodies. These patients were matched to 42 auto-antibody negative patients for factors proven to predict response to treatment such as HCV genotype, viral load, and inflammation and fibrosis scores on liver biopsy.

**Results**: There were no statistically significant differences between the two groups in demographics or biochemical profiles. No difference was observed in genotype, viral load or liver biopsies as they were well matched prior to comparison. There was a trend towards a low sustained viral response (SVR) in the auto-antibody positive group (6.2%) as compared to the auto-antibody negative group (38%) though this was not statistically significant. There was a trend towards a low sustained viral response (SVR) in the auto-antibody positive group (6.2%) as compared to the auto-antibody negative group (38%) though this was not statistically significant. There was a trend towards a low sustained viral response (SVR) in the auto-antibody positive group (6.2%) as compared to the auto-antibody negative group (38%) though this was not statistically significant. There was a trend towards a low sustained viral response (SVR) in the auto-antibody positive group (6.2%) as compared to the auto-antibody negative group (38%) though this was not statistically significant. There was a trend towards a low sustained viral response (SVR) in the auto-antibody positive group (6.2%) as compared to the auto-antibody negative group (38%) though this was not statistically significant. There was a trend towards a low sustained viral response (SVR) in the auto-antibody positive group (6.2%) as compared to the auto-antibody negative group (38%) though this was not statistically significant. There was a trend towards a low sustained viral response (SVR) in the auto-antibody positive group (6.2%) as compared to the auto-antibody negative group (38%) though this was not statistically significant. There was a trend towards a low sustained viral response (SVR) in the auto-antibody positive group (6.2%) as compared to the auto-antibody negative group (38%) though this was not statistically significant.
Conclusions: 1) US Veterans with HCV have a higher prevalence of immunity to hepatitis A and hepatitis B than the general population. 2) The prevalence of immunity to HAV increased by age but did not change for HBV. 3) US Veterans with HCV have a high prevalence of decompensated liver disease.

WHAT IS THE COURSE OF PATIENTS UNDERGOING ANTI-VIRAL THERAPY FOR RECURRENT HEPATITIS C VIRUS LIVER DISEASE?


Purpose: Chronic hepatitis C virus (HCV) liver disease is the commonest indication for orthotopic liver transplantation (OLT) in the USA. Allograft rejection is universal, and recurrent HCV liver disease seemingly inevitable. Anti-viral therapy (AVT; interferon alpha and/or ribavirin) is being used post-OLT, but outcomes are uncertain. Reports of acute and/or ductopenic allograft rejection during AVT for recurrent HCV liver disease have led to concern about the appropriateness of such treatment. We sought to determine the proportion of patients who developed acute and/or ductopenic allograft rejection whilst undergoing AVT for recurrent HCV liver disease; and the impact this had on graft and patient survival.

Methods: We identified all patients who underwent OLT at our institution for chronic HCV liver disease between January 1991 and May 2004, and to whom AVT was prescribed for histologic recurrent HCV liver disease patient. Patients who developed acute and/or ductopenic allograft rejection whilst receiving AVT were compared to those patients who did not, with respect to age at OLT, gender, race, viral genotype, primary calcineurin inhibitor (CI) therapy, graft survival, and death.

Results: One hundred-seventeen patients underwent OLT for chronic HCV liver disease during the study period. Forty-nine patients (39 men) received AVT for histologic recurrent HCV liver disease. Seven patients (four men; five white, one AA, one Asian; median age 52 years [range 40–61]; five infected with genotype 1, and two not known) developed acute and/or ductopenic allograft rejection during AVT. Primary CI therapy comprised ciclosporine (2) and tacrolimus (5). Cholestatic liver test abnormalities developed a median of 4 months (range 3–7) after starting AVT (pegylated interferon and ribavirin), and in each case this development was associated with HCV RNA elimination from serum (4), or almost total clearance thereof (3). Three patients died of complications of profound cholestasis. None of the other 42 patients developed acute and/or ductopenic rejection in the course of AVT: 12 achieved SVR, and 18 obtained measurable liver test improvement.

Conclusions: Aggressive anti-HCV therapy post-OLT led to SVR in 32.6% of patients; however, this was associated with rejection in 14.3% of patients. Given the apparent trade-off of SVR for rejection, attention to immunosuppression during AVT is mandatory. Randomized controlled trials are needed in large cohorts to ascertain whether AVT leads to improved outcomes.

HEPATITIS C IS A MAJOR ETIOLOGY FOR HCC IN VIETNAMESE AMERICANS

Mindie H. Nguyen, M.D., M.A.S.*, Huu Trinh, M.D., Ruel T. Garcia, M.D., Jing Ning, M.D., Phuong Vien, Emmet B. Keeffe, M.D. Stanford University, Palo Alto and Liver & Digestive Health Medical Clinic, San Jose, California.

Purpose: In addition to HBV, HCV is also common in Asia (6–7% in Southeast Asia). Vietnamese Americans represent a significant percentage of immigrants in many U.S. urban areas. While the importance of chronic HBV has long been recognized, little is known of the role of HCV in the development of end-stage liver disease and HCC in this population.

Methods: We conducted a cross-sectional study of all Vietnamese American patients referred for evaluation of chronic HBV or HCV to a GI clinic between 1992–99. We recorded patient characteristics and clinical outcomes such as cirrhosis, hepatic decompensation, and hepatocellular carcinoma (HCC). Risk factors (RF) for viral hepatitis were obtained from physician-administered questionnaires. We used Chi square statistics to compare categorical variables and multiple logistic regression to estimate odds ratios relating HCC with sex, age, HBV vs. HCV, and presence of cirrhosis and decompensated liver disease.

Results: We identified a total 1227 Vietnamese patients with either HCV (73.0%) or HBV (27.0%). Mean age = 59.9 ± 9.8. Most were male (60.1%). RF for viral infection were identifiable in only 283 (23.1%). The most common RF for HCV were a history of blood transfusion (46.3%) and exposure to contaminated needles (29.8%), while a family history of hepatitis (44.2%) and a history of blood transfusion (26.2%) were the strongest predictors for HBV (p < 0.0001).

Prevalence of cirrhosis = 8.8% (n = 102). Of these, 54.9% had decompensated liver disease (n = 56). HCC prevalence = 6.8% (n = 54). Of these, 55.6% were related to HCV and 44.4% were related to HBV. Among patients with HCV, HCC prevalence = 6.1% (n = 30); and among those with HBV, HCC prevalence = 7.9% (n = 24). There were no statistically significant differences between HBV and HCV as predictors of cirrhosis, decompensated liver disease, or HCC. On multivariate analysis, the strongest independent predictor for HCC was the presence of decompensated cirrhosis (OR = 17.4, p < 0.0001), followed by male gender (OR = 3.5, p = 0.005) and age (OR = 1.06, p = 0.0001). Although the 1 year diagnosis was put and the child was managed as porphyria. Another 3 attacks were successfully managed by me but other 2 siblings died due to severe attacks and bad management by others.

A TYPE OF HEPATIC PORPHYRIA LEAD TO DEATH OF SIX SIBLINGS IN ONE FAMILY

Essam Mohmd Al-Hady Al-Hady, M.D.*. Zagazig University, Zagazig, Egypt.

Purpose: This is the 5th reported cases allower the world. The family lives in a rural area in Sharkia, Egypt, but their residence is from Turkey. The parents are 2nd degree consanguinity. They had 7 siblings, honey burch and a chicken farm guarded by a dog, where their children were playing with it. I noticed that these children were floppy in their infancy. One day, (Aug. 1993) I heard that the smaller daughter - 2 years old - suddenly died after an attack of flu, fever, for which she received medications. Six months later the other daughter - 3 years old - died also suddenly after same sequence of events. The father told me that her urine was reddish during the attack. Three years later, one brother developed flu & U.R.T.I., and received medications. In the next morning, he felt sever leg pains followed by inability to walk then the condition progressed rapidly to ascending paralysis, pulmonary edema and death in 4 hours. In the next day: the other brother - 6 years old - developed a chicken farm guarded by a dog, where their children were playing with it. I noticed that these children were floppy in their infancy. One day, (Aug. 1993) I heard that the smaller daughter - 2 years old - suddenly died after an attack of flu, fever, for which she received medications. Six months later the other daughter - 3 years old - died also suddenly after same sequence of events. The father told me that her urine was reddish during the attack. Three years later, another brother developed flu & U.R.T.I., and received medications. In the next morning, he felt severe leg pains followed by inability to walk then the condition progressed rapidly to ascending paralysis, pulmonary edema and death in 4 hours. In the next day: the other brother - 6 years old - developed a chicken farm guarded by a dog, where their children were playing with it. I noticed that these children were floppy in their infancy. One day, (Aug. 1993) I heard that the smaller daughter - 2 years old - suddenly died after an attack of flu, fever, for which she received medications. Six months later the other daughter - 3 years old - died also suddenly after same sequence of events. The father told me that her urine was reddish during the attack. Three years later, another brother developed flu & U.R.T.I., and received medications. In the next morning, he felt severe leg pains followed by inability to walk then the condition progressed rapidly to ascending paralysis, pulmonary edema and death in 4 hours.
Methods: 1. Hoesh Test in urine.
2. Determination of Delta Amino Leuvalinic Acid (ALA) level in urine and enzymatic studies in blood.
3. Genetic studies by taking blood from the parents and the living siblings (by prof. Desnick, Sini institute, New York)

Results: confirmed the diagnosis of this type of porphyria. It is delta Amino Leuvalinic Acid Dehydratase - ALAD - deficiency Porphyria. It is an autosomal recessive disorder

Conclusions: This is the rarest type of hepatic porphyrias & the most rapidly fatal disease if the patient developed the attack by certain stimulations. The remaining family is living well now after proper management.

262

COMPARISON OF MORBIDITY AND MORTALITY BETWEEN PRIMARY AND SECONDARY PROPHYLAXIS WITH ENDOSCOPIC VARICEAL LIGATION (EVL) FOR ESOPHAGEAL VARICES


Purpose: Endoscopic variceal ligation (EVL) is routinely employed in the secondary prophylaxis of esophageal varices and in their primary prophylaxis if they are large and not amenable to beta-blockers. We reviewed the outcomes and complications of EVL at a tertiary referral center.

Methods: Retrospective chart review of 104 patients who underwent EVL during a two year period. Grade II and above esophageal varices were banded on average every 4 to 6 weeks until obliteration. Nonselective betablockers (NSB) when used were titrated to a pulse between 55 and 60.

Results: 104 patient charts were reviewed for a total 178 procedures of which there were 115 EVLs for primary and 63 for secondary prophylaxis.

The etiology of liver disease was similar in both groups with Hepatitis C being the most common. The mean number of bands placed per procedure in the primary prophylaxis group (PPG) was 3 vs. 4 in the secondary prophylaxis group (SPG).

The mean grade of esophageal varices was III in the primary group and IV in the secondary group.

The incidence of portal hypertensive gastropathy, GAVE, and gastric varices was the same in both groups. In the PPG 33/59 (56%) were on nonselective betablockers (NSB) when used were titrated to a pulse between 55 and 60.

Results: 104 patient charts were reviewed for a total 178 procedures of which there were 115 EVLs for primary and 63 for secondary prophylaxis.

The etiology of liver disease was similar in both groups with Hepatitis C being the most common. The mean number of bands placed per procedure in the primary prophylaxis group (PPG) was 3 vs. 4 in the secondary prophylaxis group (SPG).

The mean grade of esophageal varices was III in the primary group and IV in the secondary group. The incidence of portal hypertensive gastropathy, GAVE, and gastric varices was the same in both groups. In the PPG 33/59 (56%) were on nonselective betablockers vs. 10/48 (21%) in the SPG.

Over a 3 yr period, in the PPG 6/59 patients experienced variceal bleeding. Of those 6 patients, 2 were minor bleeds secondary to superficial ulcers from the banding procedure. One patient had significant chest pain post procedure that subsided in 48 hours. There were no deaths related to variceal bleeding. 6/45 patients bled in the in the SPG from varices. There was one bleed from an ulcer related to the EVL. There was one mortality in the SPG related to bleeding from esophageal varices instead of regular EVLs. Therefore overall adverse events from EVL in both groups together were low (2.2%).

Of 14 patients who were on a non selective betablocker 5 had variceal bleeding.

Conclusions: In our study the risk of recurrent variceal bleeding is reduced to less than 15% in 3 yr period (significant reduction from a 75% rate of rebleed in one year without treatment). Also the risk of variceal bleed in patients who have never bled before with EVL for primary prophylaxis in our study was 10% over 3 years. This study also revealed that EVL for primary prophylaxis has a low rate of adverse events (5%). The role of combined pharmacotherapy and EVL is not a routine practice (21-56%) and its efficacy needs to be further evaluated with prospective trials.

263

SEXUAL ACTIVITY AS A RISK FACTOR FOR HEPATITIS C IN PUERTO RICO

Joel De Jesus-Caraballo, M.D., Erick Suarez-Perez, Ph.D., Marialia Alvarez, Federico Rodriguez-Perez, M.D., Doris H. Toro, M.D.*. San Juan VA Medical Center and University of Puerto Rico. San Juan, Puerto Rico.

Purpose: The purpose of this study is to define the role of sexual transmission among Puerto Rican hepatitis C virus (HCV) infected patients and to determine if there is an association between sexual and non-sexual risk factors, genotypes and viral load.

Methods: A cross-sectional epidemiological IRB approved study was performed among patients with positive HCV infection from November 2001 to May 2002. Enrolled patients completed an epidemiological questionnaire. Blood samples were obtained for HCV genotype and viral load.

Results: 500 patients were enrolled, 68% were men. Most patients (70%) were between 45–65 years old. Reported sexual risk factors were: sex with a drug user (30.3%), multiple (>10) sexual partners (28.9%), sex with a HCV infected partner (9.0%) and homosexuality (8.3%). Most common non-sexual risk factors were: blood transfusions (30.2%) and intravenous drug use (IVDU) (46.8%). Those patients with IVDU reported having sex at a younger age (15.5 y/o), than those non-IVDU (18.9 y/o). p = .015. IVDU reported both, a higher frequency of homosexual encounters than non-IVDU (10.8% vs. 1.5%) p < .0001 as well as having sex with an IVDU (47.8% vs. 11.3%) p < .0001. Those patients who reported sex with an infected HCV partner and were non-IVDU had fewer partners than those with IVDU (1–2 partners vs. >20) p < .001. As a group, homosexuals had sex at a younger age, with multiple partners (>20) and had a higher proportion of sex with IVDU. The most common genotype was I (82%). After adjusting for age, gender and risk factors no significant association was found between genotype and sexual variables. The differences between groups regarding viral load showed no statistical significance.

Conclusions: Data from our study support that sexual risk factors are common among infected patients. It appears that high-risk sexual practices such as multiple partners, sex with an infected person and sex with an IVDU may favor HCV transmission. Even though sexual behavior appears to play an important role for HCV transmission in our population, the parenteral route continues to be the most common risk factor. No significant association was found between genotype, viral load and sexual transmission. When excluding parenteral transmission, having sex with a HCV infected partner was the only identified risk factor in 6.5% of the studied population.

264

HIGH PREVALENCE OF HEPATITIS A IN TUNISIA: A PROSPECTIVE EVALUATION OF 351 CASES

Riadh Bouldi, M.D.*, Mohamed Ben Moussa, M.D., Senda Laajili, M.D., Sonia Ben Hmida, M.D., Amine Hila, M.D., Ali Amor, M.D., Fawzi Khediri, M.D. - Military Hospital of Tunis, Tunisia, Tunisia and Medical University of South Carolina, Charleston, South Carolina.

Purpose: To establish the epidemiological profile of hepatitis A in Tunisia, to identify risk factors and propose a possible vaccination strategy.

Methods: 351 patients were included in this study. They represented 5 different groups: 174 consecutive children and adolescents (mean age 9 yrs) who presented to the hospital laboratory, over a period of 2 months, for out-patient labs; 61 volunteer blood donors (mean age 22 yrs); 58 health professionals presented to the hospital laboratory, over a period of 2 months, for out-patient labs; 351 patients were included in this study. They represented 5 different groups: 174 consecutive children and adolescents (mean age 9 yrs) who presented to the hospital laboratory, over a period of 2 months, for out-patient labs; 61 volunteer blood donors (mean age 22 yrs); 58 health professionals presented to the hospital laboratory, over a period of 2 months, for out-patient labs; 500 patients were enrolled. 68% were men. Most patients (70%)

Results: The total prevalence of anti-HAV Ab was 69%. The table below summarizes prevalence by group.

In the children and adolescents group, anti-HAV Ab prevalence increased with age: 8% in those 6 months to 5 yrs old (p = 0.003; odds ratio = 5.5); 32% in those 5 to 10 yrs old (p = 0.01; odds ratio = 2.1); 59% in those 10 to 15 yrs old, and reaching 76% in those 15 to 20 yrs old. We also found 4 independent risk factors associated with a high anti-HAV Ab prevalence: living in rural areas, origin from the North-West of the country, and past personal or family history of icterus or hepatitis (adjusted odds ratios were respectively: 5.24; 2.42; 9.87; and 3.08).

Conclusions: Even though there is a general tendency towards a lower prevalence of HAV in Tunisia, and a shift of the age of contact with the virus towards adolescence, the fact that the prevalence is 76% in those 15 to 20
ACUTE FATTY LIVER OF PREGNANCY
Aman K. Singh, M.D., Karen Szauter, M.D., Steven A. Weinman, M.D.*
University of Texas Medical Branch, Galveston, Texas.

Acute fatty liver of pregnancy [AFLP], although an unusual obstetrical complication, carries a high mortality for the infant and the mother. Identification of the underlying genetic defect and improved understanding of the management of AFLP have improved outcomes for both mother and infant.

Case Report: A 19 year-old female, gravida 2 and para 1, presented at 36 weeks gestation with complaints of lethargy, nausea and dark urine for one month. Physical examination revealed a gravid female with icteric sclera, jaundice and asterixis. Pertinent laboratory included: HGB:12.2 g/dL, PLT: 74 K/mm², PT: 19.1 sec, Fibrinogen: 81mg/dL, Glucose: 39mg/dL, BUN: 23mg/dL, Creatinine: 3.69mg/dL, T Bil: 13.7mg/dL, Alk Phos: 439mg/dL, PT: 23.6mg/dL, Alb: 2.4g/dL and GGTP: 159 U/L. Ultrasound of the mother’s liver was normal. Fetal monitoring revealed late decelerations and the patient was taken for emergent c-section. Post delivery, patient’s condition continued to deteriorate requiring infusions of glucose, platelets and FFP. The need for liver transplantation was contemplated but the patient dramatically improved four days after the delivery. She and the infant were discharged twelve days after presentation in a stable condition.

Discussion: AFLP occurs between the 30th and 38th week of gestation. The inheritance pattern is recessive, involving heterozygous parents and homozygous fetus. Mutation from glutamic acid to glutamine at amin acid residue 474 (Glu474Gln) is noted on at least one allele. The fetus has an isolated deficiency of long chain 3-hydroxyacyl-CoA dehydrogenase (LCHAD) which leads to disorder of mitochondrial fatty-acid oxidation. Maternal liver histology during the acute phase shows ballooned hepatocytes containing dense nuclei. On electron microscopy, structural changes in the mitochondria are evident including pleomorphism and crystalline inclusions, suggesting mitochondrial deficiency. The fetal mortality is as high as 75–90% but changes in diet have shown promise in the fetal survival. Treatment includes frequent feedings of a low fat diet including medium chain triglycerides for the infant. Studies have shown that the disease progresses rapidly if the fetus is not delivered. Fetal mortality has been significantly reduced due to the increasing awareness, earlier diagnosis and appropriate treatment.
AN ECONOMIC ANALYSIS OF PREMARRIAGE PREVENTION OF HEPATITIS B TRANSMISSION IN IRAN
Mohammadreza Rezaizadeh, M.D., Peyman Adibi, M.D., Delnaz Roshandel, M.D., Negar Behrouz, M.D., Shahin Ansari, M.D., Mohammad Hossein Soumei, M.D., Saeed Shahrizad, M.D., Mohammad Reza Zali, M.D., F.A.C.G.*. Research Center for Gastroenterology and Liver Disease, Tehran, Islamic Republic of Iran.

Purpose: To assess the economic aspects of HBV (hepatitis B virus) transmission prevention for premarriage individuals in a country with cultural backgrounds like Iran and intermediate endemicity of HBV infection.

Methods: A cost-effectiveness analysis model was used from the health care system and society perspectives. The effectiveness was defined as the number of chronic HBV infections averted owing to the following strategies:

1. HBsAg screening to find those would-be couples one of whom is HBsAg positive and putting seronegative subjects on a protection protocol comprising HBV vaccination, single dose HBIG and condom protection.
2. HBsAg screening as above, in addition to performing HBeAb screening in the HBsAg negative spouses of the HBsAg positive persons and giving the protocol only to HBeAb negative ones.

Sensitivity and threshold analyses were conducted.

Results: The cost of each chronic infection averted was 202$ and 197$ for the strategies 1 and 2, respectively. Sensitivity analysis showed that strategy 2 was always slightly cheaper than strategy 1. The threshold value for the strategies 1 and 2, respectively. Sensitivity analysis showed that strategy 2 was always slightly cheaper than strategy 1. The threshold value for the lifetime costs of chronic liver disease below which the model was cost saving was 1346$ in strategy 1 and 1312$ in strategy 2. The threshold value for the lifetime costs of chronic liver disease below which the model was cost saving was 1346$ in strategy 1 and 1312$ in strategy 2.

Conclusions: Premarriage prevention of HBV transmission in the countries with cultural backgrounds similar to Iran seems cost saving.

ASSESSMENT OF IN-HOUSE RECOMBINANT STRIP IMMUNOBLOT BLOT ASSAY (SIBA) AND GENOTYPE DISTRIBUTION OF INDIAN HCV STRAINS IN CHRONIC RENAL FAILURE (CRF) PATIENTS
Mohammed Nanne Khaja, Ph.D., Chandra Madhavi, Ph.D., Mohammed Ajeaz Haeeb, D.M., Chittoor Mohammed Habibullah, M.D., F.A.C.G.*. Deccan College of Medical Sciences, Hyderabad, Andhra Pradesh, India.

Purpose: Recent accumulated data shows that high prevalence rates of hepatitis C virus (HCV) infection observed in chronic renal failure patients (CRF). Disease progression and distribution of genotypes is most important for CRF patients because specific viral genotypes are associated with different clinical manifestations. Present study aims to assess the in-house recombinant strip immunoblot assay and genotype distribution among CRF patients.

Methods: A total of 76 chronic renal failure patients (CRF) who underwent hemodialysis and multiple blood transfusions were analyzed using the in-house indigenously developed recombinant strip immunoblot assay, Abbott 3rd EIA testing and scoring for the presence of HCV RNA by RT-PCR in addition to genotyping at NS5 region of the samples was also included in the present study.

Results: Among 76 Chronic Renal Failure (CRF) patients 70 (92.1%) patients were observed too have active viremia in their blood circulation. Out of 70 CRF viremic patients, 64 (84%) patients were recognized for SIBA and 3rd Abbott EIA and three patients were found indeterminate for SIBA. In 6 weeks follow-up 3 SIBA indeterminate patients were recognized anti-HCV antibodies with 3rd Abbott EIA and only 3 HCV-RNA positive were turned into positive with SIBA and 3rd Abbott EIA. Interestingly 52.85% (37/70) CRF patients were showed that genotype 1b followed by genotype 3b(20%), 3a(14.28%), and 1a (12.85%) respectively. These results resembled with our earlier reports.

Conclusions: Various methods are currently used for HCV typing in CRF patients, particularly based on PCR amplification of a portion of the genome. PCR methods are not very standardized and reproducibility remains a concern. In the present study we used serological assessment of HCV in CRF patients. A noteworthy observation is that NS3 antigen is positive for all SIBA-HCV. This novel assay is highly reproducible and reliable technique for detecting HCV serotypes in chronic renal dialysis patients. We found a great coincidence between serotyping by SIBA and genotyping methods in CRF patients.
Conclusions: Liver abscess should be considered for aspiration at presentation if the score is > 5 according to our model of disease severity, irrespective of etiology. Impaired renal function, leukocytosis, low platelet counts, involvement of both lobes of liver and abnormal chest X-ray were associated with high mortality.

273

PERFORMANCE OF ADEFOVIR DIPIVOXIL AND LAMIVUDINE IN THE TREATMENT OF CHRONIC HEPATITIS B WITH YMDD VIRAL MUTANTS

Purpose: Adefovir dipivoxil is a phosphonate nucleotide analogue of AMP with potent activity against HBV polymerase, reportedly efficient in HBBeAg-positive, HBBeAg-negative and lamivudine-resistant viral mutants chronic B hepatitis. Clinical trials show histological, virological and biochemical responses, either in association with lamivudine or in monotherapy.

Methods: We have analysed the efficacy of adefovir in a an open, single centre, prospective trial, 10 mg/daily, in a group of compensated chronic hepatitis B patients, with ongoing treatment with lamivudine (for more than 6 months) in whom HBV DNA levels had reappeared, associated with the presence of YMDD resistant mutants, in codon rt180 and rt204 (in vitro hybridisation INNO-Lipa HBV DR). All had previously histology performed, ALT > 1,2 ULN, at least in 2 occasions in 6 months. Patients were excluded if creatinine > 1,5 mg/dl, neutrophils < 1000 cell/mm, Hgb < 10 g/dl and alfa-fetoprotein > 40 ng/ml, evidence of hepatic mass and seropositivity for HIV. HCV or HDV. Clinical monitoring and blood tests were protocolled at week 0,4,8,16,24,32,40 and 48, with HBV DNA assessment at w8,16,24 and 48.

Results: Twenty one patients (16 males; mean age 54 years old) were studied, with mean treatment periods of adefovir+lamivudine of 6,3 months. A drop above 2 log10 HBV DNA copies/ml was seen in 18/21 (85%) at w8 and HBV DNA disappearance in 11/15 (73%) at w16. A discrete elevation of ALT was seen in 2 patients (9%) at w4, with HBV DNA levels rise. No changes were seen in serum creatinine and phosphorus, and there was no signs of liver decompensation.

Conclusions: We conclude, that adefovir plus lamivudine association in YMDD viral resistant mutants chronic hepatitis B, had an exceptional efficacy in terms of viral suppression, resulting in DNA negativation in 73% at 24 weeks of therapy, with an excellent safety profile.

274

HEPATOCELLULAR CARCINOMA IN LEBANON: ETIOLOGY AND PROGNOSTIC FACTORS ASSOCIATED WITH SHORT-TERM SURVIVAL
Ala I. Sharara, M.D., F.A.C.P.*, Cesar Yaghi, M.D., Paul Rassam, M.D., Roger Noum, M.D., Sami Rumia, Ph.D., Raymond Sayegh, M.D., Rami Moucari, M.D. American University of Beirut Medical Center; Hotel Dieu de France and St. George's hospital, Beirut, Lebanon.

Purpose: Hepatocellular carcinoma (HCC) is a common complication of liver cirrhosis. While etiology varies according to geographic distribution, reported prognostic factors are not fully satisfactory to predict early mortality. This study aims at describing the epidemiology of HCC in Lebanon and to identify prognostic factors predictive of early mortality.

Methods: This is a multicenter follow-up cohort study of HCC cases diagnosed over a five year period from 3 tertiary care university hospitals. Evaluated variables included patients’ characteristics, severity and etiology of liver disease, and tumor stage. Multivariate analysis was conducted to identify factors predictive of survival.

Results: 92 patients (mean age 60.5 years ± 22.3; M:F 5:6:1) were included. The etiology of the underlying liver disease was hepatitis B, C, and alcohol abuse in 67%, 20%, and 23.5% of cases respectively. Miscellaneous causes accounted for 5.9% and 21.2% of patients had more than one cause of cirrhosis. Child-Pugh class at time of diagnosis was A, B and C in 32 (34.8%), 35 (39.3%) and 23 (25.8%) of cases respectively. Fifty-nine patients (64.1%) did not benefit from any treatment because of either decompensated liver disease or advanced tumor stage. In the remaining cases, treatment consisted of percutaneous ethanol injection (7), chemoembolization (17), orthotopic liver transplantation (8) and surgical resection (7). Eight patients received more than one treatment modality. Overall survival was 44.8%, 32.8% and 17.6% at 1, 2, and 3 years respectively with a mean follow up of 40.2 ± 23.52 months (median 24 months). Prognostic factors identified in univariate analysis included age (> 55 years), bilirubin (> 3.2 mg/dL), HCC as the first manifestation of liver disease, ineligibility for a curative treatment, INR > 2, MELD score > 18, and the presence of portal vein thrombosis. Multivariate analysis identified only three predictors of early mortality (less than 6 months): bilirubin (> 3.2 mg/dL, p = 0.001), HCC as first presentation (p = 0.035), and creatinine (> 1 mg/dL, p = 0.017).

Conclusions: HBV is the leading cause of HCC in Lebanon. Most patients were not candidates for curative therapy at the time of diagnosis. Independent predictors of short-term survival include HCC as the first manifestation of cirrhosis, bilirubin > 3.2 mg/dL, and creatinine > 1 mg/dL.

275

SURVEILLANCE OF HEPATITIS E VIRUS IN SEWAGE AND DRINKING WATER: PREVENTION STRATEGIES IN A RESETTLEMENT COLONY OF DELHI, INDIA
Praloy Chakraborty, M.D., Premastish Kar, D.M.*. Maulana Azad medical College and associated Lok Nayak Hospital, New Delhi, Delhi, India.

Purpose: The study was designed to find out the incidence of Hepatitis E infection as well as the incidence of Hepatitis E in the drinking and sewage water of a resettlement colony in New Delhi, India and molecular characterization of the HEV isolates.

Methods: The study included total number of 141 cases of viral hepatitis in the particular area during 3 years period. After initial assessment of each case on the basis of history, clinical examination and liver function tests, the serum samples were collected for determination of HbsAg, IgM anti-HBc, HBeAg, IgM anti-HAV, anti-HCV, IgM anti-HEV by using commercially available ELISA kits. RT-PCR for detection of HEV-genome was performed in all 141 samples. Sewage and drinking water samples were collected individually from the house of all viral hepatitis patients and drinking water sample was collected daily from the main outlet water supply of the same colony. Hand pump water samples were collected from house of 12 cases. RT-PCR for detection of HEV RNA was carried out in all 141 sewage and water sample according to the method described by Jothikumar et al. 12 PCR products, which were positive for HEV-RNA, were column sequenced using automated sequencer.

Results: A total number of 141 subjects of viral hepatitis were detected during the study period with the M: F ratio of 1:1. The mean age of the patients was 24.98 ± 11.87 years. 29.08%(40 out of 141) cases had HEV infection detected by serology and/or PCR. Hepatitis B virus infection was found in 8 cases (5.67%) while 1 case had co-infection with Hepatitis E virus. HCV infection was detected in 2 cases (1.42%) but both these cases were co-infected with HEV. HEV RNA was detected in 6/141(4.25%) sewage samples and in 2/141(1.42%) in drinking water samples. Those cases whose drinking water samples were positive for HEV RNA, their sewage samples were also positive for HEV RNA. Of these 2 cases whose drinking water and sewage samples were positive for HEV-RNA had also evidence of HEV RNA positivity in serum. HEV RNA was not detected in any water samples collected from main outlet water supply as well as in hand pump water samples. All HEV isolates were of genotype 1.

Conclusions:
1. Hepatitis E virus infection is the commonest cause of cause of hepatitis in India
2. Orofaecal route is one of commonest mode of transmission for Hepatitis E virus.
3. Genotype 1 is commonest HEV genotype in India.
Abstracts

A PREDICTIVE MODEL SCORE FOR HCV-RELATED FIBROSIS IN AFRICAN AMERICANS

Bashar M. Attar, M.D.*, Gonzalo Pandolfi, M.D., Franjo Vladič, M.D., Erick Chinga-Alayo, M.D., Amila Oručević, M.D., Arthur T. Evans, M.D., Brendan M. Reilly, M.D.
John H. Stroger Hospital of Cook County and Rush University, Chicago, Illinois.

Purpose: Race has been implicated as a factor that may affect the progression of liver fibrosis in HCV patients. Several studies have described HCV-related fibrosis in predictive models. Yet, none has constructed models adjusted for demographic clinical and laboratory data including risk factors for DM.

Methods: Cross sectional analysis of 2481 HCV infected US veterans followed at New York metropolitan area. Patients’ charts were reviewed for demographic clinical and laboratory data including risk factors for DM.

Results: Of the 2481 male veterans with HCV infection, 53.1% were AA, 30.2% were white and 16.8% were Hispanic. For the entire cohort mean age (years) was 55.42 ± 0.18 (± SEM). Mean age was 55.49 ± 0.26, 50.68 ± 0.38 and 53.18 ± 0.4, (p < 0.01), for AA, whites and Hispanics respectively. BMI (kg/m²) for the total cohort was 27.05 ± 0.1. BMI was 26.74 ± 0.15, 27.62 ± 0.19 and 27.9 ± 0.24, (p < 0.01), for AA, whites and Hispanics respectively. DM was present in 557 (22.7%) of the cohort. After adjusting for risk factors for DM such as age, BMI, hypertension and family history of DM, there was no significant difference in the percentage of patients with HCV who have DM among different ethnic groups: 22.6%, 23.9% and 27.7% respectively.

Conclusions: DM appears to have similar prevalence among AA, whites and Hispanic men with HCV, after correction for the major risk factors for the disease. Further studies are needed to explore the mechanism by which HCV infection increases the risk

INCIDENTALLY DETECTED ASYMPTOMATIC HBsAg POSITIVE SUBJECTS (IDAHS) ARE NOT BENIGN. A COMPARISON WITH CHRONIC LIVER DISEASE (CLD) PATIENTS

Pankaj Tyagi, M.D., Brijesh Sharma, D.M., Shiv Kumar Sarin, D.M.*, G.B.Pant Hospital, New Delhi, Delhi, India.

Purpose: IDAHS represents the true spectrum of chronic asymptomatic HBV infection in a society, different from voluntary blood donors. The clinical, biochemical and histological spectrum of these subjects is unclear. The predictors of progression to clinical liver disease need also to be defined. Aim: To study the serological, biochemical and virological profile of IDAHS with and without high ALT and patients with chronic liver disease (CLD-B).

Methods: Four hundred treatment naïve subjects, with chronic HBV infection were categorized as IDAHS (incidentally detected without any symptoms) or CLD (symptoms or signs of chronic liver disease). Patients with IDAHS with normal ALT was grouped as Gr. I (n = 114); IDAHS with high ALT as Gr. -2 (n = 109) and CLD-B as Gr. 3 (n=173). Histological activity index (HAI) and fibrosis scores were calculated. Patients with h/o alcohol abuse, co-infection with HCV, HDV, HEV or HIV were excluded. Viral serology and quantitative HBV-DNA (up to 0.5 pg) were done and normal ALT was defined as < 40 IU/L.

Results: The age of presentation was significantly (p = 0.02) lower in Gr. II (27 ± 11 yr) compared to Gr.I (31 ± 12 yr), and Gr. III (37 ± 12 yr) compared to both Gr. I and II. HBsAg positive in 57% in Gr. I; 50% in Gr. II (p = 0.21). Mean HAI was 4.2 ± 2 in Gr. 1 and 4 ± 2 in Gr. 2 (p = ns). Hepatic fibrosis was also comparable (1.2 ± 1 vs. 1.3 ± 1.2). Mean HAI and fibrosis in Gr. III was,4.5 ± 2 and 3.0 ± 1 respectively.

Conclusions: IDAHS is not a benign state. More than 50% asymptomatic HBV infected subjects in India have replicative HBV and are highly infective. HBV DNA and ALT levels do not predict the activity and severity of liver disease in IDAHS. Patients with CLD more often are HBeAg negative and lower DNA levels.

BIOCHEMICAL MARKERS OF LIPID PEROXIDATION AND FIBROSIS IN PATIENTS WITH SIMPLE STEATOSIS AS COMPARED TO PATIENTS WITH NONALCOHOLIC STEATOHEPATITIS

Nicole A. Pulekar, M.D., Stephen A. Harrison, M.D.*, Steven Larson, M.D., Brooks Army Medical Center, San Antonio, Texas.

Purpose: Nonalcoholic fatty liver disease (NAFLD) is an all inclusive term that encompasses both simple steatosis and nonalcoholic steatohepatitis (NASH). To date, differentiation of these two entities requires histopathologic evaluation. The purpose of this study was to determine if there is a
reliable biochemical assay that could differentiate patients with steatosis from patients with steatohepatitis.

**Methods:** Forty subjects with NAFLD obtained from our liver biopsy database were enrolled. Twenty subjects had simple steatosis and 20 had histopathologic evidence of NASH. Demographic data including age, gender, body mass index, and presence of hypertension and diabetes was obtained. Laboratory data including fasting glucose, fasting insulin, calculated QUICKI, ALT, AST, LDL, triglycerides, and HgbA1C were documented. Fasting urinary 8-epi-PGF$_2$α and fasting serum levels of transforming growth factor beta (TGFβ), adiponectin, and hyaluronic acid were measured and compared between the two groups.

**Results:** Clinical characteristics of the groups are presented below. No significant difference between the two groups with respect to levels of urinary 8-epi-PGF$_2$α, TGFβ, or adiponectin was found. We did find significantly higher levels of hyaluronic acid in the NASH group ($p = 0.026$). In a subgroup analysis of the NASH group by histologic stage, there was no difference between stage 1 or 2 fibrosis and those subjects with steatosis. However, there were significantly higher levels of hyaluronic acid in subjects with stage 3 or 4 fibrosis compared to subjects with steatosis or those with NASH stage 1 or 2 ($p < 0.001$).

**Conclusions:** Hyaluronic acid levels are significantly higher among subjects with NASH and advanced stages of fibrosis compared with subjects with only simple steatosis. This finding may allow for development of a non-invasive model using clinical and biochemical data to diagnose subjects with advanced stages of NASH without the use of liver biopsy. Further analysis with larger subject enrollment seems warranted.

### Clinical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Steatosis</th>
<th>NASH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>46.1 (10.1)</td>
<td>53.1 (12.0)</td>
</tr>
<tr>
<td>Female</td>
<td>40%</td>
<td>70%</td>
</tr>
<tr>
<td>BMI</td>
<td>30.9 (4.1)</td>
<td>32.5 (5.8)</td>
</tr>
<tr>
<td>HTN</td>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>DM</td>
<td>25%</td>
<td>35%</td>
</tr>
<tr>
<td>HgbA1C</td>
<td>6.3 (1.0)</td>
<td>6.0 (0.9)</td>
</tr>
<tr>
<td>Glucose</td>
<td>113.5 (34.7)</td>
<td>106.7 (18.0)</td>
</tr>
<tr>
<td>Insulin</td>
<td>18.3 (7.9)</td>
<td>32.2 (25.5)</td>
</tr>
<tr>
<td>ALT</td>
<td>82.9 (47.3)</td>
<td>72.2 (26.8)</td>
</tr>
<tr>
<td>AST</td>
<td>54.2 (27.0)</td>
<td>58.8 (22.7)</td>
</tr>
<tr>
<td>QUICKI</td>
<td>0.34 (0.03)</td>
<td>0.29 (0.02)</td>
</tr>
<tr>
<td>LDL</td>
<td>129.3 (34.8)</td>
<td>111.9 (24.1)</td>
</tr>
<tr>
<td>Trig</td>
<td>166.6 (81.1)</td>
<td>176.6 (81.3)</td>
</tr>
</tbody>
</table>

Means and standard deviations. All $p$ values ns.

**DAPSONE - INDUCED FATAL LIVER FAILURE**

**Anthony Strippoli, M.D., Gurpreet Singh, M.D., Hossam Elfarra, M.D., Walid Baddoura, M.D.*** Seton Hall University School of Graduate Medical Education, South Orange and St. Joseph’s Regional Medical Center, Paterson, New Jersey.

**Introduction:** Dapsone has been used clinically for more than fifty years for leprosy, dermatitis herpetiformis, Pneumocystis carinii prophylaxis, and a variety of other dermatoses. Side-effects include agranulocytosis, metheglobinemia, and hemolytic anemia, and hypoalbuminemia. We present the first reported case of fatal dapsone-induced liver failure despite orthotopic liver transplantation (OLT).

**Case Report:** A 23-year-old Korean female presented to her dermatologist with a maculopapular rash on her face. A diagnosis of alopecia mucinosa was made, and she was started on dapsone 25 mg po BID, which was then increased to TID. Baseline LFT’s and CBC were normal. After six weeks of treatment, dapsone was discontinued because of anemia and abnormal liver enzymes. Few days later, the patient presented with a fever of 104 F, malaise, and jaundice. Physical exam revealed a diffuse maculopapular rash, cervical lymphadenopathy, and a benign abdomen. Laboratory data are shown in the table below; in addition, the reticulocyte count was 6.1 and haptoglobin 1, consistent with hemolytic anemia. Workup for other etiologies of acute hepatitis including hepatitis A, B, C, acetaminophen, ANA, ceruloplasmin, monospot, RPR, and urine drug screen were all negative. Upper abdominal ultrasound was normal. Use of IV steroids resulted in clinical and biochemical improvement. Two days post-discharge, she was readmitted with fever, mild encephalopathy, and abnormal labs as shown below. She was promptly transferred to a transplant center, where, despite two OLT’s, she expired.

**Conclusions:** Physicians should be aware of the potentially fatal “Sulfone Syndrome.” Prompt diagnosis and discontinuation of the drug is essential. Monitoring of liver enzymes and blood counts while on dapsone therapy is crucial.

**281 WHAT IS THE PREVALENCE OF CELIAC DISEASE AMONG US PATIENTS WITH AUTOIMMUNE HEPATITIS?**

**Alastair D. Smith, M.B., Ch.B., Judith W Gentile, R.N., Michael A. Heneghan, M.D.* Duke University Medical Center, Durham, North Carolina and Kings College Hospital, London, England, United Kingdom.**

**Purpose:** Autoimmune hepatitis (AIH) is an insidious condition of unknown etiology, characterized by elevated serum aminotransferase and globulin concentrations, positive anti-nuclear and smooth muscle antibody titers, and mononuclear cell expansion of portal tracts. Most affected European and North American patients possess either the DR3 or DR4 haplotype. Celiac disease (CD) is manifested by gluten intolerance. DR3 and/or DQ2 haplotypes, and has an prevalence of at least 1:156 in the general population. However, the estimated point prevalence of CD in patients with AIH has been reported at 1:36, albeit in European subjects. Therefore, we proposed to determine the prevalence of CD among patients with AIH at a USA center, and compare this to published data.

**Methods:** We studied patients with a diagnosis of AIH conforming International Autoimmune Hepatitis Group criteria, seen between 9/2003 and 5/2004. Patients’ sera were tested for IgA endomysial antibody (EMA) by indirect immunofluorescence, and their serum IgA concentration was measured concomitantly. Patients with selective IgA deficiency (SIgAD) were tested for serum IgG gliadin antibody (AGA) by enzyme immunoassay.

**Results:** The sample included 74 patients, 15 male (20%), with median age 40 years (range 5–76). The ethnic distribution was: 60% (81%) Caucasian, 12% (16%) African American non-Hispanic, one (1%) Caucasian Hispanic, and one (1%) American Indian. No patient had a positive EMA result. Three Caucasian non-Hispanic, male patients had SIgAD, of whom one had a mildly elevated IgG AGA concentration (27.5 units: normal 0–25). However, duodenal biopsies from this patient demonstrated no mucosal abnormality. Three female patients underwent duodenal biopsy despite negative EMA results, two for anemia, and the third because of loose stools and weight loss. In all three cases, mucosal appearances were normal, thereby excluding the potential clinical diagnosis of CD.
Conclusions: No positive serologic results indicative of CD were found among these American patients with AIH. This may indicate that the study sample was underpowered to detect an increased prevalence of positive EMA results consistent with CD. That Caucasian subjects constituted only 80% of the study population may have influenced findings. However, our results may indicate that CD is not more prevalent among US patients with AIH, than in the general population.

HEPATOTOXICITY OF METHOTREXATE IN SARCOIDOSIS
Nandini Nagaraj, M.D., Naga M. Ganesana, M.D., James C. Reynolds, M.D., Herbert Patrick, M.D.*. Drexel University College of Medicine, Philadelphia, Pennsylvania.

Purpose: To assess hepatic effects of Methotrexate (MTX) used as a steroid sparing agent in sarcoidosis.

Methods: A retrospective review of 82 patients (58 females, 24 males) with biopsy proven sarcoidosis on MTX (between 1996 -2004) was performed. Dosing: Starting dose of 2.5 mg/week, increased by 2.5 mg/week to 10 mg in 4 weeks, dose then titrated to keep WBC between 4–5/kmm$^3$ for maximal efficacy (dose up to 25mg). Monthly LFTs and WBC were reviewed. We grouped patients into normal baseline LFTs (group A = 58, mean age 53) and elevated baseline (group B = 24, mean age 49). 9 of 82 patients with hepatic sarcoid were also analyzed. Toxicity was defined as LFTs elevated >1.5 times baseline.

Results: In group A, 46 (79%) continued to have normal LFTs, 9 (15%) had transient mild elevations (<1.5 times) with 8 of 9 occurring within 1 year and 3 (5%) had toxicity. In group B, 19 (79%) had no worsening of LFTs (9 decreased, 3 had transient elevations and 7 remained same) and 5 (20%) had toxicity. 8 of 82 (9.7%) (3 in A, 5 in B) had toxicity. No statistically significant difference was found in the age, BMI, alcohol use, co-morbidities or maximal dose between and within the groups. 2 of 82 had hepatitis C with normal LFTs. Between normal (46) and toxic (8) groups, the mean cumulative dose and duration of treatment were 1.34 gm, 26.35 months and 1.28 gm, 16 months respectively. The drop in WBC (baseline – latest) was higher in toxic group (4.5) than in the normal group (0.42), p < 0.001. Of the 8 with toxicity, 3 had underlying liver disease (1 hemangioma, 1 primary biliary cirrhosis and 1 idiosyncratic NSAID toxicity) with mean alkaline phosphatase (455) higher than in the 5 with no intrinsic liver disease (159), p < 0.025. LFTs increased despite stopping the drug in 2 patients. The acute toxicity (<2 months) rate was 1.2%. 6 of 9 known hepatic sarcoid patients had active disease. Of the 6, 3 improved, 2 remained same and 1 with PBC worsened on MTX.

Conclusions: Patients with known liver disease can develop severe toxicity and MTX should be used with caution. In our study, the mean duration of treatment and cumulative dose did not correlate with toxicity suggesting individual variation in MTX metabolism. Monitoring the drop in WBC can minimize both hepatic and bone marrow toxicity. Mild elevations of LFTs do not require dose reductions. MTX can be used safely in patients with no intrinsic liver disease and elevated baseline LFTs (unconfirmed hepatic sarcoid) without increasing the toxicity.

IS NON ALCOHOLIC FATTY LIVER DISEASE AN INDEPENDENT RISK FACTOR FOR CORONARY ARTERY DISEASE?
Revathi Angatapalli, M.D., Uma Kantamneni, M.D., Hatef Massoumi, M.D., Ajit Kokkat, M.D., Mario Ricci, M.D., Edward Norkus, Ph.D., Nejat Kiyici, M.D., Hilary Herton, M.D., F.A.C.G.*. Our Lady of Mercy Medical Center, Bronx, New York.

Purpose: Non Alcoholic Fatty Liver Disease (NAFLD) is common in the U.S., and the rise in its prevalence seems to parallel the increasing rate of obesity in the population. NAFLD is associated with obesity, diabetes and hyperlipidemia, which are believed to contribute to the occurrence of atherosclerosis and coronary artery disease. The aim of our study was to determine whether NAFLD is an independent risk factor for coronary artery disease.

Methods: A group of 43 patients with NAFLD were entered into the study and compared to a control group of 62 patients with no fatty liver. All patients with NAFLD had CT scan findings consistent with fatty changes as per a board certified radiologist and confirmed by a second radiologist. We designed the control group in the way that common risk factors for coronary artery disease such as age, BMI, diabetes, hypertension and hyperlipidemia were the same as the NAFLD group. Both groups were examined for objective evidences of coronary artery disease including EKG findings consistent with prior myocardial infarction, abnormal stress test, abnormal angiogram, and history of angioplasty or coronary artery bypass surgery.

Results: A total of 105 patients participated in this study, with mean age of 65.0±13.3 (SD) years, mean BMI of 29.5±8.8 (SD); 40 males and 65 females. 52% of sample had evidence of CAD; however, there was no difference in presence of CAD between patients with NAFLD and control group.

Conclusions: Non Alcoholic Fatty Liver Disease is not an independent risk factor for Coronary Artery Diseases.

HEPATOCELLULAR CARCINOMA: TEN YEARS EXPERIENCE AMONG VETERANS IN PUERTO RICO
Luis J. Lopez-Garcia, M.D., Hector Mayol, M.D., Doris H. Toro, M.D.*. San Juan VA Medical Center, San Juan, Puerto Rico.

Purpose: The characteristics of hepatocellular carcinoma (HCC) vary among different ethnic groups. The aim of our study is to identify the relation between HCC etiology, tumor characteristics and survival rate among veterans in Puerto Rico.

Methods: We performed a retrospective study of 114 patients with biopsy-proven HCC diagnosed at the San Juan VAMC between January 1, 1992 and December 31, 2002. Data examined included demographics, Child-Turcotte-Pugh (CTP) score, presence of cirrhosis, hepatitis B and C serology, history of alcoholic and other liver diseases, use of diagnostic modalities (alpha-fetoprotein levels and imaging studies), lesion size, therapeutic interventions and overall survival.

Results: The mean age was 66.6 years old. 100% were men of Hispanic origin. 82% had underlying cirrhosis. 68 (60%) patients had documentation of alcoholic liver disease (ALD). 38 (33%) had positive serology for hepatitis C virus (HCV). 24 (21%) had evidence of concomitant ALD and HCV. 6 (5.3%) patients had chronic hepatitis B virus infection. Additional causes of chronic liver disease were not present. CTP classification distribution was: A (42%), B (44%) and C (14%). Abdominal CT scan disclosed 95.6% of the lesions, while ultrasound was positive only in 57%. The average size of the lesion was 7.0 cm. 61% had two or more lesions. Mean survival after diagnosis was 10.3 months. No difference in survival was found between risk factors for HCC. Survival rate among patients with concomitant ALD and HCV infection was shorter than either risk factor alone (10.1 vs. 12.6 months), although this difference was not statistically significant. Patients with CTP classification A had longer survival time (18.9 months) when compared with B and C scores (8.8 and 7.6 months, p = 0.04 and 0.01). Alpha-fetoprotein was elevated in 53.3% of the patients and diagnostic (>400) in 32%. Only 42% received any kind of therapy.

Conclusions: ALD is the principal underlying liver disease in our population closely followed by HCV infection. Abdominal CT is the best diagnostic tool, while sonogram detects only less than 60% of the lesions. Overall survival is decreased among patients with advanced liver disease as measured by CTP scores B and C. Most of the patients are diagnosed with advanced HCC and only less than half of the patients are able to receive any kind of therapy. Aggressive screening should be entertained in patients with cirrhosis and advanced liver disease.
Purpose: The diagnosis of hepatic encephalopathy (HE) is based primarily on clinical criteria. Clinical grading of mental status, psychometric tests, electroencephalography, ammonia and other biochemical indices have been used in an attempt to develop objective measurements of HE severity. We prospectively evaluated the relationship between venous ammonia level, neuropsychometric tests and severity of HE as assessed by clinical examination. 

Methods: 15 patients with cirrhosis complicated by HE and 15 cirrhotics without HE were enrolled in the study. Clinical assessment of HE was determined using the West Haven criteria for grading mental status. Folstein's mini mental state examination (MMSE), number connection test (NCT), part A (trail test) and Isaacs set test were used as part of neuropsychometric evaluation. This was done at baseline, 48 and 96 hours.

Results: Age, race, gender, etiology of liver disease and MELD score were similar in both groups. Neuropsychometric tests correlated moderately well with the clinical stage of hepatic encephalopathy; MMSE ($r^2 = 0.68$), NCT ($r^2 = 0.62$), Isaacs set test ($r^2 = 0.66$) as compared to ammonia level ($r^2 = 0.17$). Mean score on the Isaacs set test was lower than in controls ($32.92 \pm 8.9$ for HE stages I, II and III respectively versus $37.80 \pm 3.7$ in controls).

Conclusions: These results suggest that, simple, and quick bedside neuropsychometric tests done singly or in combination can provide a useful clinical and objective tool to assess severity of hepatic encephalopathy. Isaacs set test particularly appears to be useful to identify patients with early encephalopathy.

Purpose: Adiponectin, an adipocytokine, plays an important role in the regulation of peripheral and hepatic glucose metabolism. Chronic hepatitis C infection (HCV), with and without the presence of HIV, is commonly associated with insulin resistance (IR) and dyslipidemia. However, the relationships between adiponectin and these metabolic alterations have not been tested in HCV. The specific aim of this study was to determine the relationships of adiponectin to metabolic and body composition alterations in HCV mono- and HIV/HCV co-infection.

Methods: This was a cross-sectional study of 21 HCV mono-infected (9 women) and 27 HCV/HIV co-infected (8 women) subjects, prior to HCV treatment. Serum adiponectin levels, as well as soluble TNF receptors I and II (sTNFR I, II), fasting HDL-cholesterol, total cholesterol, triglyceride, glucose and insulin levels were measured. IR was calculated based on HOMA. Other tests included HCV viral load (RNA) and liver biopsy sample evaluation for pathologic stage. Body composition measurements included BMI, body fat and fat mass measured by bio-impedance analysis (BIA), and anthropometric measures of fat distribution. The groups were compared by Student's $t$-test and associations were determined by regression analysis. Data are expressed as mean $\pm$ SE.

Results: Serum adiponectin, sTNF RI and RII levels, and IR were similar in mono-infected and co-infected men, as well as in women. Age and BMI were similar in men and women (BMI $28.2 \pm 0.7$ vs $27.9 \pm 1.5$ kg/m$^2$ respectively). In contrast, women had significantly higher serum adiponectin levels, higher percentage of body fat, lower fat free mass (all $p < 0.001$) and lower IR ($p = 0.03$) compared to men. Serum adiponectin levels were inversely related to IR ($r^2 = 0.002$), sTNF RI ($r^2 = 0.02$) and sTNF RII ($r^2 = 0.009$), triglyceride, waist:hip ratio (WHR) and percentage of body fat (all $p < 0.001$), and directly related to HDL.

Conclusions: Circulating adiponectin concentrations are associated with body composition and metabolic alterations in HCV infection. Adiponectin levels are higher in women than men. HIV infection has no independent effect on adiponectin level in HCV/HIV co-infection.
alfalfa (PINF) and ribavirin (RBV). Consensus interferon (Interferon alpha-1, CIFN) is a bio-optimized alfalfa interferon that exhibits increased in-vitro antiviral and antiproliferative properties, as well as, increased receptor binding affinity than the naturally occurring alfalfa interferons. Improved response rates have been reported with high-dose CIFN induction therapy and RBV for patients who have failed to respond to PINF and RBV. The purpose of this study is to evaluate efficacy and safety of high-dose daily CIFN and RBV in HCV patients who failed standard therapy.

**Methods:** Patients treated with PINF and RBV for HCV infection and either failed or relapsed after completion of therapy were eligible for treatment if they met 2 criteria: 1) Tolerance of previous treatment with PINF and RBV and 2) Evidence of significant liver disease including bridging fibrosis or cirrhosis. The patients enrolled in the study were given 27 ug of CIFN daily and RBV 400 mg BID during the first 4 weeks, followed by 18 ug daily and RBV 400 mg BID daily for the next 8 weeks. At 12 weeks, CIFN was decreased to 15 ug daily while RBV was increased to 1,000–1,200 mg daily for another 36 weeks.

**Results:** Twenty-two patients have been enrolled in the study, 18 male, with a mean age of 50 years old. 95% were genotype 1. Twenty patients have completed 12 weeks of therapy and eight 24 weeks. Fourteen patients (70%) achieved an early virologic response (EVR) (5 with undetectable virus RNA). Four patients did not achieve an EVR and 2 withdrew from the study due to intolerance to the medication. Of those who completed 24 weeks of treatment, 5 continued to respond, 2 relapsed and 1 had intolerable side effects. Adverse events consisted in fatigue, insomnia, irritability, neutropenia and chest pain. Two patients required Granulocyte Colony Stimulating Factor (G-CSF) for leukopenia and CINF dose reduction.

**Conclusions:** For HCV patients with advanced histologic disease who have failed standard therapy, the combination of high-dose CIFN and RBV appears to be a well-tolerated and effective option. Further study is needed to assess the long-term tolerability and effectiveness of this protocol.

**Table.**

<table>
<thead>
<tr>
<th>Week RB D/C</th>
<th>32</th>
<th>26</th>
<th>12</th>
<th>12</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver biopsy Grade/ Stage (0–4)</td>
<td>Early cirrhosis</td>
<td>3/3</td>
<td>2/1</td>
<td>4/3</td>
<td>2/1</td>
</tr>
<tr>
<td>PEG-IFN dose (mg)</td>
<td>150</td>
<td>120</td>
<td>80</td>
<td>120</td>
<td>180</td>
</tr>
<tr>
<td>RB dose (mg)</td>
<td>1000</td>
<td>1000</td>
<td>800</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Weak RB D/C</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

*Still on treatment.*

**Does the Mode of Hepatitis C Acquisition Influence the Rate of Hepatitis A and B Vaccination?**


**Purpose:** Individuals with hepatitis C (HCV) who have a concurrent or superinfection with hepatitis A (HAV) or hepatitis B (HBV) have the potential to develop worsening clinical status. It has been recommended that if an HCV-infected individual is not immune to HAV or HBV, that vaccination be performed. This study evaluated physicians’ determination of HAV/HBV serologic status and immunization rates in HCV-infected individuals. The potential influence of the mode of HCV acquisition upon physicians’ adherence to recommendations was also assessed.

**Methods:** During a 6-month period, the medical records of consecutive patients referred for management of HCV were evaluated to determine whether the referring physicians had obtained HAV and HBV serology and whether appropriate vaccinations were performed. Information regarding patients’ mode of HCV acquisition was obtained. A database was developed with the exclusion of patient identifying factors. Statistical analysis was performed using Fischer’s exact test.

**Results:** Seventy-nine HCV-infected patients (41 men, 38 women) were included in the study. Modes of HCV acquisition were: IVDA 40 (24 men, 16 women), transfusion 16 (7 men, 9 women), sexual activity 2 (2 men, 0 women), unknown risk 21 (8 men, 13 women). There was no significant difference in the modes of HCV acquisition between men and women. One male patient was tested for HAV and received vaccination. Six patients (3 men, 3 women) were tested for HBV and received vaccination. Three patients (2 men, 1 woman) was tested for HAV/HBV and received vaccination. There was no significant difference in the rate at which patients were vaccinated against HAV and HBV based upon the mode of HCV acquisition. Gender analysis revealed that women were tested for and vaccinated against HAV at a significantly greater rate (p = 0.0215) than HAV.

**Conclusions:** This study revealed that physicians poorly tested for and vaccinated against HAV and HBV in HCV-infected individuals. The mode of HCV acquisition did not impact upon whether physicians assessed for HAV or HBV immunity or performed immunization. While women were tested for and vaccinated against HBV significantly more often than HAV, there was such poor adherence to HAV and HBV immunity testing and vaccination that conclusions cannot be reliably made. Further efforts to improve physicians’ testing of HCV-infected patients for HAV and HBV immunity and vaccination are critical.
Purpose: Common histological features between alcoholic (ASH) and non-alcoholic steatohepatitis (NASH) suggest similar pathomechanisms. Gut bacteria and lipopolysaccharide (LPS) contribute to ASH. Lactobacillus feeding beneficial experimental alcoholic liver disease and probiotics improved non-alcoholic fatty liver disease (NAFLD) in ob/ob mice. Thus, we sought to determine the role of probiotic treatment in a diet-induced model of NASH.

Methods: Female C57BL6 mice (12/group) were fed methionine-choline-supplemented (MCS) or -deficient (MCD) diet without or with a probiotic, VSL#3 (MCD+VSL) for 10 weeks and then challenged with saline or LPS (0.5mg/g b.w. i.p.) for 1.5 hours.

Results: MCD diet increased liver/body weight ratio and resulted in NAS. Serum ALT was elevated in the MCD compared to MCS groups, and surprisingly, ALT was significantly higher in the MCD+VSL (p < 0.0001). Liver triglyceride was increased in MCD, and was highest in the MCD+VSL group (p < 0.05). MCD diet increased oxidative stress as determined by thiobarbituric acid-reactive substances (TBARS) in the livers; TBARS was the highest in the MCD+VSL group after LPS stimulation (p < 0.07). Serum TNF-α was higher in VSL-treated mice compared to MCD alone (p < 0.01). Baseline serum IL-6, a hepatoprotective cytokine, was higher in the MCD- fed mice irrespective of VSL. After LPS challenge, IL-6 was reduced in the MCD+VSL-fed mice. The anti-inflammatory IL-10 was induced to higher levels by LPS in the MCD compared to MCS groups; however, IL-10 was reduced in the VSL-treated mice both at baseline and after LPS challenge. LPS induced higher hepatic NF-κB and AP-1 activation in MCD vs. MCS group and highest levels in MCD+VSL groups.

Conclusions: These results suggest that in MCD-diet-induced NAS, probiotics fail to prevent steatohepatitis possibly related to down-regulation of the anti-inflammatory and hepatoprotective cytokines, IL-10 and IL-6.

293

COMPLICATIONS AFTER UNGUIDED PERCUTANEOUS LIVER BIOPSY IN A GASTROENTEROLOGY FELLOWSHIP PROGRAM

John F Altomare, M.D., Robert E. Smith, M.D., Michael J. Komar, M.D., Nicholas A. Inverso, M.D.*. Geisinger Medical Center, Danville, Pennsylvania.

Purpose: To assess the safety and success of unguided percutaneous liver biopsy in a gastroenterology fellowship program.

Methods: Retrospective review.

Setting: Gastroenterology clinic in a tertiary medical center.

Patients: All patients who underwent outpatient percutaneous liver biopsy at the Geisinger Medical Center from June 1, 2002 through May 31, 2004.

Results: Chart review identified 213 patients undergoing liver biopsy. All of the cases were performed via a Microvasive® ASAP™ Liver Biopsy System core biopsy needle. Five cases were performed solely by a staff gastroenterologist, all yielding adequate tissue. Under direct staff supervision, a gastroenterology fellow initiated 208 biopsies obtaining core tissue grossly resembling liver in 202 cases (97.1%). Four of the six remaining cases failed to obtain adequate tissue despite additional attempts by a staff gastroenterologist. In 204 specimens submitted, 6 tissue samples (2.9%) were insufficient for histologic diagnosis. Eight patients (3.8%) were evaluated for symptoms following the procedure. Six patients (2.8%) were admitted to the hospital; four had abdominal pain, one had syncope and one had respiratory distress. Of the eight patients evaluated, six underwent CT scan for abdominal pain. Two of the six patients (33%) had radiologic evidence of bleeding (one subcapsular hematoma and one gallbladder thrombus). No patients required blood transfusion or surgical intervention and all were discharged within 48 hours. Tissue acquisition was obtained during the first pass in 173 of the 213 cases (81%).

Conclusions: To date, there is no published data that specifically measures the success or complication rates of gastroenterology fellows performing this procedure. Our data compare favorably to previous reports of adverse events performed by skilled clinicians. Despite a trainee’s limited experience, a sizable difference in adverse events or adequate sampling was not observed, provided that appropriate staff supervision was maintained.

294

HEMOLYSIS GUIDED SELECTIVE DOSE REDUCTION IN PATIENTS RECEIVING COMBINATION THERAPY FOR HCV: RACIAL DIFFERENCES IN THE INCIDENCE OF HEMOLYSIS AND IMPACT ON TREATMENT

Maher Azzouz, M.D.*, Diana Little, C.N.P., Donna Bingham, PharmD., Gagan K. Sood, M.D. University of Mississippi and G.V. Montgomery VA Medical Center, Jackson, Mississippi.

Purpose: Many HCV patients receiving combination therapy experience anemia. Hemolysis induced by Ribavirin is dose dependent and is thought to be due to RBC membrane damage; whereas anemia related to IFN therapy is due to bone marrow suppression. Lower Ribavirin doses are associated with lower response rates. Our aim was to study the incidence of hemolysis among patients who developed anemia and the impact of anemia on treatment response. The second aim was to study the impact of race on the incidence of anemia and hemolysis.

Methods: 73 patients receiving combination therapy for HCV through our clinic were reviewed. Haemolysis parameters were measured on all patients who developed anemia including haptaglobin, LDH, reticulocyte count and indirect bilirubin. Anemia was defined as a decrease in hemoglobin by >2g/dl. Patients with renal insufficiency, HIV or hemoglobinopathy were excluded. Demographic data collected included age, sex, race and BMI. Treatment response rates as well as histological grading and staging (Metavir index) were studied. Patients were separated into three groups: no anemia, anemia with no haemolysis, and anemia with haemolysis.

Results: Anemia was observed in 56 patients (77%) and haemolysis parameters were positive in only 16/73 (22%). The three groups were similar regarding sex, age (50.2±9.3 vs 50.5±7.0 vs 50.9±8.2), BMI (30.6±4.2 vs 28.0±5.1 vs 27.1±4.3) and inflammation and fibrosis scores. Sustained response was noted in 14/29%, 33/15% and 13/15% in the three groups respectively. Our study population included 39 (53%) Caucasian and 34(47%) AA. Anemia was observed in Caucasians 31 (79%) vs AA 25 (74%) and hemolysis in 7(18%) vs 9(26%). These differences did not reach statistical significance in this sample size.

Conclusions: Anemia was observed in the majority of patients receiving combination therapy; however hemolysis is noted in only about 1/4. There was no significant difference in the incidence of hemolysis in African American patients. Unless studies prove a suppressive effect of ribavirin on haematopoiesis, many ribavirin dose reductions may not be necessary. We propose ribavirin dose reduction only in patients with evidence of hemolysis, which should prevent unnecessary dose reduction. We are currently studying the effect of haemolysis guided dose reduction of ribavirin on quality of life and treatment outcome.

295

THROMBOTIC THROMBOCYTOPENIC PURPURA (TTP) ASSOCIATED WITH INTERFERON THERAPY OF HEPATITIS C

Kyle Stribling, Kashif Ahmed, Adam Waller, M.D., Urooj Ahmed, M.D., Robert R. Schade, M.D.*. Medical College of Georgia and Veterans Administrative Medical Center, Augusta, Georgia.

Purpose: Rare reports have implicated IFN-α therapy as a precipitating factor for Immune Thrombocytopenic Purpura (ITP) in patients with Hepatitis C Virus (HCV). One report associated IFN-α with the occurrence of TTP in the treatment of patients with leukemia. We report a 43-year-old female who developed TTP on two separate occasions soon after beginning treatment for HCV.
Method: A 43-yr-old African American female with a 20 year history of HTP was stable until 7/11/01 when she had a liver biopsy to evaluate HCV genotype II. Subsequent to liver biopsy, she had an occurrence of TTP. Bone marrow biopsy showed marked megakaryocytes and PBS revealed 3–4 schistocytes. She was treated with plasma exchange, recovered, and remained stable until 1/15/02 when she started Intron 3-megaunits 3 times per week and Ribavirin-1000 mg per day for HCV. Platelet count was 263,000; AST, 14; ALT, 32. Within 5 days, she presented with headache, nausea, abdominal pain, fever, petechiae, and ecchymosis. Her platelet count was 19,000. Admission labs revealed: LDH, 839 mu/ml; reticulocyte count, 3.4; total bilirubin, 1.0 mg/dl; urinalysis, 5–10 RBC/hpf. After plasma exchange her clinical picture improved. At discharge platelets were 266,000; LDH, 170; total bilirubin, 0.7. The patient remained asymptomatic with normal platelet counts for 2 years. IFN-α was resumed on 4/15/04 with AST, 18 an Within 4 days, she had myalgia, vomiting, hematuria, and fever. Her platelet count was 7,000 and HCV treatment was again discontinued. Labs revealed: LDH, 2284; reticulocyte count, 5.2; total bilirubin, 2.5; PBS, moderate-marked schistocytes; urinalysis, (+) blood. She received plasma exchange 6 more times. Discharge labs were: Platelets, 372,000; LDH, 235; total bilirubin, 0.8. Subsequently her platelet count has remained stable.

Conclusion: Although it is known that IFN-α therapy can lead to thrombocytopenia secondary to bone marrow suppression, there have been cases reported of TTP or TTP occurring with the treatment of HCV and leukemia, respectively. This case shows a strong association with IFN-α therapy and TTP in a patient with HCV because of the short time interval between beginning treatment and symptom onset, and duplication of the occurrence after a long symptom free period following rechallenge with the drug. IFN-α may modulate the immune system and trigger a TTP episode in susceptible HCV patients.

PEGYLATED-INTERFERON INDUCED OTOTOXICITY AS A SIDE EFFECT OF HEPATITIS C TREATMENT
Sutha Sachar, M.D., John Polio, M.D.*. St. Francis Medical Center, Hartford, Connecticut.

Pegylated interferon and ribavirin is the “gold-standard” of treatment for chronic hepatitis C. We report a case of acute hearing loss during treatment with pegylated interferon and ribavirin. Only one other reported case describes this association.

A 54 yr white male underwent treatment for chronic hepatitis C (genotype 2B, viral load: 1,000,000 copies/ml, histology: grade 2 stage 1). Pegylated interferon and ribavirin decreased viral load and normalized transaminases without significant effect on hematologic parameters. At treatment week 14, the patient noted acute hearing loss. An MRI was normal. Pure tone audiogram showed 50% sensorineural hearing loss in the right ear and diminished discrimination. Conduction was normal. Upon evaluation of the patient’s past medical history, family history and medications, it was thought that the hearing loss was secondary to pegylated interferon. Antiviral therapy was discontinued and a prednisone taper was prescribed. At two weeks, hearing was restored. Due to the profound nature of the hearing loss, potential for permanent deficit and presence of mild histologic injury re-treatment with interferon was not instituted.

Sudden hearing loss has been associated with standard interferon therapy. A recent report describes hearing loss associated with pegylated interferon. Proposed etiologies for auditory dysfunction associated with interferons include direct ototoxicity with high dose interferon, hematological changes, autoimmune-mediated microvascular damage, and idiopathic. During treatment with pegylated interferon and ribavirin, patients should be routinely questioned about hearing loss. If symptoms arise, auditory function should be closely monitored and therapy may need to be discontinued.


LIVER TRANSPLANT DURING ACTIVE COCCIDIODES INFECTION

Introduction: Coccioidiomycosis is a fungal infection that is endemic to the southwestern United States. The major route of infection is respiratory via inhalation of the arthroconidial form. The majority of infections are asymptomatic and present with mild respiratory illness. In HIV, transplant recipients and chronically ill patients the course can be severe.

Case report: A 47-year-old, Hispanic female with a past history of hepatitis C, presented for liver transplantation. She was admitted to the Hepatologist transplant service for increasing confusion, headaches, fatigue, diarrhea and worsening renal failure. She had a past history significant for TIPS placement, variceal bleeding and multiple hospitalizations for liver related illnesses.

Her physical exam revealed a skin rash on the lower extremities, which consisted of deep purple and violaceous patches with some scaling, involving the dorsal foot and shins. There was associated edema and the upper thighs revealed discrete light purple lesions with central clearing, as well as 5 mm macules without induration. The left index finger was very swollen at thePIP with erythema, scaling and desquamation.

The patient underwent transplant and shortly afterwards, developed pneumonia. Coccioidiomycosis as well as bacterial etiologies were considered. On the first post operative day, the patient’s bilateral rash in the lower extremities was biopsied to rule out coryglobulinemia. A sputum culture returned as positive for methicillin resistant Staphylococcus aureus (MRSA). The patient also had worsening renal function ultimately requiring dialysis. By day six, kidney function started to improve. Ultimately the patient’s finger lesion required irrigation and drainage, and pathology and microbiology revealed filamentous fungi. A diagnosis of coccidioidomycosis was made. The patient was started on treatment and has done well to date.

Discussion: Coccioides immitis has a fulminant course in those patients who are immunosuppressed and active infection is a relative contraindication. To our knowledge there has been no case of liver transplantation during active coccidioidal infection. At the time of presentation many of the patients complaints, signs and symptoms were attributed to chronic liver disease. Retrospectively, however, they could be linked to the active cocci infection.

LIVING RELATED LIVER TRANSPLANT AND BILIARY COMPLICATIONS

Purpose: Living related liver transplantation (LRT) is now being performed at an increasing number of medical centers as an alternative to cadaveric transplantation. Cadaveric transplantation is typically associated with a 15 to 30% rate of biliary complications, but the complication rate in LRT has
not been clearly defined. The aim of this study is to evaluate the incidence, presentation, treatment, and outcome of biliary complications in LRT.

**Methods:** Adult patients who underwent LRT at our institution were retrospectively studied. Age, gender, etiology of liver disease, type of biliary Anastomosis, clinical findings and LFTs before and after treatment were evaluated. Cholangiograms through percutaneous transhepatic or endoscopic retrograde techniques were examined for stones, bile leak, choleodochal or hepatopancreaticojejunostomy strictures. Balloon dilatation, stone extraction and/or stent placement were performed when indicated. Follow up data were collected for clinical and biochemical outcome.

**Results:** Of 23 patients (age 18–74, 14 M and 9 F) studied, 8 underwent hepatopancreaticojejunostomy and 15 had end-to-end anastomosis, 11 patients had biliary complications. Etiology of liver disease was: Alcohol (2), Hepatitis C (4), Hepatocellular carcinoma (HCC) (2), Hepatitis C and alcohol (2), Hepatitis C and HCC (7), Hepatitis B and HCC (1), PBC (1), carcinoid tumor (1), PSC (1), and autoimmune hepatitis (1). Presenting symptoms of biliary complications included fever, abdominal pain, jaundice and pruritis. Findings at cholangiography in the 11 patients included stone (1), bile leak (4), cholecodochal stricture (4), and hepatopancreaticojejunostomy stricture (2). Mean laboratory values at time of complication diagnosis were: total bilirubin (4), choledochal stricture (4), and hepaticojejunostomy stricture (2). Mean cholangiograms through percutaneous transhepatic or endoscopic techniques were examined for stones, bile leak, choleodochal or hepatopancreaticojejunostomy strictures. Balloon dilatation, stone extraction and/or stent placement were performed when indicated. Technical success was achieved in 11/11. All 11 patients had clinical and biochemical improvement for a mean period of 14.9 months (range: 3 to 25 months).

**Conclusions:** The incidence of biliary complications seems to be higher in LRT compared to cadaveric transplant. Percutaneous and endoscopic techniques offer accurate diagnosis and satisfactory therapeutic options in these patients.

---

**INCREASING INCIDENCE OF HEPATOCELLULAR CARCINOMA IN THE UNITED STATES: TRENDS IN A CLINICAL HEPATOLOGY PRACTICE**


**Purpose:** Several reports describe a marked increase in the incidence of HCC. A recent study showed a survival advantage for these patients with periodic screening of compensated cirrhotics. If screening is beneficial, then detection of HCC at an earlier cirrhotic stage may correlate with improved survival. We sought to determine whether 1) referrals for evaluation of hepatocellular carcinoma were increasing, 2) HCC was being detected at earlier stages of cirrhosis, and 3) survival has changed over the past decade.

**Methods:** We retrospectively reviewed the charts of 67 consecutively diagnosed patients with HCC seen between the years 1990–2002 at a large community based hepatology referral service. No patient was referred for transplant evaluation and these cohorts were derived before the revision in transplant evaluation and these cohorts were derived before the revision in the MELD criteria. We recorded demographics, risk factors, cirrhosis stage (Child-Pugh), and mean survival following diagnosis. We divided the patients into three time groups based on time of diagnosis: Group 1 (1990–1993), Group 2 (1994–1997), and Group 3 (1998–2002). Survival analysis was performed based on Kaplan Meier estimates.

**Results:** The mean age was 66.4 years (range, 38–81); 56 (83%) were Caucasian; risk factors included alcohol, 22 (33%), HCV, 17 (25%), alcohol/HCV, 6 (9%), HBV, 7 (10%), cryptogenic, 9 (13%), other 6 (9%). There were an increasing number of cases with HCC identified in the three time groups [14/67 (20.9%), 21/67 (31.3%) and 32/67 (48.6%)]. The corresponding percent increase in diagnosed cases of HCC between these time groups were 50, 52.38 and 128.57, respectively. Chronologically, as time progressed, HCC was detected at earlier Childs-Pugh stages of cirrhosis (p = 0.029). We did not observe improved survival from the first time cohort to the last. The mean survival was 15.0 months, 15.3 months and 15.5 months in Groups 1, 2, and 3, respectively (p = 0.45).

**Conclusions:** Consistent with recent reports, the proportion of HCC patients referred to a hepatology service has increased dramatically over the past decade. Patients with HCC are being detected at earlier stages of their cirrhotic disease. Nevertheless, we found no overall improvement in survival in the more recent cohort. This was a retrospective study that included decompensated cirrhotics, and the findings are therefore not inconsistent with the possibility that screening for HCC and early transplantation may ultimately improve survival from this tumor.

---

**Table 1.** shows patient characteristics, with only ascites (p < 0.05 and odds ratio 9.9) possibly predicting HRS in patients with cirrhosis + renal failure.

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>type I HRS (n = 11)</th>
<th>type II HRS (n = 17)</th>
<th>no HRS (n = 35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>54 (28–78)</td>
<td>54 (38–70)</td>
<td>56 (38–77)</td>
</tr>
<tr>
<td>ascites</td>
<td>11 (100%)</td>
<td>16 (94%)</td>
<td>25 (73%)</td>
</tr>
<tr>
<td>HE</td>
<td>9 (81%)</td>
<td>16 (94%)</td>
<td>21 (60%)</td>
</tr>
<tr>
<td>history of EVB</td>
<td>3 (27%)</td>
<td>10 (59%)</td>
<td>7 (20%)</td>
</tr>
<tr>
<td>admission Na</td>
<td>131 (115–148)</td>
<td>128 (117–141)</td>
<td>133 (117–167)</td>
</tr>
<tr>
<td>admission Cr</td>
<td>2.3 (1.5–3.2)</td>
<td>3.0 (1.7–4.6)</td>
<td>3.4 (1.4–11.9)</td>
</tr>
<tr>
<td>admission INR</td>
<td>2.1 (1.6–5.2)</td>
<td>2.2 (1.3–3.2)</td>
<td>1.9 (1.1–3.3)</td>
</tr>
<tr>
<td>admission bili</td>
<td>15.9 (3–38.6)</td>
<td>16.5 (2.4–35.1)</td>
<td>9.6 (0.4–36.0)</td>
</tr>
<tr>
<td>admission alb</td>
<td>2.0 (1.4–2.7)</td>
<td>1.9 (1–2.8)</td>
<td>2.4 (1.0–9.0)</td>
</tr>
<tr>
<td>urine sodium</td>
<td>35.8 (7–105)</td>
<td>20.7 (10–62)</td>
<td>38 (10–112)</td>
</tr>
<tr>
<td>CTP score</td>
<td>12.5 (10–14)</td>
<td>12.9 (11–14)</td>
<td>10.4 (7–14)</td>
</tr>
<tr>
<td>MELD score</td>
<td>33 (21–47)</td>
<td>32 (22–44)</td>
<td>27 (10–46)</td>
</tr>
</tbody>
</table>

**Table 2.** shows increased time until a required intervention (liver transplant or dialysis) for HRS patients treated with multiple medicines.

<table>
<thead>
<tr>
<th>Treatment type</th>
<th>Average days until dialysis or transplant</th>
<th>Average number of days to death</th>
<th>Average number of days until hospice</th>
<th>Average number of days until loss of follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>multiple meds (dopamine + octreotide + albuterol) or (dopamine + octreotide)</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>single medicine (dopamine drip or octreotide) or supportive care</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>supportive care</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
MYCOPHENOLATE MOFETIL FOR TREATMENT OF REFRACTORY TYPE 1 AUTOIMMUNE HEPATITIS
Adam D. Waller, M.D., Robert R. Schade, M.D.*. Medical College of Georgia and Veteran’s Administration Medical Center, Augusta, Georgia.

Although the treatment of choice for autoimmune hepatitis (AIH) is glucocorticoids, their side effects make long-term use undesirable. Azathioprine is standard therapy for maintenance of remission; however, approximately 15% of patients are intolerant of therapy and 10% do not respond to it. Treatment options for patients not responding to standard therapy are limited, particularly in patients with other comorbidities such as renal dysfunction. We describe the use of Mycophenolate mofetil therapy in a patient with AIH who was intolerant of azathioprine, 6-mercaptopurine and cyclosporine.

A 51-year-old African-American female presented with a 15-year history of AIH complicated by Sjogren’s syndrome, Raynaud’s phenomenon, hypertension and chronic renal insufficiency. AIH was diagnosed after finding abnormal liver enzymes, elevated antinuclear antibody, anti-smooth muscle antibody and immunoglobulin levels, and was later confirmed by liver biopsy. The patient had been started on prednisone 20 mg daily and maintained on this as a long-term management strategy. She became corticosteroid-dependent and took prednisone almost continuously for 15 years; and subsequently, she developed osteoporosis. The patient never achieved complete resolution of her biochemical abnormalities, with an average AST of 60 MU/mL and ALT of 65 MU/mL. In addition, she developed occasional flares of hepatitis with elevation in transaminases and total bilirubin, which periodically necessitated an increase in her dose of prednisone. Treatments with azathioprine, 6-mercaptopurine, and cyclosporine were attempted, but she was intolerant of each of these medications because of nausea, vomiting and diarrhea. Mycophenolate mofetil 500 mg daily was started as a corticosteroid-sparing agent along with her current prednisone therapy of 10 mg daily. She proved to be tolerant of the new medication. After one month of treatment, her liver enzyme tests became normal for the first time since her long-term follow-up and assessment. This allowed reduction in her prednisone dose from 10 mg to 7.5 mg, with plans to subsequently taper this further.

In this patient intolerant of most immunosuppressive medications, Mycophenolate mofetil appeared to be effective and was well tolerated. It may be an alternative for patients with AIH and renal impairment because of the risk of nephrotoxicity seen with other immunosuppressants.

FACTORS IMPLICATED IN RECEIVING THERAPY IN PATIENTS WITH HEPATITIS C ± HIV CO-INFECTION IN A LOWER SOCIAL ECONOMIC GROUP
Bashar M. Attar, M.D.*, Erik Chinga-Alayo, M.D., Gonzalo Pandolfi, M.D., Oluwatoyin Adeyemi, M.D., Scott Cotler, M.D., Donald M. Jensen, M.D., Brendan M. Reilly, M.D. John H. Stroger Hospital of Cook County; Rush University, Chicago, Illinois and UIC, Chicago, Illinois.

Purpose: To evaluate the main reasons for not receiving therapy in patients of a low socioeconomic group with hepatitis C only vs. co-infection with hepatitis C and HIV.

Methods: A total of 450 consecutive patients with chronic hepatitis C were evaluated. Patient demographics: mean age 49.9, males 59%, African Americans 56%, Hispanics 24% and Whites 16%. Patients with hepatitis C only who received treatment were 29% (102/349) compared to 16% (16/101) in the co-infected group.

Results: Major reasons for not receiving treatment in the non-HIV patients included: medical 52%, psychiatric 29%, active alcohol or drug abuse 26%, refusal of therapy or evaluation process 12%, and no medical indication for therapy 11%. The main medical reasons in non-HIV patients prohibiting therapy included decompensated cirrhosis, severe thrombocytopenia, severe anemia, severe systemic disorder, and cardiac disease. Major reasons for not receiving treatment in HIV patients: medical 51%, psychiatric 29%, active alcohol or drug use 13%, refusal of treatment or the evaluation process 20%, and no medical indication 13%.

Conclusions: We conclude that the reasons involved in not receiving therapy in patients with hepatitis C only are similar to those who are co-infected with HIV. HIV co-infection did not adversely influence receiving therapy for hepatitis C.

RISK FACTORS OF CIRRHOSIS IN SICKLE CELL PATIENTS
Mohammad E. Hoque, M.D., Behzad Kalaghechi, M.D., Samuel A. Giday, M.D., Duane T. Smoot, M.D., T. Naab, M.D., Alpha Banks, M.D., Victor Gordeuk, M.D., Oswaldo Castro, M.D.*. Howard University Hospital and Howard University College of Medicine, Washington, District of Columbia.

Purpose: Case series describing liver histology in sickle cell disease (SCD) report only occasional instances of liver cirrhosis. We conducted this study to investigate the risk factors of cirrhosis of liver in sickle cell disease and to evaluate the role serum ferritin as screening test for liver cirrhosis in SCD.

Methods: We searched our Sickle Cell Disease Center’s patient databases from 1983–2003 for diagnosis of cirrhosis of liver. We reviewed medical records of these patients for the type of SCD (SS vs SC), age of the patient at time of diagnosis of cirrhosis, history of blood transfusions and total amount of blood transfusions and alcohol intake, survival period of the patient after diagnosis of cirrhosis, serum ferritin levels, serum Iron, liver function tests and hepatitis profile. All pathologic slides of liver biopsies have been reviewed by one experienced pathologist. The histologic sections were graded for the presence and amount of inflammatory infiltrate, degenerative swelling of hepatocytes, necrosis, sickling of red blood cells, fibrosis, cholestasis, and iron deposition.

Results: We found 17 cases of liver cirrhosis documented by histology. Twelve of these were diagnosed by liver biopsy while the patient was alive. The diagnosis in the remaining 5 patients was made at autopsy. Sixteen patients had histories of multiple transfusions and one had a history of alcohol abuse. One patient, who had no transfusions before diagnosis, is thought to have had non-HFE hemochromatosis. Histological evidence of heavy iron overload (by iron stain) was present in most livers examined. One had only a moderate degree of iron deposition. The mean and median follow up for the 12 patients diagnosed during life were 1 year (±1.67 SD) and 0.4 years, respectively.

Conclusions: Our data suggests that in most SCD patients, liver cirrhosis is associated primarily with iron overload. Since a substantial number of patients were diagnosed at autopsy, a more frequent use of liver biopsy is recommended for SCD patients, particularly those with high serum ferritin levels. We recommend that sickle cell patients with a serum ferritin concentration over 1000 ng/ml be considered risk factor of cirrhosis and Liver biopsy should be done to confirm iron overload and to guide appropriate therapy.

EFFECT OF TRANSJUGULAR INTRAHEPATIC PORTOSYSTEMIC SHUNT ON THROMBOCYTOPENIA ASSOCIATED WITH LIVER CIRRHOSIS
Omar I. Massoud, M.D., Nezar Zein, M.D.*. Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: Thrombocytopenia is a well known complication of liver cirrhosis and portal hypertension. Occasionally, it is severe and represents a difficult management issue. Transjugular Intrahepatic Portosystemic Shunt (TIPS) is a minimally invasive procedure for portal decompression, which has proven to be of benefit in the management of refractory ascites and variceal bleeding. It has been suggested that TIPS could be used for the treatment of severe thrombocytopenia in patients with cirrhosis; although it remains controversial. Our aim is to assess the effect of TIPS on Thrombocytopenia associated with liver cirrhosis.
Methods: Sixty consequent patients who underwent TIPS at Cleveland Clinic Foundation between 1999 and 2003 were included in this study. Platelet count was determined on three different occasions within 1–3 months before and after the TIPS. Severe thrombocytopenia was defined as platelet count <50,000. Significant increase was defined as ≥ 20% increase of platelet count. Portosystemic pressure gradient was measured pre and post TIPS. Ultrasound Doppler was performed to ensure the patency of TIPS after 24 hours, 6 weeks and 3 months of the TIPS. The t test was used to test the differences in means before and after TIPS, while Spearsman’s correlation coefficient was used to test the correlation between the change in platelet count and post TIPS portosystemic gradient.

Results: Of 60 patients, 24 (40%) showed significant (≥20%) increase in platelet count after TIPS procedure (82,000 ± 44 pre-TIPS vs. 112 ± 41 post-TIPS, P < 0.05). Of 9 patients with severe thrombocytopenia, 7(78%) showed clinically significant increase in platelet count (36,000 ± 8 pre TIPS vs. 52,000 ± 13 post TIPS, P < 0.005). The changes in platelet count after TIPS procedure was independent of the etiology of liver disease or the portosystemic pressure gradient following placement of TIPS.

Conclusions: Transjugular Intrahepatic Portosystemic Shunt may improve thrombocytopenia associated with liver cirrhosis. Patients with severe thrombocytopenia are more likely to benefit from this procedure.
Methods: Case Report: A 62 years old male, who underwent OLT five years ago for EPP was being maintained on IV hematin-albumin and packed red blood cells every two weeks. After two years with no evidence of recurrent disease, it was decided to increase the interval between treatments to every two months. Within 6 weeks of stopping treatment he presented to the ER with abdominal pain and jaundice. Exam revealed a tender hepatomegaly and icterus. His admission labs revealed a WBC 6.9, hemoglobin 11.0 g/dl, platelet count of 237, creatinine 2.1, glucose 137, INR 1.1, total bilirubin 5.9, alkaline phosphatase 146. AST 261, ALT 193. Liver biopsy showed marked cholestasis and pigment consistent with protoporphyria. MR Cholangiography showed no obstruction. Free RBC protoporphyrin level was elevated above his baseline by nearly 10-fold. Subsequently, over the next three days his bilirubin rose to 13.6 mg/dl. Exchange transfusions followed by intravenous heme-albumin infusion were initiated. There was complete resolution of his symptoms and normalization of his LFT’s in 8 weeks. Since his discharge, he has been maintained on the strict regimen of IV heme-albumin infusion every two weeks and plasmapheresis once a month.

In October, 2003, because of persistent need for weekly transfusions, an attempt was made to correct his anemia with erythropoietin. This resulted in recurrence of abdominal pain and an increase in the patients liver enzymes (AST 107, ALT 263), with bilirubin rising to 4mg/dl. Erythropoietin was discontinued followed by resolution of his symptoms. The patient’s anemia is currently being managed with blood transfusions as needed.

Conclusions: Post transplant EPP patients should be maintained with heme-albumin combined with plasmapheresis indefinitely. Erythropoietin could potentially worsen the porphyria by increasing erythropoiesis and should be avoided in this patient population.

308
PEGINTERFERON PLUS RIBAVIRIN FOR THE INITIAL TREATMENT OF CHRONIC HEPATITIS C GENOTYPE 4: A META-ANALYSIS OF RANDOMIZED TRIALS
Mohammad S. Khuroo, M.D.*, Mehnaaz S. Khuroo, M.D., Saleem T. Dahab, M.D. King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia and Shri-Ramachandra Medical College and Research Institute, Porur, Chennai, Tamil Nadu, India.

Purpose: Guidelines for treatment of patients infected with hepatitis C virus (HCV) genotype 4 are not known.

Methods: To address this issue we performed a meta-analysis of randomized controlled trials comparing peginterferon plus ribavirin with interferon plus ribavirin treatment in naïve patients infected with chronic HCV genotype 4. Outcome measure used was sustained virologic response. The measure of association employed was relative risk (RR) calculated by random-effect model; with heterogeneity, sensitivity and subgroup analyses.

Results: Of the 565 studies screened, 6 randomized controlled trials including 424 patients (peginterferon plus ribavirin 219, interferon plus ribavirin 205) were analyzed. Duration of therapy was for one year in all trials. Sustained virologic response obtained with peginterferon plus ribavirin (54.8%) was significantly higher than with interferon plus ribavirin (29.8%) [RR, 1.71 (95% CI, 1.15–2.56); p = 0.0088]. In the subgroup analyses, sustained virologic response obtained in trials with peginterferon alfa-2a (62.2%) was significantly higher than with peginterferon alfa-2b (42.9%; p = 0.04). This was possibly related to use of fixed dose of peginterferon alfa-2b in 2 of the 3 trials and use of low-dose ribavirin in all the 3 trials included in the meta-analysis. Also, sustained virologic response in trials using standard-dose ribavirin (1000 or 1200 mg per day) was 72% as against 45.8% in trials using low-dose ribavirin (800 mg per day) (p = 0.01). Further sub-group analyses for treatment duration, body-weight, viral load and cirrhosis could not be done due lack of relevant data.

Conclusions: Naïve patients infected with hepatitis C virus genotype 4 should be treated with peginterferon plus standard dose ribavirin for one year, with an expected sustained virologic response rate of 72%.

309
SEVERE FETAL HEPATITIS E VIRUS INFECTION IS THE POSSIBLE CAUSE OF INCREASED SEVERITY OF HEPATITIS E VIRUS INFECTION IN THE MOTHER: ANOTHER EXAMPLE OF MIRROR SYNDROME
Mohammad S. Khuroo*, Saleem S. Kamili, Saleem T. Dahab, Ghulam N. Yattoo. King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia; US Centre for Disease Control and Prevention, Atlanta, Georgia and Sher-i-kashmir Institute of Medical Sciences, Srinagar, Kashmir, India.

Purpose: The cause of increased severity of hepatitis E virus (HEV) infection in pregnancy is not known. We sought to find out if fetal HEV infection and fetal disease could influence the course of HEV infection in the mother.

Methods: We studied clinical and biochemical characteristics of 36 consecutive pregnant women with acute HEV infection. Babies borne to these women were assessed for vertically-transmitted HEV infection and the severity of liver disease in the newborn. The severity of disease in the newborn was correlated with the maternal disease.

Results: Of the 36 pregnant women with HEV infection, 20 (55.6%) had nonfulminant disease and 16 (44.4%) had fulminant hepatic failure (FHF). Nine (56.3%) of the 16 mothers with FHF had disseminated intravascular coagulation. 6 (37.5%) women with FHF survived and 10 (62.5%) died. Twenty-five (69.4%) infants had HEV infection at birth. Fourteen (56%) of such infants died with a clinical syndrome resembling FHF. Babies born to mothers with FHF were more often HEV infected and viremic ((15/16; 93.8%) for both) than those with nonfulminant disease (10/20; 50% and 5/20; 25%) (p = 0.004 and < 0.001 respectively). Twelve (75%) of the 16 babies born to mothers with FHF had clinical syndrome of FHF as a result of massive hepatic necrosis. In contrast only 2 (10%) of the 20 mothers with nonfulminant disease delivered babies who developed FHF. (p = 0.008) All the 6 mothers who survived had delivered babies within 4 days (2.3 ± 1.0 days) of onset of encephalopathy. In contrast, all the 10 mothers who died had delivered babies 4 days (9.6 ± 3.0 days) after onset of encephalopathy (p = 0.02).

Conclusions: We hypothesize that severe fetal liver disease caused by vertically-transmitted HEV infection causes severe maternal liver disease, akin to what happens in mirror syndrome. Fetus with severe liver disease may produce toxins which cross to the maternal blood and precipitate FHF and DIC in the HEV infected mother. (This work was done at the Department of Gastroenterology Sher-I-Kashmir Institute of Medicine Srinagar, Kashmir, India.)

310
THE APRI IS A GOOD PREDICTOR OF FIBROSIS IN HCV, AND MAY BE ENHANCED BY THE INSULIN RESISTANCE INDEX (HOMA-IR), A PROSPECTIVE STUDY
Ned Snyder, M.D.*, Leka Gajula, M.D., Darrell Finlay, M.D., Alex Hewlett, D.O., Bhaveni Moparty, M.D., Harsha Vittal, M.D., Shu-Yuan Xiao, M.D., Daryl T-Y. Lau, M.D., Roger Soloway, M.D., John Petersen, Ph.D. University of Texas Medical Branch, Galveston, Texas.

Purpose: Since the liver biopsy is invasive, expensive, and subject to sampling error, an accurate non invasive method to estimate hepatic fibrosis has been widely sought. The AST/platelet ratio (APRI) has been found in a retrospective study of 354 patients (Snyder et al. Gastro 2004; 126:A304). We assessed the APRI in an ongoing prospective study of various hepatic fibrosis markers, and examined whether the addition of an insulin resistance index (HOMA-IR) enhanced the accuracy.

Methods: Under IRB approval, blood was collected from patients with HCV undergoing pre treatment liver biopsies. Patients were excluded if they were coinfected with HIV or HBV, had an organ transplant, or had been treated

S100 Abstracts

AJG - Vol. 99, No. 10, Suppl.,
with interferon in the last year. Analysis was performed using Insightful Miner 3 software (Insightful Corporation Seattle, WA, USA). The liver biopsies were staged blindly by one pathologist using the Ludwig Batts criteria. The APRI was calculated as AST/ULN X 100/platelets. The HOMA-IR was calculated as fasting insulin(μU/mL) X fasting glucose (mmol/L)/22.5.

Results: 113 patients have been studied. 50 had mild fibrosis (F0-F1) and 63 had significant fibrosis (F2-F4). By logistic regression, the APRI had a sensitivity of predicting mild fibrosis of 88.1% with a specificity of 79.7%. An APRI of < 0.42 had a NPV of 92.6% (25/27 patients correct) while an APRI of > 1 had a PPV of 95.7% (44/46 correct). This left 40 patients (35.4%) in a gray or overlap zone. Using logistic regression, we were able to construct an index with the APRI and the HOMA-IR. A value of < -1.15 had a PPV for significant fibrosis of 91.9%, while a value of >0.65 had a PPV of 92.5%. This narrowed the gray zone to 23 patients (23.5%).

Conclusions: This prospective study confirms that the APRI is an accurate index for estimating fibrosis in patients with chronic HCV. Utilization of this simple bedside test can reduce the number of liver biopsies. It also demonstrates that the combination of the APRI and the HOMA-IR may be useful since it can narrow the gray zone between cutoff values.

311

PEGYLATED INTERFERON ALFA-2A AND RIBAVIRIN FOR RECURRENT HEPATITIS C AFTER LIVER TRANSPLANTATION
Sanjeev Mahenery, Joyce Rogge, Lynne Weaver, Daniel F Schaefer. University of Nebraska Medical Center, Omaha, Nebraska.

Purpose: Recurrent hepatitis C (HCV) is universal after liver transplantation (OLT). Patients are often treated with interferon in an attempt to eradicate HCV and prevent retransplantation. We describe our experience with pegylated interferon and ribavirin combination therapy in 29 patients.

Methods: Between October 2002 and June 2004, consecutive patients with recurrent HCV were screened to determine treatment eligibility. Recurrent HCV was defined as the presence of elevated transaminases in the presence of HCV RNA viremia with a biopsy demonstrating recurrent hepatitis or steatosis. This cohort was followed prospectively after starting pegylated interferon alfa-2a 180mcg qweekly and ribavirin 1000–1200mg qd with folic acid 1mg per day. Patients with genotypes 1 and 4 were treated for 24 weeks and other genotypes for 36 weeks. Erythropoietin 40,000units weekly was used to maintain hemoglobin greater than 10 and Filgrastim 300mcg weekly for interferon-induced leukopenia. HCV RNA was repeated at 3 months, end of treatment (EOT) and six months after EOT for patients HCV RNA negative at EOT.

Results: 33 patients were screened and 29 eligible for treatment. There were 19 males and 10 females. Median age was 49.8 years. 21 patients were genotype 1, 5 were genotype 2, 2 were genotype 2 and one was genotype 4. Median pre-treatment viral load was 2.8 million ui/ml. Median interval between OLT and treatment was 16 months. 15 patients have completed treatment, 11 remain on therapy and 3 were intolerant. Erythropoietin was used in 3 patients and G-CSF in 2. Of the 15 patients who completed treatment, 11 were HCV RNA negative at 3 months and remained negative at EOT. 6 months after EOT, 5 patients remain HCV RNA negative (HCV RNA pending in 6). Of the 11 patients still on treatment, 7 were HCV RNA negative at 3 months, 1 was RNA positive and pending in 3. Interestingly, 2 of the 3 intolerant patients developed a sustained response to HCV eradication after only 2 months of treatment (both were genotype 2).

Conclusions: Pegylated interferon alfa-2a and ribavirin were well tolerated in this series of patients. Only 11.3% of patients withdrew from therapy. In an intention to treat analysis, sustained HCV eradication occurred in at least 24.1% of patients which is comparable with other interferon-based therapies. Prospective, randomized studies comparing pegylated interferon alfa-2a and ribavirin with other pegylated interferons are required to determine the most cost-effective approach for managing this emerging epidemic.

312

RAPID DEVELOPMENT OF ASCITES IN A PATIENT WITH MYELOPROLIFERATIVE SYNDROME
Sharif Zubair, M.D.*, Aarti Sekhar, Rashmi Patwardhan, M.D.*. University of Massachusetts Medical School; University of Massachusetts and St. Vincent Hospital at Worcester Medical Center, Worcester, Massachusetts.

We present a case of an 83 year-old man with myeloproliferative syndrome, who presented with two months of fatigue, weight loss, and abdominal girth.

Physical exam revealed pedal edema without evidence of heart failure. Abdominal examination revealed tense ascites, splenomegaly and a non-palpable liver. Laboratory investigation was significant for anemia, leukocytosis, thrombocytosis with large platelets, and an elevated LDH and uric acid. Peripheral smear showed nucleated RBCs, teardrop cells and basophilic stippling. Hepatitis panels were negative, and functional and inflammatory liver tests were all normal.

CT scan of the abdomen showed a grossly normal liver, ascites, splenomegaly, and prominent splenic and portal veins. Duplex of the portal venous system was unremarkable for thrombosis. An echocardiogram was also normal.

Due to suspected portal hypertension, transjugular portal pressure studies were done and a liver biopsy was performed. Hepatic wedge pressure was elevated at 26mm Hg and a liver biopsy revealed large numbers of megakaryocytes in the liver sinusoids with a small focus of extramedullary hematopoeis. No fibrosis was seen. The patient’s myeloproliferative syndrome had apparently progressed to myelofibrosis with myeloid metaplasia, with shunting of hematopoeis to the liver and spleen, resulting in subsequent portal hypertension and ascites. As the patient’s anemia prevented him from being a candidate for aggressive myeloablative therapy and advanced age made him unsuitable for bone marrow transplantation, he is being treated conservatively with spironolactone and furosemide for ascites and allopurinol for hyperuricemia.

Portal hypertension and ascites are rare complications of myeloproliferation. This case illustrates an unusual presentation of extramedullary hematopoiesis progressing to sinusoidal hypertension and ascites. Thus, intra-hepatic extramedullary hematopoeis should be kept in the differential for ascites in any patient with known or suspected myeloproliferative disease.

313

BILIARY DISEASE AFTER LIVER TRANSPLANTATION: KING FAISAL SPECIALIST HOSPITAL AND RESEARCH CENTRE (KFSHRC) RIYADH EXPERIENCE

Purpose: To document the frequency, clinical presentation and management of biliary complications after liver transplantation.

Methods: Liver transplant clinic at KFSHRC has registered 220 patients (150 males and 70 females; age 40.6 ± 18.6; pediatric 33, adult 187) during the period 1987 to June 2003. Biliary complications were suspected on clinical and biochemical parameters and confirmed by imaging techniques.

Results: Forty patients (18.2%) developed 53 biliary complications. These included bile leak in 16, strictures in 25, calculi in 8, and sphincter of Oddi dysfunction and possible recurrence of primary sclerosing cholangitis in the donor duct in 2 each. Leak occurred at anastomotic site in 13 patients. Patients presented with biliary drainage (n = 6), abdominal pain at t-tube removal (n = 3), fever (n = 2), sepsis (n = 1), dyspnea (n = 1) and abnormal liver tests (n = 3). Eleven patients had intra-abdominal bilious collections. Two patients were treated conservatively, 8 patients had ultrasound-guided aspiration of biloma, 5 had biliary stenting at ERCP and 2 patients needed surgery. There were 4 deaths, 2 of which were related to bile leak. Bilary strictures occurred due to hepatic artery thrombosis in 3, while 21
strictures were localized to the anastomotic site. Biliary strictures presented with elevated liver tests in 5 patients, progressive cholestasis in 5, cholangitis (with septicaemia in 5) in 11, abdominal pain in 2 and acute pancreatitis in 3 patients. Repeated sessions of endoscopic or percutaneous dilatation and stenting (mean sessions 4.4/patient, range 3–7) were attempted in 20 patients to relieve strictures, with success only in 9 patients. Suen patients had surgery. Four patients with biliary strictures died. Biliary calculi developed late in the follow up and had appearance of biliary casts in 5 and sludge in 3 patients. Eleven (27.5%) patients with biliary disease died as compared to 35 (19.4%) patients without biliary disease.

**Conclusions:** Biliary complications occurred in 18.2% of patients and caused considerable morbidity and mortality.

314

HEPATOCARCINOMA IN BLACKS

Adiyinka O. Latemo, M.D., Alpha T. Banks-Blair, M.D.*, Tammy Naab, M.D., Marie Fidelius-Lambert, M.D. Howard University Hospital, Washington, District of Columbia.

**Purpose:** Hepatocellular carcinoma (hepatoma), the predominant form of primary hepato-biliary neoplasia, is one of the commonest cancers in the world with significant geographical variance. It is commoner in Africa and Asia where it is more frequently associated with hepatitis B as compared to Europe and North America where hepatitis C plays a dominant role. However, even in the low incidence areas, the incidence of hepatocellular carcinoma (HCC) is higher in the black population as compared to the whites. We conducted a review of hepatocellular carcinoma exclusively in blacks treated in an inner city teaching hospital and compared our data with available data from the United States and the rest of the world.

**Methods:** Retrospectively, the medical records of patients attended to in our hospital from 1990 to 2003 with a discharge diagnosis of primary hepato-biliary malignancy were analyzed.

**Results:** Forty-eight patients with hepatocellular carcinoma were identified. There were 31 males (65%), mean age was 62.3, forty-one patients (85%) were born in the United States. Thirty-two patients (67%) had history of alcohol abuse, intravenous drug abuse 23%, tobacco abuse 58%, but only one patient was HIV positive. 35% had hepatitis C, 8% hepatitis B, and no history of chronic hepatitis in 54%. Alpha fetoprotein was greater than 20 ng/ml in 77% with the highest AFP being 379,600 ng/ml. The majority of lesions were found in the right lobe. Only 10 patients (21%) could be offered any form of therapy due to late presentation, in spite of the fact that 83% had medical insurance. Overall prognosis was dismal. 42% died within 3 months of diagnosis.

**Conclusions:** There is need for an increased health education in the black community and optimal screening in blacks with hepatitis and cirrhosis in order to reduce the incidence and mortality from hepatocellular carcinoma.

315

DEFLOLAC SODIUM CAUSED ACUTEFULMINANT HEPATIC FAILURE IN AN INFANT AGED 9 MONTHS

Essam Mohmd Al Hady Al Hady, M.D.*, Aly Mohmd Zky, M.D. Dr Solliman Fkeh Hospital, Jeddah, Saudi Arabia.

**Purpose:** To investigate cause of acute fulminant hepatitis in an infant presented by vomiting, diarrhoea & fever for 3 days & received voltaren 12.5 mg supp.(DEFLOLAC SODIUM), one day before followed by a dose of Junifer syrup (IBUPROFEN) to control the fever. He had past history of fever since 2 weeks followed by a rash after 3 days, where multiple doses of tempra (ACETAMINOPHEN) were given. I noticed reddish colouration of the colon, and acute mesenteric ischemia. 14 patients were excluded

**Methods:** 1- Serological viral screening 2- Viral study in our virology lab. by:

A- Viral cultures from nasopharyngeal aspirate, stool and blood.
B- The samples were inoculated on four cell lines:

A- Viral cultures from nasopharyngeal aspirate, stool and blood.
B- The samples were inoculated on four cell lines:
because they received antibiotics prior to being considered for study enrollment (usually due to presumption that the acute “painful” hematoma was due to acute diverticulitis), 6 patients did not consent to inclusion into the study, 3 underwent surgery (peritonitis with pneumoperitoneum), and 4 were actually enrolled into the study protocol.

**Conclusions:** Empiric antibiotic therapy in patients presenting with acute hematoma was a major reason for failure to recruit an adequate number of patients into a study protocol. This occurred despite previously spending considerable effort to educate our local healthcare providers. Given the difficulties we encountered, it is our suspicion that a high-quality prospective investigation assessing the use of antibiotics in ischemic colitis may never be completed.

317

**LOCALY ADVANCED RECTAL CARCINOMA (T3-T4): LOCATION ON THE RECTAL CIRCUMFERENCE IS NOT RELATED TO LOCAL RECURRENCE OR SURVIVAL**

**Jose E. Andujar, M.D., Sara Worley, Elena Manlich, James M. Church, M.D., Ian Laverty, M.D.**. Cleveland Clinic Foundation, Cleveland, Ohio.

**Purpose:** To evaluate the relationship between the location on the circumference of distal rectal cancers and the incidence of local recurrence and survival.

**Methods:** A prospectively managed database of patients with the diagnosis of rectal cancer was reviewed. Inclusion criteria were: Stage II disease (T3-T4, N0, M0), tumor located within 7 cm of the anal verge, and no neoadjuvant therapy. Circumferential tumors were excluded. Patients were divided into two groups: Group I: Patients with anterior tumors, and Group II: Patients with tumors in “other” locations. Groups were compared on demographic and clinical variables using the Chi-square or Wilcoxon Rank Sum tests. Timing of local recurrence and survival were determined and compared with Kaplan-Meier and log-rank tests, respectively.

**Results:** Seventy-nine patients met the inclusion criteria, 23 in Group I and 56 in Group II (posterior 19, left lateral 18, right lateral 19). There were 25 females (32%). The mean age was 53 years (24–84 years). There were no differences between groups with respect to gender, age, tumor stage, histology and surgical procedures. Local recurrence at five years was determined. 21 of 23 patients (91.3%) with anterior tumors (Group I) were free of local recurrence at five years, compared with 49 of 56 patients (87.5%) with tumor in other locations (Group II) (p = 0.63). Recurrence-free time was 35.9–107.6 months (median 87.6) in group I, and 29–75.9 months (median 41.8) for group II (p = 0.07). Survival at five years was 84.6% for group I and 83.7% for group II (p = 0.94). Median survival was 87.6 months (35.9, 107.9) for group I, and 44.2 months (29.7, 75.9) for group II (p = 0.071).

**Conclusions:** The location on the circumference of a distal rectal cancer is not an independent factor predicting local recurrence or survival after surgery.

318

**RISK FACTORS FOR FECAL INCONTINENCE IN DIABETICS**


**Purpose:** Diabetics have an increased prevalence of fecal incontinence (FI). Proposed risk factors for the development of diabetic FI include 1) hyperglycemia; 2) the presence of peripheral neuropathy; 3) autonomic neuropathy; 4) diarrhea; and 5) medications for the treatment of diabetes. The role of these proposed risk factors for the development of FI in diabetics was assessed.

**Methods:** Participants were recruited from an outpatient endocrinology clinic at a tertiary care center. A validated gastrointestinal questionnaire was administered to assess FI and bowel habits. Peripheral neuropathy was assessed by self-reported presence of numbness or tingling in the extremities. Autonomic neuropathy was assessed by the presence of postprandial sweating or positional light-headedness. Hyperglycemia was assessed by a HgbA1C level obtained within 2 months of completion of the survey. Use of oral diabetic medications and insulin use were recorded.

**Results:** The survey was completed by 85 patients (39 men and 46 women). FI was reported in 15/85 (18%) patients. Peripheral neuropathy was reported in 8/15 (53%) of those with FI, versus 13/69 (19%) without FI (Fishers Exact test p = 0.002). After adjusting for age and gender, peripheral neuropathy remained a significant risk factor (logistic regression Chi-square p = 0.049). Autonomic neuropathy was reported in 9/15 (60%) of those with incontinence versus 30/67 (45%) of those without FI (Fishers Exact test p = 0.39). The median HgbA1C was 6.8% for diabetics with FI and 6.7% for those without FI (Mann-Whitney p = 0.75). Insulin dependence was present in 10/15 (67%) of those that reported FI versus 48/69 (69%) of those without FI (Fishers Exact p > 0.999). In addition, no oral diabetic medication class reached statistical significance as a risk factor. None of the diabetics with incontinence reported diarrhea and 8/15 (53%) of those with FI reported leakage of formed stool.

**Conclusions:** This study showed a positive association between the presence of FI in diabetics and the presence of peripheral neuropathy. The high prevalence of FI (18%) was not attributed to a higher rate of diarrhea or abnormal bowel habits. Hyperglycemia, assessed by HgbA1C, was not a risk factor associated with FI. Diabetic medication usage also was not a significant risk factor for the development of diabetic FI.

319

**IS COLONOSCOPY MORE DIFFICULT IN OBESE OR THIN PATIENT? A PROSPECTIVE STUDY**

**Edson Jurado da Silva, M.D., F.A.C.G.*. Hospital dos Servidores do Estado and Casa de Portugal, Rio de Janeiro, Brazil.

**Purpose:** The aim of this study was to determine whether body mass index (BMI) impacts the success rate of colonic intubation during colonoscopy. Last year we presented a poster about gender.

**Methods:** The time required for colonic intubation was prospectively recorded for 227 consecutive colonoscopies performed by the author. To be eligible the patient should be an adult. Exclusion criterion was a previous colorectal surgery. The data collected was analyzed for completeness of the procedure, age, gender and BMI. In all of them we used meperidine and midazolam for conscious sedation. Student t test was used for means and chi-square to compare frequency. A p < 0.05 was considered significant. We called difficult procedure when the time required was longer than the average plus the standard deviation.

**Results:** 96 men, age 56.8+/-16.3 and 131 women, age 58.2+/-14.2 p>0.05. One man (1%) and 3 women (2.3%) had an incomplete examination p>0.05. The time required for cecum intubation was 11.1+/-5.2 for men and 13+/-5.9 for women p<0.05. For the whole group the time was 12.2+/-5.6. The BMI was similar between gender, being 25.3+/-4.2 for men and 25.5+/-5.4 for women p>0.05. The BMI for complete colonoscopies was 25.6+/-5.5 being 22+/-1.5 for the non complete ones p>0.05. In 32 patients (14%) the procedure was felt difficult, BMI being 26.2+/-6.4 for them and 25.3+/-4.7 for the easy ones p>0.05. For the incomplete procedures the age was 59.3+/-17.4 being 57.6+/-15 for the complete ones p>0.05. For the difficult group the age was 59.6+/-14.7 being 57.1+/-15.3 for the easy ones p>0.05.

**Conclusions:** The difficulty of doing colonoscopy was not related to BMI. In this study we spent more time in doing colonoscopy in woman than man. We will keep studying gender and BMI trying to settle down this matter.

320

**PREVALENCE OF MEDICATION-ASSOCIATED CONSTIPATION**

**Travis J. Rutland, M.D., Olatun A. Adeniji, M.D., Jack A. Di Palma, M.D., F.A.C.G.*. University of South Alabama College of Medicine, Mobile, Alabama.

**Purpose:** Although constipation affects >20% of the U.S. population, the role of medications causing constipation has not been well characterized.
The purpose of this study was to determine the prevalence of medication-associated constipation in patients with self-reported constipation.

**Methods:** Study subjects who responded to advertising regarding constipation were interviewed about the nature of their constipation and medication use. Medications were identified as constipating medications if they were listed by pharmaceutical industry reporting in the Physicians’ Desk Reference as causing constipation in more than 3% of the patients using the product.

**Results:** Three hundred twenty-nine subjects surveyed formed the study group. Among patients identified as constipating medications if they were listed by pharmaceutical industry reporting in the Physicians’ Desk Reference as causing constipation in more than 3% of the patients using the product.

**Conclusions:** Medication history is an important factor to consider in the management of patients with constipation. The substitution of non-constipating alternatives is often a difficult task.

### 321 IN VITRO FERMENTABILITY OF CELLULOSE, METHYLCELLULOSE, PARTIALLY HYDROLYZED GUAR GUM, AND PECTIN BY HUMAN FECAL MICROFLORA

**Objective:** Fibers used as dietary supplements and for managing constipation can differ in their solubility and fermentability. Cellulose (C) and pectin (P) represent fibers which are resistant to fermentation by human fecal microflora. This study compares in vitro fermentability by human fecal microflora of partially hydrolyzed guar gum (G), with that of M, C, and P.

**Methods:** Substrates were incubated anaerobically in vitro in a semi-defined medium. They were inoculated with human fecal microflora prepared from freshly voided feces obtained from 3 healthy male volunteers. Organic matter disappearance (OMD), short-chain fatty acid (SCFA) production, pH, and gas production were measured during 10 hrs incubation at 37°C. All measures and methods are validated, and have been used in prior studies.

**Results:** Ten hours of fermentation of G and P resulted in significant OMD values 44% and 67%, respectively. No disappearance in organic matter was observed for C. OMD was not measured for M, due to methodological issues. Time-dependent production of SCFA was observed with G and P, with total SCFA production of 145 mg/g and 150 mg/g, respectively, with 10 hr. Acetate and butyrate were the major SCFAs produced, P produced relatively more acetate than G. In contrast, no SCFA production occurred with either M or C. Differences between G and P and C and M were significant (p < 0.05). A significant decrease in pH was associated with generation of SCFA. Fermentation was also associated with generation of gas. Gas evolution of 108, 140, 2.2, and 1.0 mL/g organic matter was obtained during 10 hours of incubation with G, P, C, and M, respectively (p < 0.05 for G and P vs C and M).

**Conclusions:** This study demonstrates that similar to pectin, partially hydrolyzed guar gum is fermented by human fecal microflora. In contrast, methylcellulose, though a soluble fiber, is resistant to fermentation by human fecal microflora, and is similar to cellulose for these properties.

### 322 CORTICOSTEROID USE IN PATIENTS WITH CLOSTRIDIUM DIFFICILE INFECTION: AN ASSOCIATION WITH INCREASED RISK OF COLECTOMY AND DEATH

**Purpose:** Corticosteroids are commonly used to treat ulcerative colitis and Crohn’s colitis; however, their effects on patients with Clostridium difficile colitis may be detrimental. The aim of this study was to determine if corticosteroids are associated with an increased risk of developing severe outcomes leading to surgery and/or death.

**Methods:** A case control study based on review of charts and our hospital’s information system of 181 patients aged 18 years or older who were confirmed to have C difficile infection from May 1, 2001 to May 31, 2003, at St. Vincent Charity Hospital, Cleveland, OH. The main outcome measures were the number of patients who had severe outcomes, leading to colectomy and/or death, comparing patients who received corticosteroids to those who did not.

**Results:** Of the 181 confirmed case of C difficile infection, 126 patients did not receive corticosteroids, whereas 55 patients received them for treatment of other medical problems. Patients who developed severe outcomes in both groups were generally older. Serum albumin levels were lower in patients who required a colectomy and/or expired, however there was no significant difference whether they had received corticosteroids or not, p = .777. Out of 126 patients who did not receive corticosteroids (control group), there were 20 deaths (15.87%), compared to 22 out of 55 deaths (40%), in the corticosteroid group [odds ratio (OR) = 4.752; 95% confidence interval (CI): 2.329 to 9.695; p < .001]. In the control group there were 4 out of 126 patients (3.17%) who required a colectomy compared to 9 out of 55 patients (16.36%) in the corticosteroid group [OR = 5.967; CI: 1.752 to 20.328; p < .004]. In the control group, 1 out of 4 patients who had a colectomy expired after surgery (25%), compared to 6 out of 9 patients (66.66%) in the corticosteroid group [OR = 6; CI: 0.422 to 85.252].

**Conclusions:** Our study shows that when corticosteroids are used for treatment of other medical conditions in patients with C difficile colitis there is increased risk for the development of severe outcomes leading to colectomy and/or death. Further studies would be warranted to test the validity of these findings and to determine whether corticosteroid reduction or IV immunoglobulin administration would be helpful in severe cases of C difficile colitis.

### 323 COMPARATIVE YIELDS OF COLONOSCOPY IN PATIENTS REFERRED FOR EITHER COLORECTAL CANCER SCREENING OR EVALUATION OF POSITIVE FECAL OCCULT BLOOD TESTING

**Purpose:** In order to assess the impact of fecal occult blood testing on the yield of colonoscopy, we compared separately the yields of colonoscopies done for purely screening indications to those done as part of an evaluation for positive fecal occult blood testing (FOBT).

**Methods:** Mandated colonoscopy logs of six gastroenterology fellows were retrospectively reviewed for the period of January, 2002 to May, 2003. We extracted indications and all pathologic findings from all colonoscopy reports during this period, and we subsequently reviewed pathology reports of all specimens sent. Additionally, we reviewed the charts in patients whose pathology report included adenocarcinoma to confirm the initial indication for the procedure.

**Results:** Of a total of 1,205 colonoscopies, the primary indication on the procedure report was screening for colorectal cancer in 226 patients and positive FOBT in 195 patients. The yields of nonmalignant lesions were similar in both groups and were similar for each fellow. There were four cancers diagnosed, all in the patients with positive FOBT (2.1%). The charts of the four patients with cancers found at colonoscopy were reviewed for the presence of indicators for endoscopic evaluation other than positive FOBT. Three subjects had been anemic on prior laboratory evaluation and the fourth complained of altered bowel habits and had a sigmoid mass detected previously on radiologic imaging. Thus, none of the four
patients with adenocarcinoma qualified for screening and should have been referred for endoscopic evaluation irrespective of FOBT testing. The medical records of other subjects referred for colonoscopy were not reviewed to check the accuracy of stated procedure indications.

**Conclusions:** These results suggest that the yield of colonoscopy screening may be similar to the yield of colonoscopies prompted solely on the basis of positive FOBT.

**Yields of Colonoscopy by Indication**

<table>
<thead>
<tr>
<th>Indication for Colonoscopy</th>
<th>Screening</th>
<th>Positive FOBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Cases</td>
<td>226</td>
<td>195</td>
</tr>
<tr>
<td>Adenocarcinoma (%)</td>
<td>0</td>
<td>2.1</td>
</tr>
<tr>
<td>Advanced Adenoma (%)</td>
<td>6.2</td>
<td>7.2</td>
</tr>
<tr>
<td>Tubular Adenoma &lt; 1cm or Hyperplastic (%)</td>
<td>34.1</td>
<td>27.7</td>
</tr>
<tr>
<td>Hemorrhoids/Vascular Lesion (%)</td>
<td>38.9</td>
<td>48.1</td>
</tr>
</tbody>
</table>

**324**

**LEAD POISONING AS AN ETIOLOGY OF ABDOMINAL PAIN AND INTESTINAL PSEUDO-OBSTRUCTION IN ADULTS**

Chi P. Tran, M.D., Ruel T. Garcia, M.D., Vinh T. Lam, M.D., Thang H. Trong, M.D., Emmet B. Keeffe, M.D., Mindie H. Nguyen, M.D., MAS*, Hue Central Hospital, Hue, Thua Thien-Hue, Viet Nam; Liver and Digestive Health Medical Clinic, San Jose and Stanford University Medical Center, Palo Alto, California.

**Purpose:** In a referral hospital in Central Vietnam, several patients presented yearly with a syndrome of idiopathic abdominal pain, constipation and intestinal pseudo-obstruction. They were all commercial fishermen, suggesting an occupational etiology.

**Methods:** We reviewed records of 9 patients hospitalized from 1/03–4/04 with the above syndrome. Patient characteristics, occupational factors, hospital course, imaging and laboratory studies were reviewed including blood lead level (BLL).

**Results:** Mean age is 43 ± 12. Most are male (67%). All are fishermen from villages where the habit of chewing lead sinkers to tie to fishnets is a common practice (Figure 1). The average duration of this habit is 26 ± 12 years. Symptoms include: abdominal pain (100%), pseudo-obstruction or severe constipation (100%), vomiting (78%), seizure/coma (11%). Symptoms resolved with supportive care and NGT decompression after a median of 7 days (range: 4–12). There was no mortality. Seven (78%) had dark line on gingival tissue characteristic of heavy metal poisoning (Figure 2). Patients were anemic: mean Hct = 29.1 ± 6.4%. All had elevated lead level: median BLL = 38.4 ug/dl (range: 17.3–49.4).

**Conclusions:** Few have reported the GI manifestations of lead toxicity. We report a series of patients presenting primarily with GI symptoms due to lead poisoning and the habit of chewing on lead sinkers. The magnitude of this problem is unknown, and further investigation is needed. In particular, education on the health hazards of chewing on lead sinkers is urgently needed among the fishing communities in Vietnam.

**325**

**CIGARETTE SMOKING A RISK FOR LEFT SIDED COLON POLYPS?**

Sarba Kandu, M.D., Manjushree Gautam, M.D.*, Sunitha Mannam, M.D., Muhammad F. Khan, M.D., Juan C. Zabieta, M.D., Priya Balakrishnan, M.D., William Vemula, M.D., Mohammad N. Athar, M.D., Rafael Amural, M.D., Steven Lichtenstein, DO. Mercy Catholic Medical Center, Darby, Pennsylvania.

**Purpose:** Colonoscopy is widely available and a relatively safe procedure. We evaluated the findings of colonoscopy and the trends in our community setting.

**Methods:** We retrospectively reviewed the charts of patients who underwent outpatient colonoscopy at two community outpatient centers during December 2002 to June 2003. Patients with previous history of colorectal cancer, history of colon surgery or recent pelvic radiation were excluded from the study. Information was obtained on demographics, colorectal cancer risk factors, indications and findings of colonoscopy.

**Results:** A total of 177 profiles were used for the final analysis. The median age of our study group was 65 years. There were more women (60%) than men (40%). The majority of patients were whites (43%) followed by blacks (37%). The most common indication for colonoscopy was blood in stools (25%). About 10% patients underwent colonoscopy as a part of their routine screening for colorectal cancer. Around one quarter of patients had multiple indications for undergoing the colonoscopy. 41% patients had normal colonoscopic examination where as rest of them had either polyps or diverticuli or both. Majority of polyps (57%) were located on left side. When analyzed for all ages, left sided polyps showed a statistically significant association with a history of smoking (OR = 2.7, 95%CI = 0.97–4.3, p = 0.04). However, this association was even more significant in smokers above 50 years of age (OR = 3.17, 95%CI = 1.3–7.8, p = 0.005). We did not find any association between age and location of polyp. Logistic regression analysis matching all the risk factors still showed that cigarette smoking has an independent risk association with left sided polyps in people above the age of 50 years (OR = 2.18, 95%CI = 1.01–4.74, p = 0.04). In our study the
commonest polyps were adenomatous (38%) and hyperplastic (21%). Seven percent were malignant.

**Conclusions:** Colonoscopy has gained more attention recently as a cost-effective tool for colorectal cancer screening. However, it is also done for other indications. In our study it was done more often for other indications like hemepositive stools/bleeding per rectum. A statistically significant association was found between polypl location and smoking in individuals above 50 years of age. However, this association needs further evaluation. Future studies with better quantification of smoking history are required to evaluate this association.

---

**326**

**CYCLOOXYGENASE 2 IS NOT OVEREXPRESSED IN POLYPS FROM JUVENILE POLYPOSIS SYNDROME PATIENTS WITH MUTANT BMPR1A**

Jayde E. Karland, M.D., Stacey Beck, B.S., Carol Solomon, M.D., R. DeMarco, B.S., Oscar S. Brann, M.D., John Carethers, M.D.*, Sherry Huang, M.D. Naval Medical Center San Diego, San Diego and Veterans Administration Medical Center, La Jolla, California.

**Purpose:** BMPR1A is a serine-threonine kinase, TGFβ superfamily type I receptor involved in protein signaling. Germline BMPR1A mutations, in addition to germline SMAD4 and PTEN mutations, have been described in kindreds with Juvenile Polyposis Syndrome (JPS), a syndrome with elevated risk for colorectal cancer. COX-2, an enzyme overexpressed in neoplastic colonic tissue, can activate Epidermal Growth Factor Receptor mitogenic activity. BMP ligands, which may be overexpressed in cells with mutant BMPR1A, negatively regulate EGF responsiveness. We characterized a JPS kindred for BMPR1A mutations, and examined the polyps for BMPR1A expression and COX2 expression.

**Methods:** DNA analysis for BMPR1A was performed on a 21-year old male diagnosed with JPS who had a family history for JPS. Polypectomies were performed. Adenomatous change was present in several polyps. Genomic DNA was extracted from polypl material and microsatellite and LOH analyses were performed. Immunohistochemistry was performed using specific antibodies for BMPR1A and COX2. Hamartomatous polyps from patients without germline mutations in BMPR1A were used for controls.

**Results:** The kindred possessed a germline BMPR1A missense mutation. In polypl domains containing adenomatous change, microsatellite analysis revealed novel frameshift mutations, but no LOH was observed using markers near the BMPR1A locus. Immunostaining revealed light staining for BMPR1A from the adenomatous epithelial components of the polyps, indicative of decreased expression of BMPR1A. COX2 immunostaining did not reveal overexpression in the cystic epithelium or lamina propria.

**Conclusions:** Polyps from a JPS patient with germline BMPR1A mutation showed decreased expression of BMPR1A in adenomatous epithelium, which overlapped with areas demonstrating microsatellite instability. This form of genomic instability may represent a mechanism for adenomatous change. COX2 was not overexpressed in polypl or adenomatous tissue from the BMPR1A heterozygote, suggesting an alternative mechanism for pathogenesis in these hamartomatous polyps compared with Peutz Jeghers polyps. This may imply that COX2 inhibitors would not be an effective means for chemoprevention in these polypl.

---

**327**

**COLON CANCER IN THE COMMUNITY: OCCURRENCE, RECURRENCE AND CHARACTERISTICS IN A ONE YEAR REVIEW**


**Purpose:** Surveillance colonoscopy for colon cancer (CC) prevention has been widely advocated in the USA in recent years. The findings of a community based practice are examined in this study.

**Methods:** We retrospectively reviewed charts of all patients (pts) who underwent colonoscopy between 1/1/03 – 12/31/03 in our private GI practice. Characteristics of all pts who had newly diagnosed CC or a history of CC undergoing follow-up colonoscopy were examined.

**Results:** 2167 pts underwent colonoscopy in the year 2003. 60 pts had a diagnosis of CC. 28 (47%) male, 32 (53%) female, mean age = 59. 13/60 were newly diagnosed in 2003. 70% of CC were distal to the splenic flexure, 26% were in the right colon. Only 2/13 (15%) new CC had a family history (FH) of CC or colon polyps (CP), compared to 14/60 (23%) overall. 13/60 (22%) developed CC before age 50, 33% (4/13) had a FHCC or CP 3/60 (5%) developed a CC within 3 years of a normal colonoscopy. 6/60 (10%) had recurrence of CC within 1–4 years of surgical resection. CC was diagnosed in 11/60 (18%) pts between ages 50–55. Of 425 pts with FHCC, 7 (1.6%) developed CC. Of 259 pts with a FHCC, 7 (2.7%) developed CC. Of the 1483 pts without a FHCC or CP, 46 (3.1%) developed CC.

**Conclusions:**

1. 13 new cases of CC were discovered in 1 year (0.6% of colonoscopies).
2. Most CC (70%) occurred distal to the splenic flexure.
3. 22% of CC pts were under age 50.
4. Colon cancer may develop more rapidly than currently thought in certain individuals.
5. Recurrence of CC occurred in 10% of pts within 4 years of the initial resection. Annual colonoscopy for 4 years post-surgery may be advisable.
6. We did not recognize a higher incidence of CC in the FHCC or FHCP groups as compared to the general population, perhaps a sampling phenomenon.
7. Screening colonoscopy at age 50 might have discovered CC at an earlier stage in 18% of our pts, with CC diagnosed between ages 50–55.

---

**328**

**DIAGNOSTIC YIELD OF COLONOSCOPY AT A TERTIARY REFERRAL CENTER: A SYMPTOM BASED ANALYSIS**

Thalia Mayes, M.D., Parvez S. Mantry, M.D.*. University of Rochester, Rochester, New York.

**Purpose:** Colonoscopy is routinely performed to rule out colonic pathology for a wide constellation of signs and symptoms. In a given cohort of patients we decided to determine the diagnostic utility of this procedure for different indications.

**Methods:** We retrospectively studied the results of all colonoscopies performed by a single endoscopist from September 2002 through February 2003 in a tertiary care university hospital and reviewed the indication, endoscopic findings, and pathology to determine if colonoscopy led to a diagnosis to explain the signs/symptoms prompting the procedure.

**Results:** There were 605 colonoscopies of which 210 were for screening and were excluded. The remaining 405 were performed for: change in bowel habits (constipation or alternating diarrhea and constipation) or abdominal pain or discomfort, chronic diarrhea (of more than 4 weeks duration) and lower gastrointestinal bleeding (LGB).

Of these 156 were men and 249 women patients Ages ranged from 18 to 96 years old with a median age of 50. In 127 studies, the indication was a change in bowel habits with abdominal discomfort. Of these 67 procedures were in patients < 50y.o and 60 in patients age 50 or older. 2/67 studies in pts < 50y.o and 4/60 studies in pts 50y.o or 40/60 studies in pts 50y.o or older had findings to explain the diarrhea. 186 studies were performed to evaluate LGB. Of these 72 were in patients < 50y.o and 114 studies were in patients 50y.o or older. 29/72 studies in pts < 50y.o and 40/114 studies in pts 50y.o or older found the cause for the bleeding.

**Conclusions:** The overall yield of diagnostic colonoscopies at our institution was 26% and varied from 47% in patients who presented with chronic diarrhea and were over age 50 to 3% in patients below age 50 who presented with altered bowel habits. In the evaluation of LGB, an etiology was found.
in 35–40% of patients. In our experience colonoscopy was more useful in obtaining diagnostic information when performed for evaluation of diarrhea and LGIB than for abdominal pain or change in bowel habits. A detailed history and screening with other tests may be more useful as an initial strategy in evaluating young patients with symptoms suggestive of irritable bowel syndrome and more prospecitive studies are needed in this direction to improve the diagnostic yield of colonoscopies.

### COMPARISON OF LOPERAMIDE-SIMETHICONE (IMODIUM® ADVANCED) VS. LOPERAMIDE ALONE (IMODIUM® AD), SIMETHICONE ALONE, AND PLACEBO IN THE TREATMENT OF ACUTE DIARRHEA WITH GAS-RELATED ABDOMINAL DISCOMFORT

Students Hanauer, M.D., Herbert DuPont, M.D.*, Charles Laudadio, M.D., Debra Bowen, M.D. University of Chicago Medical Center, Chicago, Illinois; University of Texas Medical School, Houston, Texas and McNeil Consumer & Specialty Pharmaceuticals, Fort Washington, Pennsylvania.

**Purpose:** To compare the efficacy and safety of a loperamide hydrochloride—simethicone (LS) combination product with those of loperamide (L) alone, simethicone (S) alone, and placebo (P) in treating acute diarrhea with gas-related abdominal discomfort.

**Methods:** This was a randomized, double-blind, multi-center, parallel, placebo-controlled study carried out in adult students attending school in Mexico. Three primary care facilities located in Mexico participated in the study. A total of 485 outpatient non-Mexican adults aged 18 to 78 years, with acute nonspecific diarrhea with at least moderately severe abdominal discomfort were enrolled in the study. Each patient was randomly assigned to initially receive 2 chewable tablets. Each tablet contained one of the following: LS (2 mg/125 mg; n = 120); L (2 mg; n = 120); S (125 mg; n = 123); or P (n = 121). Subsequent dosing consisted of 1 tablet after each unformed stool, up to 4 tablets in any 24-hour period. Patients were dispensed a total of 8 tablets for the 48-hour study period. The primary outcome endpoints were time to complete relief of abdominal symptoms and time from initial medication dose to passage of the last unformed stool.

**Results:** In an Intent-to-Treat analysis, patients who received LS had significantly (P < .0001) shorter times to last unformed stool (TLUS) and relief of gas-related abdominal discomfort (ABD) than patients who received L, S or P. The number of patients reporting adverse events was comparable among the 4 treatment groups. There were no serious adverse events were reported.

**Conclusions:** The LS combination chewable product provides faster relief of acute nonspecific diarrhea and associated gas-related abdominal discomfort (cramps, gas pressure, and bloating) than loperamide, simethicone or placebo alone.

#### Median Time to LUSF & ABD

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS</td>
<td>7.6</td>
</tr>
<tr>
<td></td>
<td>12.0</td>
</tr>
<tr>
<td>L</td>
<td>11.5</td>
</tr>
<tr>
<td>S</td>
<td>26.0</td>
</tr>
<tr>
<td>P</td>
<td>29.4</td>
</tr>
<tr>
<td></td>
<td>23.2</td>
</tr>
</tbody>
</table>

### STUDY OF SODIUM PHOSPHATE (NaP, VISICOL®) TABLETS FOR CONSTIPATION


**Purpose:** To assess the safety and efficacy of low-dose therapy with NaP tablets (tabs) in patients (pts) with chronic constipation.

**Methods:** Adults with functional constipation or constipation predominant IBS (IBS-C) with ≤3 BM and a Bristol Stool Score of 1 to 3 in a 7 day screening period were eligible. Pts at 7 centers were randomized to open label treatment with 4 (group A) or 8 (group B) NaP tabs (1.5 g/tab) Q AM for 28 days. 4 NaP tabs were taken q 15 minutes with 8 oz fluid. Pts kept a BM & GI symptom diary. A chemistry panel was drawn at baseline & weekly during therapy. NaP dose was titrated up or down by 2 tabs/day based on response. Constipation response rate (CRR) was defined as ≥3 BM/week with ≥1 more BM than baseline.

**Results:** 43 pts received NaP; 40 were evaluable. CRR was 100% and 96% in groups A (N = 16) & B (N = 24), respectively (last observation carried forward). All 7 IBS-C pts responded (4 in group A, 3 in group B). Median time to first BM was 21 hr (group A) & 4 hr (group B), but by the end of day 2 there was no significant difference between groups in the % of pts with ≥1 BM: 81% (group A) vs 92% (group B). There were increases in weekly BM from baseline to Weeks 1 & 4 within each group (P < 0.001 for all comparisons, see table). There were sustained, significant improvements in stool consistency, straining, cramping, & bloating/distension in each group. All 3 BM and a Bristol Stool Score of 1 to 3 in a 7 day screening period were eligible. Pts at 7 centers were randomized to open label treatment with 4 (group A) or 8 (group B) NaP tabs (1.5 g/tab) Q AM for 28 days. 4 NaP tabs were taken q 15 minutes with 8 oz fluid. Pts kept a BM & GI symptom diary. A chemistry panel was drawn at baseline & weekly during therapy. NaP dose was titrated up or down by 2 tabs/day based on response. Constipation response rate (CRR) was defined as ≥3 BM/week with ≥1 more BM than baseline.

**Conclusions:** NaP tabs taken daily for 4 weeks were generally well tolerated and produced prompt and sustained relief of chronic constipation. The lowest effective dose may be 2-4 tabs (3-6 g) daily, well below the recommended dose of NaP solution (13-30 g daily).

<table>
<thead>
<tr>
<th>Weekly BMs (Mean ± SD)</th>
<th>Group A (N = 16)</th>
<th>Group B (N = 24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>2.31 ± 0.60</td>
<td>1.96 ± 0.95</td>
</tr>
<tr>
<td>Week 1</td>
<td>6.81 ± 4.42</td>
<td>10.46 ± 5.41</td>
</tr>
<tr>
<td>Week 4</td>
<td>8.87 ± 3.98</td>
<td>9.16 ± 4.17</td>
</tr>
</tbody>
</table>
**MORPHOLOGIC AND PROGNOSTIC EFFECT OF LIGAND-RECEPTOR SYSTEM BETWEEN Ca²⁺ AND CALCIUM SENSING RECEPTOR IN COLORECTAL CANCER**

Eiji Shinto, M.D., Hitoshi Tsuda, M.D., Jeremy Jass, M.D.*, Hidetaka Mochizuki, M.D., Osamu Matusbara, M.D. McGill University, Montreal, Quebec, Canada and National Defense Medical College, Tokorozawa, Saitama, Japan.

**Purpose:** Evidence suggests that dietary calcium can reduce the risk of left-sided colorectal cancer (CRC), an effect that may be mediated through activation of a calcium sensing receptor (CaSR). Additionally, a ligand receptor system between extracellular Ca²⁺ and CaSR was shown to contribute to abnormal differentiation of CRC. The aim of this study was to clarify the histomorphological and prognostic implications of the Ca²⁺-CaSR ligand-receptor system of left-sided CRCs.

**Methods:** 1) Using formalin-fixed paraffin-embedded sections of primary left-sided pT3 CRC resected from 88 patients (1987-93), we constructed tissue microarray (TMA) blocks comprising core specimens taken from the subserosal invasive front of each tumor. After examination of CaSR immunoreactivity in TMA specimens, the prognostic significance of CaSR expression was investigated. In CaSR-positive patients, we further examined the prognostic significance of “tumor budding” grade. “Tumor budding” is one of the semiquantitative indices of the grade of tumor differentiation in the invasive front of a tumor. 2) Frozen sections of primary left-sided CRC resected from 87 patients (2002-03) were classified into two groups by CaSR immunoreactivity, and the relationship between patients’ serum Ca²⁺ level (═ serum Ca-albumin) and “tumor budding” grade of primary tumors was investigated.

**Results:** 1) The outcome of patients with CaSR-positive tumor (5-yr survival of 82%, n = 40) was better (p = 0.05) than that of patients with CaSR-negative tumor (64%, n = 48). Among the patients with CaSR-positive tumor, the outcome of patient subgroup with tumor with high-grade “tumor budding” (5-yr survival of 65%, n = 15) was worse (p = 0.04) than that with tumor with low-grade “tumor budding” (92%, n = 25). 2) In the patient group with CaSR-positive tumor (>5% of immunopositive tumor cells, n = 69), the rate of high-grade “tumor budding” among patients with low serum Ca²⁺ level (≤ 4.7) was higher than that among patients with high Ca²⁺ (≥ 4.8) (52% vs 21%, p = 0.008). However, there was no significant difference in the rate of high-grade “tumor budding” between such subgroups in the patient group with CaSR-negative tumor (n = 18) (29% vs 27%).

**Conclusions:** The “tumor budding” grade of CaSR positive left-sided CRC, which was shown to be an indicator of patient prognosis, was associated with serum Ca²⁺ level.

**PROGNOSTIC IMPLICATION OF CD8-POSITIVE TUMOR-INFILTRATING LYMPHOCYTES OF RECTAL CANCER**


**Purpose:** Evaluation of pre-therapeutic host immuno-response could be informative for decision making of treatment plan, because it may predict prognosis of cancer patient. The aim of this study was to clarify the features of colorectal cancer (CRC) with CD8-positive tumor-infiltrating lymphocytes (TIL), and to examine the possibility of preoperative evaluation of TIL using muco-submucosal biopsy.

**Methods:** 1) Pathological sections of 77 resected RCs (97-98) were used for CD8 immunostain. After selecting 3 areas with most abundant TIL, we counted the total number of TIL within the 3 microscopic fields of x200, and divided cancers into two grades: TIL-H, the number of TIL ≥ 15. Comparisons of clinicopathological features were performed. 2) Using exploratory excisional forceps, which is an instrument for uterine cervix biopsy, transanal muco-submucosal punch biopsy was performed on 26 patients with advanced RC preoperatively (98-99). After CD8 immunostain of punch biopsy sections, we counted the number of TIL within 3 microscopic fields, and divided into two grades: pTIL-H, 2; pTIL-L, 1. We examined the concordance rates of TIL findings between surgical specimens and corresponding biopsy specimens.

**Results:** 1) Twelve RCs (16%) were classified into TIL-H, while 65 (84%) were classified into TIL-L. The rates of lymph node metastasis and distant metastasis are higher in patients with TIL-L (65%, 25%) than those in TIL-H patients (0%, 0%) (p < 0.0001, p = 0.06). TIL-H patients showed better survival (5 yr survival of 92%) than that of TIL-L (65%, p = 0.10). 2) Using punch biopsy, we were able to obtain 5mm diameter specimens including the area where cancers infiltrated into surrounding stroma in submucosal layer. Eight punch biopsy specimens were judged pTIL-H preoperatively, 6 of which were classified into TIL-H after examination of surgical specimens, while 18 were judged pTIL-L, 17 of which were classified into TIL-L (p = 0.0008, sensitivity 86%, specificity 75%, accuracy 89%).

**Conclusions:** The grade of TIL was associated with cancer aggressiveness and prognosis of cancer patient. Immunohistochemical evaluation of punch biopsy specimens enabled the precise prediction of the grade of TIL preoperatively. Preoperative evaluation of CD8-positive tumor-infiltrating lymphocytes of rectal cancer with punch biopsy may be useful for decision making of treatment plan.

**CHRONIC ANAL FISSURE TREATMENT WITH BOTULINUM TOXIN TYPE A INJECTION: DOES THE ADDITION OF NITROGLYCERIN INCREASE HEALING**


**Purpose:** Chronic anal fissure is a common medical problem affecting approximately 10% of the US population. Both Botulinum Toxin Type A (BT-a) and topical nitroglycerine (NTG) have been studied separately for the treatment of chronic anal fissures. **Objective.** To determine if the combination of BT-a and NTG offers any benefit over the use of BT-a alone in the treatment of anal fissures.

**Methods:** This was a randomized, double-blinded, placebo-controlled study. Twenty-eight (28) patients with chronic anal fissures (all with symptoms of anal pain, rectal bleeding for > 6 weeks, and classic signs of anal fissures on physical exam) completed the study. At the initial study visit, all patients were injected with 25U of BT-a in areas of exposed muscle fibers of the internal anal sphincter. All patients were placed on a stool softener (100mg docusate sodium, 3 times a day) and psyllium fiber once a day. Patients were then randomized to receive 6-week topical therapy of either placebo ointment or 0.2% NTG ointment applied twice daily to the anal sphincter. Patients returned for follow-up at weeks 2, 8, and 12.

**Results:** Of the 28 patients who completed the study (29 enrolled; 1 lost to follow-up), 17 (61%) healed completely. Complete healing of anal fissure was experienced by 53.8% (7/13) patients receiving NTG and 66.7% (10/15) of patients receiving Placebo (p = 0.70). Of the 11 patients that did not heal, 5 and 6 had received topical placebo and topical NTG, respectively. The median time to heal was 8 weeks. Healing was accompanied by reduction of pain and rectal bleeding in all subjects.

**Conclusions:** This investigation confirms results of previous studies with BT-a; that it is a highly effective medical therapy for healing of anal fissures. Additionally, combining topical NTG therapy with BT-a injects provides no additional therapeutic benefit beyond that achieved with BT-a injections alone. Further investigation into the optimal injection paradigm of BT-a for the treatment of chronic anal fissure is warranted.

**BACKGROUND EPIDEMIOLOGY OF ISCHEMIC COLITIS**

Dong-Churl Suh, Ph.D., Kristijan H. Kahler, S.M., Elmira Valiyeva, Ph.D., Hyeon-chul Shin, Ph.D., Michael Sheteline, M.D. Rutgers University, Piscataway and Novartis Pharmaceuticals Corporation, East Hanover, New Jersey.

**Purpose:** To determine the concordance rates of TIL findings between surgical specimens and corresponding biopsy specimens.
Purpose: A recent study reported a 4-fold increased rate of ischemic colitis (IC) among patients with irritable bowel syndrome (IBS) compared to a control group without IBS. 1 The rate of IC in that control group was 40 per 100,000 person-years. The primary objective of this study was to assess the occurrence of IC in an asymptomatic population to determine a background prevalence of IC.

Methods: Patients who had a diagnostic colonoscopy (DC) or colorectal cancer screening colonoscopy (SC) performed at least once during the study period (1/1/99–12/31/02) were identified using the MarketScan database, which includes person-specific medical and pharmacy claims data for over 3 million lives. In an effort to identify the prevalence of IC in a population not seeking healthcare for GI-related symptoms (asymptomatic patients), we assessed the occurrence of IC (ICD-9: 577.xx, excluding 555.xx, 556.xx, 008.xx, 009.xx, and 009.1x) identified on the same day as a SC. We also assessed the prevalence of IC identified on the same day as a DC. In a separate cross-sectional analysis we identified the prevalence of IC among the entire MarketScan population for the years 1999 to 2002.

Results: 263,258 patients with at least one colonoscopy were identified during the study period, of which, 4,033 had at least one SC. The prevalence of IC identified from the screening colonoscopy was 49.6 per 100,000 persons (2 in 4,033). These IC cases were females without evidence of IBS (by diagnostic coding). The prevalence of IC identified from the DC was 329.1 per 100,000 persons (853 in 259,225); 72.0% of which were female. The cross-sectional analysis revealed an annual population prevalence of IC of 42.1, 39.4, 41.6, 49.7 per 100,000 persons from 1999 to 2002, respectively. Moreover, in patients that had evidence of IC in the previous year, the prevalence of recurrence of ischemic colitis in 2000, 2001, and 2002 was 4.7, 4.8, and 5.2 per 100,000 persons, respectively.

Conclusions: In this population based study, we found a consistent annual prevalence of IC to be about 40 per 100,000 persons. Among those that had a screening colonoscopy, we found a prevalence of IC equal to 49.6 per 100,000 persons, indicating a relatively high occurrence of IC even among patients not seeking care for GI-related symptoms.


### 336 PERIPHERAL EOSINOPHIL COUNT AS A MARKER FOR INFLAMMATORY BOWEL DISEASE (IBD)


Purpose: Functional bowel disorders such as irritable bowel syndrome (IBS) may masquerade as IBD, making the cost-effective evaluation of proton, insidious symptoms like diarrhea and abdominal pain challenging. Blood tests are frequently obtained, although to date, none are able to reliably differentiate IBD from IBS. Mucosal infiltration with eosinophils is a hallmark of IBD. We hypothesized that peripheral eosinophil count may be a sensitive marker for triaging patients for IBD evaluation.

Methods: We conducted a retrospective review of medical records from 2001–2004. All patients with IBD including ulcerative colitis (UC), Crohn’s disease (CD) and microscopic colitis (MC) had histological confirmation. We analyzed the study group of UC, and control groups of CD, MC, IBS and otherwise healthy subjects undergoing routine screening colonoscopy (SC). Patients were chosen based on diagnosis and available laboratory data, without regard to age, sex, race or additional medical history. Comparative statistical analysis was used to determine the relationship of UC with CD, MC, IBD and RC in terms of peripheral eosinophilia.

Results: With regard to proportion of patients with eosinophilia, (the upper limit of normal in our assay was 3%) the UC group was significantly different from the CD group (p = 0.0004). If the threshold was raised to 4%, the UC group (30.7%) differed significantly from both the CD (11.8, p = 0.038) and RC (0, p = 0.014) groups. With regard to absolute eosinophil count (AEC), there is a statistical difference between UC and IBS (p = 0.003) and UC and RC (p = 0.036). Sensitivity and specificity ranges for the groups were between 14–45% and 61–72% respectively.

Conclusions: Our data provides compelling evidence that circulating eosinophils are increased in patients with IBD, supporting their biological role. The performance characteristics of peripheral eosinophil count alone appear to be inadequate for distinction between IBD and IBS. However, future studies will assess the role of eosinophil counts in conjunction with other clinical parameters in the formulation of clinical prediction rules for distinguishing IBD from IBS.

<table>
<thead>
<tr>
<th></th>
<th>#</th>
<th>%Eos in Differential</th>
<th>%Eos &gt; 3</th>
<th>AEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC</td>
<td>62</td>
<td>3.6 (.3)</td>
<td>45.2</td>
<td>0.26 (.03)</td>
</tr>
<tr>
<td>CD</td>
<td>34</td>
<td>2.0 (.4)</td>
<td>14.7</td>
<td>0.22 (.04)</td>
</tr>
<tr>
<td>MC</td>
<td>13</td>
<td>2.0 (.7)</td>
<td>30.8</td>
<td>0.20 (.04)</td>
</tr>
<tr>
<td>IBS</td>
<td>61</td>
<td>2.4 (.3)</td>
<td>34.4</td>
<td>0.17 (.06)</td>
</tr>
<tr>
<td>RC</td>
<td>11</td>
<td>2.1 (.6)</td>
<td>20.0</td>
<td>0.15 (.02)</td>
</tr>
</tbody>
</table>

### 337 ANAL CONDYLOMA ACCUMINATA ON SCREENING COLONOSCOPY, AN UNEXPECTED SEXUALLY TRANSMITTED DISEASE IN A LOW RISK POPULATION


Purpose: Anal condyloma results from Human papillomavirus (HPV) infection, the most common sexually transmitted disease. Because the incubation period is variable, sexual partners are usually infected by the time of diagnosis, although they may be asymptomatic. The risk of contamination is high, even after a single sexual contact. Studies suggest it may be more common in those practicing receptive anal intercourse (RAI). However, other modes of sexual transmission without RAI may occur. The incidence of anal condyloma in asymptomatic patients undergoing screening colonoscopy is unknown. Anal Condyloma could be an important finding since the incidence of anal cancer is high in patients with anal condyloma.

To determine the incidence of Anal Condyloma in a group of patients at low risk for sexually transmitted disease of the anus, undergoing screening colonoscopy. And to determine if RAI was the possible mode of transmission.

Methods: Retrospectively, data was collected on a group of patients who had undergone screening colonoscopy at a single private office in New York City in a one-year period of time. Patients had a diagnosis of Anal Condyloma made on screening colonoscopy with biopsy of the lesion at the time of colonoscopy. Biopsies of the anal canal had the typical appearance of Condyloma Accuminata, confirmed by the pathologic lesion of Condyloma Accuminata on histology. Patients were asymptomatic for anal diseases.

**Results:**

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Male</th>
<th>Female</th>
<th>Age</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>6</td>
<td>110</td>
<td>&gt;50</td>
<td>66%</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>3</td>
<td>&lt;50</td>
<td>66%</td>
</tr>
<tr>
<td>HIV+</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>33%</td>
</tr>
<tr>
<td>RAI</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>33%</td>
</tr>
<tr>
<td>Missed Prior Colon</td>
<td>4</td>
<td>4</td>
<td>44%</td>
<td></td>
</tr>
</tbody>
</table>
Conclusions: Those with Anal Condyloma were young less than 50. All were asymptomatic. Most were male; non-HIV and most denied having RAI. All of the females denied RAI. A significant number of patients 44% had Condyloma not seen on a prior colonoscopy examination. Results indicate that Anal Condyloma occurs in a low risk population and in those not practicing RAI. Other as yet undescribed modes of transmission may account for Anal Condyloma in low risk populations. Anal condyloma may be missed on a colonoscopic examination. This leads us to recommend that Anal Condyloma be examined for during screening colonoscopy especially in young low risk populations. The true incidence may be under appreciated and should be studied in larger populations. It may be that “You can’t see what you’re not looking for”.

GENDER PREFERENCE OF ENDOSCOPIST AS A BARRIER TO COLORECTAL CANCER SCREENING IN INNER-CITY MINORITY POPULATION

Purpose: Colorectal cancer is the 2nd leading cause of cancer-related deaths. Studies have shown that women and minority are less likely to undergo colorectal cancer screening. Gender preference for endoscopists has been suggested as a potential barrier. The purpose of our study is to assess whether gender preference for endoscopists serves as a barrier to colorectal cancer screening in inner-city minority population.

Methods: We conducted a pilot study of 31 women and 22 men referred to the GI clinic for colon cancer screening in Newark, NJ. The patients were predominantly African American and Hispanic. At the time of initial consultation, a questionnaire was administered to the patients regarding their knowledge of colorectal cancer screening and whether they have gender preference for endoscopist. For those patients that expressed gender preference, they were assigned an endoscopist of gender of their choice.

Results: The mean age of women was 57.7 +/- 6.3 years and for men 58.7 +/- 6.5 years. Overall, 42% of total female and 27% of total male patients had gender preference for endoscopists, but this was not statistically significant. Of those that expressed preference, 92% of the women and 67% of the men preferred same sex endoscopist. All of the patients with gender preference would nevertheless proceed with colonoscopy even if they did not have the gender option. Younger patients (age < 60) were more likely to have preference and this was statistically significant using univariate analysis. Compliance was not improved in those with preference. A disparity was seen in comparison to other cancer screening tests. Approximately 50% of patients were aware of colonoscopy. Only 13% of women and 27% of men were offered colonoscopy prior to our visit. This is in contrast to 90%, 97% and 77% had had their mammogram, PAP smear, and prostate cancer screening done respectively.

Conclusions: Gender preference for endoscopist does not preclude inner-city minority patients from undergoing screening colonoscopy. The most striking barrier to screening in our study population is the lack of physician recommendation. In addition to increasing community awareness and education to colon cancer, more aggressive efforts must be made by all physicians to encourage colon cancer screening.

SODIUM PHOSPHATE (NaP) COLONOSCOPY PREPARATION: DOES THE ADDITION OF BISACODYL IMPROVE RESULTS?

Purpose: NaP solution is easier to tolerate, yet equally efficacious as large volume oral lavage solutions. However, a considerable number of patients taking NaP still have poor cleansing. The purpose of our study was to assess the effect of adding bisacodyl on cleansing and patient tolerance.

Methods: In this prospective randomized double-blind placebo-controlled trial, 175 patients took NaP solution, plus four tablets of placebo (F), while 172 patients took NaP plus four 5 mg tablets (F). NaP was taken at 7:00 p.m. the day before and 6:00 a.m. the morning of colonoscopy. Bisacodyl or placebo was taken at 7:00 p.m. the evening before colonoscopy.

Results: F+B resulted in significantly improved cleansing (p < 0.001). Excellent or good cleansing of right colon occurred in 92% vs 76% in F respectively (p < 0.001), abdominal cramps (p < 0.005), nocturnal diarrhea (p < 0.001). F+B negatively affected patient tolerance. There was more nausea (p < 0.01), abdominal cramps (p < 0.05), anal soreness (p < 0.02) and nocturnal diarrhea (p < 0.001) in F+B.

Conclusions: F+B significantly improves cleansing than F. Minor adverse effects, in terms of patient tolerance, occur more often with F+B.

A RETROSPECTIVE REVIEW OF THE PREVALENCE OF ADENOMATOUS COLONIC POLYPS IN A RUSSIAN AMERICAN COHORT

Purpose: To assess the prevalence of colorectal adenomas in a cohort of Russian-American (RA) patients undergoing screening colonoscopy.

Methods: A retrospective analysis of the GI endoscopy database at a single community based teaching hospital from January to December of 2003 was performed. Using demographic criteria entered in our database a cohort of patients who emigrated from Russia or nations of the former Soviet Union were identified. Only patients undergoing colonoscopy for colorectal cancer screening were included in this analysis. A cohort of age-matched controls identified in our database as Caucasian (White) were also analyzed.

Results: A total of 248 patients were analyzed. Of these, 49 were RA. The mean age of the RA cohort was 68 (range 42 to 87), 61% were female. The prevalence of adenomas in the RA patients was 43% compared to 20% in the control group (chi-square = 0.004). In the RA patients 14% had three or
more adenomas compared with 1% in the control group. The prevalence of diverticulosis was 94% in RA as compared to 66% in the control group.

**Conclusions:** There is a higher prevalence of colorectal adenomas in our cohort of RA patients compared to an age matched control group. This may represent the higher risk of colorectal neoplasm seen in Ashkenazi Jews. Further exploration of this observation is warranted.

**342**

**RADIOGRAPHIC AND ENDOSCOPIC FINDINGS IN PATIENTS WITH MRSA DIARRHEA**

Mehrnaz Hojjati, M.D., Ronald Vender, M.D., E.A.C.G., John M. Boyce, M.D.*. Hospital of Saint Raphael, Yale University, New Haven, Connecticut.

**Purpose:** Methicillin-resistant *Staphylococcus aureus* (MRSA) has been described as a cause of antibiotic-associated diarrhea (AAD), but is seldom reported in the United States. In earlier studies, we attributed AAD to MRSA when stool specimens were negative for Clostridium difficile toxins A/B, no enteric pathogens or parasites, and yielded heavy growth of enterotoxin-producing MRSA.

To establish the radiographic and endoscopic findings of MRSA diarrhea, and to determine if these findings are more frequent in patients with MRSA diarrhea than in patients colonized with MRSA at other body sites.

**Methods:** During a 22-month period, we identified 20 patients who met our case definition for MRSA diarrhea. A retrospective chart review was performed on these patients, and the following parameters was recorded: age, gender, abdominal X-ray and CT scan findings, results of colonoscopy. A control group of 20 patients was randomly selected from patients who had MRSA isolated from one or more body sites, and the same parameters were recorded. Statistical analysis was performed by using chi-square or Fisher's Exact test.

**Results:** Case patients had a mean age of 67 years (range: 46-83). Controls had a mean age of 77.6 (range: 41-93). Controls had MRSA recovered from sputum (25%), blood (5%), stool (5%), urine (1%), multiple body sites (50%), and other sites (5%). Abdominal X-rays were performed significantly more often than controls (40%), p = 0.012. Abdominal CT scans were performed with similar frequency in cases (65%) and controls (60%). Of patients who had abdominal imaging, abdominal distention was the indication given in 100% of cases versus 38% of controls (p = 0.0002). Abdominal imaging findings compatible with ileus were significantly more common among cases (47%) than controls (7%) (p = 0.04). Dilatation of small bowel, was seen in 23% of cases versus 7% of controls (p = 0.18). Bowel thickening was seen in 23% of cases and 16% of controls. Four cases underwent colonoscopy, all had mucosal hyperemia, and 3 had biopsy findings compatible with non-specific colitis.

**Conclusions:** Patients with AAD due to MRSA frequently present with abdominal distention and often have radiographic signs of intestinal dilatation, which mimicks small bowel ileus. Ogilvie's syndrome or bowel ischemia. These findings are significantly more common among patients with MRSA diarrhea than patients colonized or infected with MRSA at other body sites. Better recognition of the clinical features of MRSA diarrhea should lead to more prompt initiation of appropriate therapy and decrease morbidity.

**343**

**DO PATIENTS WITH LYMPHOCYTIC COLITIS HAVE A HIGH RISK FOR ADENOMAS?**

Mehrdad Asgeri, M.D., Bo Shen, M.D.*, Wendy Liu, M.D., Carol Burke, M.D., Jean-Paul Achkar, M.D., Farah Khandwala, M.S., Aaron Breszinski, M.D., Tyler Stevens, M.D., Kerry Sherman, R.N., Millissa Patch, Evelyn Brown, Bret Lashner. The Cleveland Clinic Foundation, Cleveland, Ohio.

**Purpose:** Lymphocytic colitis (LC) is a chronic inflammatory disease of the colon. It is not known whether LC is associated with an increased risk for adenomas, thereby necessitating surveillance colonoscopy. The aim of the study was to assess the prevalence of adenomas in patients with LC compared to controls.

**Methods:** From 1994–2004, 354 patients with LC and 309 patients with chronic diarrhea who underwent colonoscopy to exclude microscopic colitis and the biopsies were normal, were identified from our pathology database. Age-specific prevalence of adenomas between the two groups was compared using a logistic regression model.

**Results:** Thirty-four patients (9.6%) in the LC group and 31 patients (10.0%) in the control group had adenomas (P = 0.85). There was no difference in the prevalence of adenomas in the LC and control groups (P = 0.56), after adjusting for age. There were no differences in the mean size, mean number, and frequency of advanced adenomas between the 2 groups. In a separate study of screening colonoscopy in 272 patients ≥ 50 yrs at average risk from our institution, adenomas were identified in 67 patients (25%), which was significantly higher than that of the LC (31/219, 14.2%) or the control (25/175, 14.3%) groups with age ≥ 50 yrs in the current study (P < 0.01).

**Conclusions:** Lymphocytic colitis does not increase the risk for adenomas. Routine surveillance colonoscopy is not warranted in patients with LC.
Purpose: Chronic anal fissures (AF) are associated with a persistent hypertonia and spasm of the internal anal sphincter causing severe rectal pain during and after defecation. Classic treatment is targeted to reduce the anal tone and eliminate sphincteric spasm. Lateral internal anal sphincterotomy, posterior anal sphincterotomy and manual sphincter dilatation are well-established surgical procedures. Several pharmacological means to treat AF have been explored with some success also. We evaluated efficacy and safety of balloon dilatation as a treatment of AF.

Methods: Twenty patients from January 2001 to July 2003 (12 men age 48±12 years, and eight women age 44±8 years) with AF (16 posterior and four anterior), diagnosed during colonoscopy and anal examination, were treated with balloon dilatation. Microvasive-Rigiflex, 10 cm long, 30 and 40 mm balloon, was used for dilatation. The anal sphincter was dilated from one to two minutes at 20 psi. Eighteen patients were treated once and two patients were treated twice. The patients were also treated with high-fiber diet, bulk agents like Metamucil, increased fluid intake, and sitz baths during this period. All patients were followed in the office and examined to assess the symptoms and healing of AF at four and eight weeks.

Results: Twelve patients had healed in four weeks, five patients in eight weeks and two patients required re-treatment with balloon dilatation. Out of the two requiring retreatment, one healed in four weeks after the second treatment and the second patient was successfully treated with nifedipine/lidocaine ointment. One patient went for lateral internal anal sphincterotomy. None of the patients had fecal incontinence.

Conclusions: Balloon dilatation is an effective and safe alternative to surgical intervention with a high cure rate and no fecal incontinence.

346 COLONOSCOPY IS THE PREFERRED COLORECTAL CANCER SCREENING TOOL IN WOMEN: COMPARISON OF MEN IN VA COOPERATIVE STUDY 380 AND WOMEN IN CONCERN STUDY Philip S. Schoenfeld, M.D., Brooks Cash, M.D., Andrew Flood, Ph.D., David Lieberman, M.D.*. University of Michigan School of Medicine, Ann Arbor, Michigan; National Naval Medical Center, Bethesda, Maryland; University of Minnesota School of Medicine, Minneapolis, Minnesota and Oregon Health Sciences University, Portland, Oregon.

Purpose: VA Cooperative Study 380 determined that approximately 30% of men with advanced colonic neoplasia (i.e., adenoma ≥ 10 mm, villous adenoma, adenoma with high grade dysplasia or colorectal cancer) would have their lesions missed if only flexible sigmoidoscopy were performed. The CONCERN Study is a tandem study of VA Cooperative Study 380 and defines the yield of flexible sigmoidoscopy and screening colonoscopy in women.

Methods: Consecutive asymptomatic women referred for screening were offered colonoscopy to determine the prevalence and location of advanced colonic neoplasia and the yield of flexible sigmoidoscopy (i.e., proportion of patients with advanced colonic neoplasia who had this advanced lesion in the distal colon or who had advanced colonic neoplasia in the proximal colon with synchronous small adenomas in the distal colon). Female patients in this study were then matched by age, (−) fecal occult blood status, and (−) family history of colon cancer with male patients in VA Cooperative Study 380.

Results: 1483 women enrolled, and colonoscopy was complete in 1463 women (98.7%). Colonoscopy revealed advanced neoplasia in 4.9% (72/1463) and colonoscopy revealed one or more adenomas in 20.4% (299/1463). If only flexible sigmoidoscopy was performed, then 1.7% (25/1463) of women would have advanced colonic neoplasia identified, and 3.2% (47/1463) of women would have advanced colonic neoplasia missed. Thus, the yield of flexible sigmoidoscopy was only 35% in women The yield of flexible sigmoidoscopy for identifying advanced colonic neoplasia was lower in women versus for matched men from VA Cooperative Study 380 (35% vs 66%, p < 0.01). However, men were more likely to have advanced neoplasia than women in 50–59 years old group: 4.7% (35/743) vs. 2.9% (20/689); [RR = 1.62 (95% CI: 0.95–2.78)] and in 60–69 years old group: 10.6% (112/1057) vs. 5.0% (19/382); [RR = 2.13 (95% CI: 1.33–3.42)], but in the 70–79 years old group, men were not more likely to have advanced neoplasia than women: 10.6% (43/406) vs. 11.8% (15/127).

Conclusions: Colonoscopy may be the preferred colorectal cancer screening tool for women.


Purpose: Fecal incontinence has been associated with depression in patients seen in clinic settings. We examined the cross-sectional association between fecal incontinence and depressive symptoms and distress proneness in a large bi-racial community study.

Methods: Participants were 6,099 residents aged 65 years and older of a geographically-defined Chicago community (78.8% of age-eligible residents). During in-home interviews, participants completed a 10-item version of the Center for Epidemiologic Studies-Depression scale (CES-D), and a 4-item short form of the NEO-FFI neuroticism scale, a measure of distress proneness. The question used to determine the presence of fecal incontinence was: “In the past few months have you ever lost control of your bowels when you didn’t want to?”

Results: In separate multiple logistic regression models adjusted for age, sex, and race, higher CES-D and distress proneness scores were each associated with increased prevalence of fecal incontinence. The prevalence odds ratio was 1.26 (95% CI: 1.22–1.31) for each one-point increase in CES-D score, and 1.16 (95% CI: 1.11–1.28) for each one-point increase in distress proneness score.

Conclusions: Symptoms of depression and proneness to psychological distress may be associated with the occurrence of fecal incontinence.

348 SCREENING FOR COLORECTAL CANCER USING COLONOSCOPY IS FEASIBLE IN THE VA SYSTEM DEPENDING ON APPROPRIATENESS OF RESOURCES Vikas Khurana, M.D.*, Stephen Sontag, M.D., Laura K. Kochevar, Ph.D. Overton Brooks VAMC, Shreveport, Louisiana; Minneapolis VAMC, Minneapolis, Minnesota and Hines VA, Hines, Illinois.

Purpose: A convenience sample of 35 VA GI specialists, including chiefs of GI services (58%), attended a VA GI session and responded to a survey using digital remote response keypads. Attitudinal items were measured on a 10 point scale. The respondents were from 16 of the 21 VA regional service networks and worked primarily in tertiary-care medical centers (88.6%).

Results: Respondents reported that their facilities’ colorectal cancer (CRC) screening programs relied primarily on FOBT (44.4%), FOBT + flexible sigmoidoscopy (19%) or colonoscopy (36.1%). The attitude towards screening colonoscopy was highly positive. A majority (80.6%) felt that screening colonoscopy should be offered within the VA, but that the choice of screening modality should be individualized to each patient (72%). Screening colonoscopy is currently being offered sporadically in the VA facilities as a first choice based on local resources. Respondents did not think that the availability of screening colonoscopy would increase the number of patients receiving CRC screening, but rather would increase the effectiveness of screening in terms of greater prevention, early detection, and reduction in CRC mortality. Respondents saw practical advantages to screening colonoscopy in terms of high sensitivity, specificity and ability to perform polypectomy during the procedure, and were not concerned with the potential for complications while performing large volumes of procedures.

Respondents all agreed as to the need to invest substantially greater resources to efficiently conduct such a program- a program that almost certainly provide
such an important service. Understaffing of MDs, nurses, and clinic staff, and shortages of procedure rooms and recovery areas were the principal barriers to screening colonoscopy. Patient adherence with prep, late cancellations, and no-shows were also seen as barriers.

**Conclusions:** Our limited, self-selected sample of VA GI specialists, many of whom hold leadership positions, believes that the VA should offer screening colonoscopy as one method of screening for colorectal cancer.

### 349

**ABDOMINAL PAIN AFTER COLONOSCOPY: A NOVEL DIAGNOSIS**

Sharif Zubair, M.D., Lavton Shick, M.D.*. University of Massachusetts Medical School, Worcester, Massachusetts.

As gastroenterologists, we are well aware that the risks of colonoscopy include colonic perforation, bleeding, adverse events related to sedation and the possibility of a missed lesion. We report the case of an unusual complication of a man presenting with a Morgagni hernia immediately after a colonoscopy.

A 59 year old man with past medical history significant for hypertension, history of a left pneumothorax and alcohol abuse, presents for a colonoscopy to evaluate weight loss and guaica positive stools. Colonoscopy reveals a 3mm sessile transverse colon polyp, a 2.0 × 1.8 × 0.9cm pedunculated descending colon polyp with a 2.5cm stalk and a 4mm sessile descending colon polyp. All three polyps are removed by snare cautery. Pathology reveals two tubular adenomas and one tubulo-villous adenoma. Post-procedure, the patient complains of shortness of breath, epigastric abdominal pain and right-sided chest pain aggravated by deep inspiration. Physical examination reveals bowel sounds with diffuse abdominal tenderness but there are no signs of rebound or peritonitis. Laboratory data reveals an elevated white blood cell count of 12.7 with unremarkable liver chemistries, amylase, lipase and serum lactate. An abdominal roentgenograph reveals a large right-sided Morgagni-type diaphragmatic hernia.

The patient undergoes laparoscopic reduction of the herniated colon and omentum and subsequent repair of the anterior diaphragmatic defect via exploratory laparotomy. He has an uncomplicated post-operative course.

### 350

**A NOVEL MUTATION INVOLVING AN INSERTION IN EXON 4 OF THE APC GENE LEADING TO AN UNCOMMON PHENOTYPE: A 72 YEAR OLD MAN WITH SYNCHRONOUS COLON CANCERS AND 175 ADENOMAS**

Ethan D. Miller, M.D., Howard Hampel, M.D., Ph.D., Richard W. Goodgame, M.D.*. Baylor College of Medicine and Harris County Hospital District, Houston, Texas.

**Background:** Familial adenomatous polyposis (FAP) and the attenuated form (AFAP) are both caused by mutations of the adenomatous polyposis coli (APC) gene. APC mutations associated with FAP and AFAP are distinct, although there is current debate regarding mutations in the extreme 5’ region, an area initially thought to be characteristic of AFAP. Correlation between phenotype and genotype has been particularly difficult in this region because there is great heterogeneity of phenotypes in reported cases. We present a case report of a patient with synchronous colon adenocarcinomas, numerous polyps and a novel APC mutation in the 5’ region.

**Patient and Methods:** A 72 year-old African-American male, with a family history of colon cancer in both parents and 4 siblings, presented with abdominal pain. Colonoscopy revealed two masses including a 3 cm mass in the ascending colon and a 5 cm ulcerated mass in the proximal transverse colon and more than 100 sessile polyps from the cecum to the descending colon. The sigmoid colon and rectum had no polyps. He underwent subtotal abdominal colectomy and stapled ileorectal anastomosis. Liver nodules were found at the time of surgery and were biopsied. Blood samples were obtained for assay by PCR and denaturing high-performance liquid chromatography.

**Results:** Pathological exam of the colon revealed 2 moderately differentiated adenocarcinomas. There were 175 pedunculated and sessile polyps (ranging from 0.3 - 3.0 cm) with varying degrees of tubular and villous adenomatous histology. Liver biopsy confirmed metastatic disease. Genetic testing revealed an insertion (477insA), in codon 513 in exon 4 of the APC gene, causing a change of tyrosine to a stop codon (TAC> TAA).

**Conclusions:** We present a novel insertion mutation in the APC gene. This patient’s phenotype is consistent with AFAP. This is only the second known report of APC-associated colon cancer in an African-American lineage. He presented with advanced, metastatic colon cancer, suggesting that even AFAP-like disease may be severe at presentation.

This research was supported by the Frank Lanza, M.D. Research Fund.

### 351

**CORRELATION OF FECAL INCONTINENCE WITH PHYSICAL AND COGNITIVE DYSFUNCTION**


**Purpose:** Fecal incontinence is a common condition among older persons that is frequently not reported to physicians. Therefore, it is important to identify patients who may be at increased risk. In this study, we report on the association of fecal incontinence and physical and cognitive function in a large bi-racial population of individuals aged 65 years and older.

**Methods:** Study subjects are participants of the Chicago Health and Aging Project (CHAP), an ongoing study of older Chicago residents. A total of 6,099 participants completed the baseline in-home interview and assessments used in this analysis. Physical disability was measured using three self-report measures (Katz activities of daily living, Rosow-Breslau, and Naki), in which higher scores represent less disability. Physical performance was assessed by the subject’s ability to perform a chair stand, measured walk, and tandem stand. A composite score of all three tasks was computed, and ranged from 0 (lowest performance level) to 15 (highest level). Cognitive status was assessed in two ways: by a global measure of the averaged scores of four cognitive tests, and the Mini-mental Status Examination (MMSE). The question used to determine the presence of fecal incontinence was: “In the past few months have you ever lost control of your bowels when you didn’t want to?”

**Results:** In multiple logistic regression models adjusted for age, sex, and race, the prevalence of fecal incontinence increased significantly with greater physical disability and with greater cognitive impairment. The odds ratios for fecal incontinence were: 2.07(95% CI: 1.90–2.25) for each one point decrease on the Rosow-Breslau measure, 1.67 (95% CI: 1.58–1.77) on the Naki measure, 1.71 (95% CI: 1.62–1.80) on the Katz measure, and 1.19 (95% CI: 1.16, 1.22) on the physical performance measure. The odds of fecal incontinence increased by 96% (OR = 1.96; 95% CI: 1.77–2.17) per 1 point decrease in the global cognitive score, and by 10% (OR = 1.10; 95% CI: 1.08–1.11) per 1 point decrease in MMSE score.

**Conclusions:** Older persons with physical and cognitive dysfunction may be at increased risk of fecal incontinence.
DIABETES MELLITUS IS A RISK FACTOR FOR COLON CANCER: A CASE CONTROL STUDY IN HALF A MILLION VETERANS


Purpose: To explore the association between diabetes mellitus and the risk of developing colon cancer in US veterans.

Background: The incidence of insulin resistance is increasing in the US where colon cancer remains the second leading cause of cancer death. The geographic patterns of colon cancer and diabetes are strikingly similar. Mechanistically, hyperinsulinemia leads to increased levels of growth factors including IGF-1 which may promote colon cancer through their effects on colonoocyte kinetics. We conducted a case controlled study of US veterans and further examined the association between diabetes and the incidence of colon cancer.

Methods: A retrospective cross sectional case control study was conducted using data from the VISN 16 VA database from 1998 to 2004. We analyzed 534,273 patients from 4 states (LA, MS, TX, AK). The mean age was 61.1 (SD +/-14.4) years and 92.1% were males. Multiple logistic regression analysis was done and the data was adjusted for obesity, smoking, use of aspirin and alcohol.

Results: Of the 501,350 patients in the study, 106,825 (21.3%) had diabetes. Of these, colon cancer was seen in 1,601 (1.5%). In the control group 394,525 (78.7%) did not have diabetes. Of these, colon cancer was seen in 3738 (1.0%). Diabetic patients were more likely to have colon cancer (Odds ratio 1.15: 95% CI 1.08 to 1.23). The data was controlled for aspirin use, obesity, smoking and alcohol use. Additionally, alcohol (odds ratio 1.12, 95% CI 1.05 to 1.18) and obesity (odds ratio 1.26, 95% CI 1.13 to 1.41) were identified as significant covariates in this model.

Discussion: Our data should be evaluated with caution, given the limitations of the population, the database and the fact that this is a case control study. Duration and degree of diabetes was not factored into the analysis. Some factors known to increase the risk of colon cancer like family history and inflammatory bowel disease were not incorporated in the study. However, the large size of the database was felt to limit the errors in this study related to the assumption of these effects.

Conclusions: Our data does not support the hypothesis that diabetes increases the risk of metastatic colon cancer.

ROLE OF TECNETIUM-99m-LABELED RED CELL SCINTIGRAPHY IN ACUTE GASTROINTESTINAL BLEEDING: A TEACHING HOSPITAL'S EXPERIENCE


Purpose: Urgent colonoscopy as the initial investigation in acute lower GI bleeding remain controversial. Though time of colonoscopy is an independent predictor of hospital length of stay, the reduction of length of stay seen to be primarily related to improved diagnostic yield rather than therapeutic intervention. We sought to determine the efficacy of Technetium-99m-Labeled Red Cell Scinigraphy (Bleeding scan) in setting of acute lower GI bleeding (ALGIB).

Methods: A retrospective review of bleeding scans of 61 bleeding scans of 54 cases of ALGIB.

Results: Mean age of patient was 69.04 (avg. range 41–96). 31 female and 23 males were in the study. A total of 13 patient (21.3%) had Bleeding scan positive, underwent definite surgical treatment. 5 of 13 patient also undergo colonoscopy, which could not find definite source bleeding, nor did they undergo any therapeutic intervention. A total of 12 patients (19.6%) had a negative scan of which 2 had a positive upper endoscopy revealed source of bleeding and underwent successful endoscopic treatment. 6 (50%) of this group required no definitive treatment. Rest of the 36 patients (59.1%) had negative scan and endoscopy required no definite treatment.

Conclusions: Identification of definite source of bleeding lead to prompt therapeutic intervention by bleeding scan remains the mainstay in this small scale study. Negative bleeding scan with negative endoscopy indicate self limiting bleeding and do not require immediate surgical intervention.

EFFECTS OF BOTOX ON LEVATOR ANI SYNDROME: A DOUBLE BLIND, PLACEBO CONTROLLED CROSS-OVER STUDY

Satish S.C. Rao, M.D.*. Megan McLeod, Jennifer Beaty, Mary Stessman, R.N. University of Iowa Hospitals & Clinics, Iowa City, Iowa.

Purpose: Levator ani syndrome is characterized by recurrent anorectal discomfort/pain, possibly from spasm of anal sphincter/levator muscles. Our aim was to assess the efficacy and safety of Botox by performing a randomized, placebo controlled cross over study.
Methods: Nine (M/F = 4/5) patients with chronic anorectal pain (>1 year) but without other systemic problems or anorectal disorders were recruited. They received intrasphincteric injection of either 100 units of botulinum toxin or placebo (saline) under EMG guidance at 90-day intervals. The assessments included daily frequency, intensity and duration of anorectal pain, and VAS pain scores (0–10) at baseline, 10 and 90 days after each injection, and anorectal manometry, balloon expulsion, saline continence, and pudendal nerve latency (PNTML) tests at baseline and 10 days after injections.

Results: Seven patients (M/F = 4/3) completed the study and two dropped out. During the Botox phase, the mean frequency, intensity, and duration of anorectal pain did not improve (p = 0.60) when compared to baseline. Also, VAS pain scores did not improve. Anal sphincter pressures, nerve latency and saline retention was unchanged but rectal sensory thresholds decreased (Table, mean ± SD). Three subjects reported pain following injection but no other adverse events were noted.

Conclusions: Botox appears to be safe but does not improve anorectal pain associated with levator ani syndrome. Anal sphincter, pudendal nerve function, and continence were unaffected. Botox may enhance rectal sensation.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Botox</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAS</td>
<td>8.4 ± 1.7</td>
<td>7.7 ± 2.5</td>
<td>9.3 ± 0.9</td>
</tr>
<tr>
<td>Resting Pres. mmHg</td>
<td>60 ± 21</td>
<td>60 ± 18</td>
<td>67 ± 27</td>
</tr>
<tr>
<td>Max. Squeeze Pres. mmHg</td>
<td>162 ± 68</td>
<td>147 ± 70</td>
<td>150 ± 69</td>
</tr>
<tr>
<td>PNTML-Right ms</td>
<td>2.5 ± 1.3</td>
<td>2.3 ± 0.5</td>
<td>2.4 ± 1.2</td>
</tr>
<tr>
<td>PNTML-Left ms</td>
<td>2.8 ± 1.3</td>
<td>2.4 ± 1.1</td>
<td>2.3 ± 0.9</td>
</tr>
<tr>
<td>First Sensation (cc)</td>
<td>57 ± 60</td>
<td>18 ± 8*</td>
<td>38 ± 35</td>
</tr>
<tr>
<td>Desire to Defecate (cc)</td>
<td>117 ± 80</td>
<td>837 ± 41</td>
<td>82 ± 52</td>
</tr>
<tr>
<td>Urgency Threshold (cc)</td>
<td>160 ± 79</td>
<td>117 ± 66*</td>
<td>140 ± 80</td>
</tr>
<tr>
<td>% Saline Retention</td>
<td>78 ± 38</td>
<td>60 ± 32</td>
<td>54 ± 43</td>
</tr>
</tbody>
</table>

Supported by grants from ACG and Allergan Pharmaceuticals. *p < 0.05 vs Baseline.

356

THE USE OF A NOVEL SHAPELOCK™ OVERTUBE TO FACILITATE COLONOSCOPY

Gregory B. Haber, M.D.*; Jay Pariacha, M.D. Lenox Hill Hospital, New York, New York and University of Texas, Galveston, Texas.

Purpose: A small proportion of Colonoscopy procedures are unsuccessful due to failure to reach the cecum. This unique new shape lock device was evaluated as to its ability to facilitate passage of the colonoscope to the cecum.

Methods: 16 Pts undergoing colonoscopy were enrolled. 63% were male and 27% had a previous colonoscopy in which cecal intubation failed. The ShapeLock overtube was preloaded over the colonoscope and intubation was carried out in the usual fashion. After advancing the colonoscope to 100 cm or the splenic flexure, the scope position was reduced as much as possible to remove any sigmoid loops and then the 70 cm long ShapeLock device was advanced over the scope. This device has a unique design which converts the device from a flexible shape to a fixed shape. Once the scope is shortened as much as possible the ShapeLock device is fixed in a rigid configuration to allow advancement of the scope without reforming a sigmoid loop. Fluoroscopy was used to visualize the manoeuvres employed and to track the position of the new device.

Results: Three different colonoscopy techniques were observed: 1) The ShapeLock fixed the sigmoid in place to enable advancement of the scope tip forward after standard shortening manoeuvres. 2) The ShapeLock device in its flexible state was shortened along with the scope and then advanced forward before locking into the rigid configuration. 3) The scope was shortened and simultaneously the ShapeLock was advanced in a coordinated fashion. Cecal intubation was achieved in all patients without any mucosal trauma or other adverse effect associated with the use of the device.

Conclusions: The new and unique ShapeLock technology is much simpler than a conventional overtube with the ability to be advanced, held in position, or withdrawn in a flexible or rigid configuration. This feature allowed for cecal intubation in previously failed colonoscopies.

357

RELATIONSHIP OF 6-MP/AZA METABOLITE LEVELS WITH HEPATOTOXICITY IN ADULT PATIENTS WITH IBD

Maria T. Abreu, M.D., Omid Shaye, M.D., Karen Simon, M.D., F Fred Poodrad, M.D., Paul Martin, M.D., John Vierling, M.D., T tram T. Tran, M.D.*. Cedars-Sinai Medical Center, Los Angeles, California.

Purpose: The 6-mercaptopurine (6MP) and azathioprine (AZA) are mainstays in the treatment of IBD. Studies have suggested that metabolite levels can be used to optimize clinical efficacy and limit adverse events. In pediatric patients, the 6MP metabolite, 6-mercaptopurine ribonucleotides (6-MMPR), was associated with hepatotoxicity at levels >5700 picomoles (pM) per 8 X 108 RBC. To determine the relationship between 6-MMPR levels and hepatotoxicity in adult IBD patients.

Methods: Aminotransferases (AST, ALT), bilirubin and alkaline phosphatase were measured along with 6MP metabolite levels (6 thioguanine (TG) and 6MMPR) in adult patients seen from Nov 2002 to Dec 2003 at the Cedars Sinai IBD Center. Hepatotoxicity was defined as AST and/or ALT 2X upper limit of normal (AST < 46, ALT < 53) or cholestasis (bilirubin 2.0 and alkaline phosphatase >250) during treatment.

Results: 103 patients with Crohn’s disease, 59 patients with ulcerative colitis and 10 patients with indeterminate colitis received 6MP/AZA therapy. The mean age was 38 (19–80). Eight patients (8/172, 4.6%) met criteria for a diagnosis of 6MP hepatotoxicity, none met criteria for cholestasis. Average 6MMPR level in the entire population was 4743 pM. The mean 6MMPR level in the 8 patients with hepatotoxicity was 10537 pM versus 3451 pM in the non-hepatotoxicity group (p < .001). Risk of hepatotoxicity above the third quartile (6 MMPR level> 5200) was 5 times that below the third quartile (11.6% vs. 2.3%, p = .03). Of the 8 patients with hepatotoxicity, 3/8 (37.5%) had 6MP levels below 5200. One of the patients who developed hepatotoxicity had fatty liver on imaging, but none of the 8 patients had abnormal liver enzymes prior to 6MP therapy. Consistent with the diagnosis of 6MP toxicity, 7/8 patients completely normalized AST and ALT within 3 months of dose reduction or discontinuation, one patient had persistent mild elevation of ALT.

Conclusions: 6MP is associated with hepatotoxicity in 4.6% of patients. Less than 10% of patients with 6-MMPR levels above 5700 had evidence of hepatotoxicity. Conversely, a significant percentage of patients with hepatotoxicity (40%) had low 6-MMPR levels. Dose reduction of 6-MP/AZA should be reserved for patients with increased aminotransferases.

358

MICROSCOPIC COLITIS IS NOT ASSOCIATED WITH AN INCREASED RISK OF COLORECTAL CANCER


Purpose: Long-standing ulcerative colitis and Crohn’s colitis are associated with an increased risk of developing colorectal cancer. Microscopic colitis (MC) is another chronic inflammatory condition of the colon, although the risk of colorectal cancer has not been well studied in these patients. In one study in collagenous colitis, there was no increased risk. Our aim was to assess the risk of developing colorectal cancer in a population-based cohort of patients with MC.

Methods: The Rochester Epidemiology Project, a unique medical records linkage system providing data on all health care for a defined population in Olmsted County, MN was used to identify all county residents with a diagnosis of MC between 1/1/85–12/31/00. These biopsies were reviewed by an expert GI pathologist for confirmation. In addition, all colon biopsies for evaluation of diarrhea in county residents over the same time period were reviewed be sure that cases were not missed. Medical records were reviewed for all cancer diagnoses, which were confirmed by follow up with their local physicians.
Results: 135 cases were identified. Median age was 68 (23–96); 69% were women. There were 533 person-years of follow up (mean 3.9 years per patient). Only 15 patients had follow up of 7 or more years. In this cohort, there were 3 cases of colon cancer, but all preceded the diagnosis of MC by 19, 22 and 51 years. In no case did a colorectal cancer develop after the diagnosis of MC.

Conclusions: In this population-based incidence cohort, the diagnosis of MC was not associated with an increased risk of colorectal cancer. However, the cohort was relatively small and follow up was limited. We cannot exclude an increased risk with longer disease duration, as is seen with ulcerative colitis and Crohn’s colitis.

This research was supported by an ACG Clinical Research Grant.

359

COLLAGENOUS COLITIS, BUT NOT LYMPHOCYTIC COLITIS, IS ASSOCIATED WITH CIGARETTE SMOKING


Purpose: Crohn’s disease is associated with cigarette smoking whereas ulcerative colitis is associated with non-smoking. It is unknown if any association exists between microscopic colitis (MC) and smoking. We studied the association between smoking status and the diagnosis of MC in a population-based cohort.

Methods: The Rochester Epidemiology Project, a unique medical records linkage system providing data on all health care for a defined population in Olmsted County, MN was used to identify all county residents with a diagnosis of MC between 1/1/85–12/31/01. These biopsies were reviewed by an expert GI pathologist for confirmation. In addition, all colon biopsies for evaluation of diarrhea in county residents over the same time period were reviewed to be sure that cases were not missed. Smoking status was determined by review of the medical record at the time that MC was diagnosed. The smoking status of an age-, gender-, and calendar year-matched control group of county residents without MC was assessed for comparison using hazard ratios.

Results: 135 cases were identified (89 lymphocytic colitis [LC] and 46 collagenous colitis [CC]). Median age was 68 (23–96); 69% were women. The hazard ratios for current or former smoking in cases compared to controls are listed in Table 1. For LC, there was no significant association with smoking status. For CC, the association with current smoking was significant (p = 0.04).

Conclusions: In this population-based cohort, the diagnosis of CC was associated with current but not former cigarette smoking. In LC, there was no association with smoking status. In these very similar clinicopathologic entities, cigarette smoking may be one factor that favors the deposition of subepithelial collagen.

Hazard Ratios and 95% confidence intervals

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Former</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>1.2 (0.5 - 2.9)</td>
<td>1.1 (0.5 - 2.1)</td>
</tr>
<tr>
<td>CC</td>
<td>5.2 (1.1 - 26)</td>
<td>1.5 (0.5 - 4.3)</td>
</tr>
</tbody>
</table>

360

RELATIONSHIP BETWEEN MICROSATELLITE INSTABILITY, RESPONSE AND SURVIVAL IN AFRICAN AMERICAN PATIENTS WITH COLORECTAL CANCER UNDERGOING 5-FU BASED CHEMOTHERAPY

Rehana Begum, M.D., Hassan Ashktorah, Ph.D., Duane T. Smoot, M.D.*, Fitzroy Davkins, M.D., Mamoon Elbedawi, M.D., Giardiello Francis, M.D.

Howard University College of Medicine, Washington, District of Columbia and Johns Hopkins School of Medicine, Baltimore, Maryland.

Purpose: This study investigated the relationship between microsatellite instability (MSI), treatment response and survival in patients with colorectal cancer (CRC) undergoing first-line treatment with 5-fluorouracil (5-FU) based adjuvant chemotherapy.

Methods: Tumor tissue from the colorectal carcinomas was analyzed from 46 African American patients. MSI analysis was carried out. Patients charts were reviewed for patient’s demographics, evaluation of if the patients had/hadn’t received 5FU based chemotherapy and vital status.

Results: Tumors from 19 patients (41.3%) showed high microsatellite instability (MSI-H), one (2.1%) cancer demonstrated low microsatellite instability(MSI-L) and the remaining 26 (56.5%) were microsatellite stable (MSS). Patients were grouped as microsatellite stable (MSS and MSI-L) and unstable (MSI-H). Most of MSI-H tumor were proximal, well differentiated, highly mucinous and 71% were at stage Dukes stage B or C. Age distribution was similar in both groups (MSI-H-68±17.3 and MSS 64.2±16.3) and tumor stage was also similar between the two groups. Sixty-eight of the patients in the MSI-H group were females, while only 48% of the the patients in the MSS group were females. Thirty-two (69%) of the 46 patients did not receive chemotherapy, 20 (63%) patients were in MSS group and 12 (38%) were in MSI-H group. Patients in the MSS group lived on average 23.8 months while patients in MSI-H group lived on average 24.3 months after diagnosis.14 (30%) patients who were treated with 5FU based chemother- apy. The patients were evenly split between the MSI-H and the MSS groups. Patients in the MSS group lived on average 20.7 months, while patients in the MSI-H group lived an average15.2 months beginning of chemotherapy (P = 0.4).

Conclusions: These data show a higher frequency of MSI-H tumors in women. The data also demonstrates similar survival data between patients with MSI-H and MSS tumors who do not receive chemotherapy. However, there is a trend toward a survival benefit in patients who have MSS tumors that receive 5FU based chemotherapies. These data are consistent with the hypothesis that MSS-CRC might have a better response and survival than MSI-H-CRC treated with 5FU based chemotherapy.

CLINICAL VIGNETTES

361

SUCCESSFUL ENDOSCOPIC TREATMENT OF SYMPTOMATIC MEDIASTINAL PSEUDOCYSTS

Kenneth A. Musana, M.D., Sean P Switzer, D.O., Steven H. Yale, M.D., Ahmad S. Abdulkarim, M.D., Christopher J. Rall, M.D.*, Marshfield Clinic, Marshfield, Wisconsin.

Mediastinal pseudocysts are rare but can pose a diagnostic and therapeutic challenge. Recognizing their presence and instituting appropriate therapy can reduce morbidity and mortality.

This report describes a 69-year-old patient with a history of alcohol abuse and pancreatitis who presented with progressive dyspnea, bilateral pleuritic chest pain, and cough. Significant findings on examination were diminished breath sounds and dullness to percussion bilaterally involving the lower one-third of the posterior lung bases. A chest x-ray showed bilateral pleural effusions, computerized tomography (CT) of the chest and abdomen revealed a fluid collection in the paraesophageal area measuring 4.2 x 1.7 cm, a calcification in the pancreatic duct with duct dilatation, a 3.7 x 2.4 cm fluid collection anterior to the pancreas, which had a severely atrophic body and tail. Thoracocentesis revealed an elevated amylase and lipase in the pleural fluid and endoscopic retrograde cholangiopancreatography (ERCP) confirmed the stone in the main pancreatic duct, revealed a leak in the tail of the duct and a stent was placed. An enteral jejunal tube was placed for feeding after oral intake was stopped, and octreotide was started.

A CT scan of the abdomen and pelvis performed 41 days after the first ERCP showed resolution of the mediastinal pseudocysts, pleural effusions,
and dilatation of the pancreatic duct. A small 1.0 cm residual pseudocyst was identified in the pancreatic tail. The pancreatic stent was subsequently removed and the patient made a complete recovery, which persisted at 6-month follow-up. This case illustrates the fact that endoscopic treatment of mediastinal pseudocysts can be successful averting the need for surgery and its associated morbidity and mortality. A discussion of the current approaches to mediastinal pseudocyst management are presented.

**HEMURIA AS THE INITIAL PRESENTATION OF CELIAC DISEASE AND RENAL ARTERY STENOSIS**


A 56-year-old male was found to have microscopic hematuria and mild proteinuria on routine urinalysis. Intravenous pyelogram, cystoscopy, and urine cytology were normal. Two years later he developed mild anemia. He did not have diarrhea or abdominal pain. Gliadin, endomysial, and tissue transglutaminase antibody titers were significantly elevated (Table 1). Celiac disease (CD) was subsequently confirmed by small bowel biopsy. The proteinuria increased, and a renal biopsy confirmed IgA nephropathy. Gluten free diet was initiated. The effect of gluten free diet on the course of IgA nephropathy in patients with CD is not clear (1,2). Some patients with CD and IgA nephropathy experience worsening of their renal function in spite of adhering to strict gluten free diet. As with CD. Other causes of renal insufficiency should be pursued if there is no improvement. Some patients are asymptomatic. IgA nephropathy is known to be associated with CD (3). About 3.6% of patients with IgA nephropathy have CD (1). About 32% of newly diagnosed celiac disease patients had mesangial IgA on renal biopsy.(4). Patients with unexplained persistent microscopic hematuria and proteinuria should be screened for CD. Renal biopsy should be considered. Early diagnoses helps in correction of nutritional deficiencies and reduces the risk of cancer associated with CD. Other causes of renal insufficiency should be pursued if there is worsening of renal functions in spite of adhering to strict gluten free diet. As this case points out, there was an additional factor affecting renal function.

**Discussion:** The exact prevalence of CD in adults is not clear. Some presentations are atypical, as with this case. Some patients are asymptomatic. IgA nephropathy is known to be associated with CD (3). About 3.6% of patients with IgA nephropathy have CD (1). About 32% of newly diagnosed celiac disease patients had mesangial IgA on renal biopsy.(4). Patients with unexplained persistent microscopic hematuria and proteinuria should be screened for CD. Renal biopsy should be considered. Early diagnoses helps in correction of nutritional deficiencies and reduces the risk of cancer associated with CD. Other causes of renal insufficiency should be pursued if there is worsening of renal functions in spite of adhering to strict gluten free diet. As this case points out, there was an additional factor affecting renal function.

---

**Table 1.**

<table>
<thead>
<tr>
<th>Antibodies</th>
<th>Values</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gliadin antibodies, S IgA</td>
<td>322</td>
<td>&lt;25</td>
</tr>
<tr>
<td>Endomysial antibodies, S IgA</td>
<td>1:2560</td>
<td>Negative</td>
</tr>
<tr>
<td>Tissue Transglutaminase Abs</td>
<td>&gt;250</td>
<td>&lt; 20</td>
</tr>
</tbody>
</table>

**Table 2.**

<table>
<thead>
<tr>
<th>Duration (months)</th>
<th>Event</th>
<th>BUN</th>
<th>Creatinine</th>
<th>Hemoglobin</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Microscopic Haematuria</td>
<td>13</td>
<td>1.2</td>
<td>13.9</td>
</tr>
<tr>
<td>30</td>
<td>Small bowel biopsy and gluten free diet initiated</td>
<td>13</td>
<td>1.0</td>
<td>12</td>
</tr>
<tr>
<td>35</td>
<td>Follow up</td>
<td>13</td>
<td>1.3</td>
<td>14.3</td>
</tr>
<tr>
<td>40</td>
<td>2 months after ACE inhibitor initiated</td>
<td>44</td>
<td>2.5</td>
<td>16.1</td>
</tr>
<tr>
<td>42</td>
<td>ACE inhibitor stopped and confirmed bilateral RAD</td>
<td>25</td>
<td>1.7</td>
<td>16.0</td>
</tr>
</tbody>
</table>

---

**A CASE FOR “ROUTINE” ILEAL INTUBATION DURING COLONOSCOPY**


To describe a case of ileal carcinoid detected during “routine” ileal intubation at colonoscopy. In the past, some have advocated “routine ileoscopy,” as part of a “complete” colonoscopic examination. A recent prospective investigation has suggested that “routine” ileoscopy is safe, can be achieved in the overwhelming majority (~97%) of patients, and the findings often lead to an alteration of clinical management (Scand J Gastroenterol 2003;38:1184–1186.). This case highlights the latter contention. An otherwise healthy 41 yo female underwent screening colonoscopy, given a family history of colorectal cancer (in a first degree relative who was less than 60 yo). The exam was normal to the cecum. Ileal intubation disclosed an ~3 cm submucosal lesion which was located ~5 cm proximal to the ICV. Aside from a tiny erosion, mucosa overlying the lesion appeared normal. Endoscopic biopsies showed changes suggestive of a carcinoid tumor. A SBFT and abdominal/pelvic CT scan failed to reveal any abnormality. She underwent a terminal ileectomy/right hemicolectomy with resection of 11 regional mesenteric lymph nodes. The final pathology confirmed a malignant carcinoid, with microscopic metastatic disease noted in 2/11 regional lymph nodes. She recovered uneventfully and remains well. This case highlights the importance of “routinely” performing ileal intubation, as part of a complete colonoscopic procedure. Although the anecdotal nature of this case report cannot prove that “routine” ileal intubation led to an increase in survival of this individual patient, it lends support to the notion which suggests the clinical value of this endoscopic maneuver.

**A NEW SYNDROME OF MALLORY-WEISS TEAR WITH ASSOCIATED ESOPHAGEAL SUBEPITHELIAL HEMORRHAGE CAUSING “PURPLE ESOPHAGUS”**


Mucosal tear of the esophagogastric junction (Mallory-Weiss tear) is an occasional cause of serious upper gastrointestinal hemorrhage. A 46 year-old previously healthy man presented after having a paroxysm of deep cough with subsequent bright red-colored hematemesis. The patient was transiently...
hypotensive prior to isotonic intravenous fluid resuscitation, and although he did not require blood transfusion therapy, the Hgb level dropped a total of (6 gm/dl. Coagulation studies and the platelet count were normal. Upon passing the gastroscope, one noted a prominent purple-blue disoloration of the distal 3 cm of the esophageal mucosa (Figure 1). Distally on the esophagogastric junction, a deep 2 cm, nonbleeding mucosal tear was seen (Figure 2). The remainder of the esophagastroduodenoscopy was normal to the second portion of the duodenum. The patient was treated conservatively with a soft diet and short course of proton pump inhibitor therapy, and clinical recovery was complete.

To my knowledge, this is the first case report of Mallory-Weiss tear with associated distal esophageal subepithelial hemorrhage, causing a segment of “purple esophagus.” The endoscopic appearance was striking. The patient had previously ingested both aspirin and non-steroidal anti-inflammatory drugs on a near daily basis, and one wonders whether this may have altered the pathophysiology of his mucosal tear, and in some manner predisposed to subepithelial dissection of blood, leading to the unusual endoscopic findings.[figure1][figure2]

A CASE OF NON-CIRRHOTIC PORTAL-SYSTEMIC ENCEPHALOPATHY TREATED BY COIL EMBOLIZATION OF THE PORTASYSTEMIC SHUNT

Introduction: Intrahepatic portal-systemic venous shunts are defined as communication between the portal and the systemic venous circulation, measuring more than 1mm in diameter, and at least partially located inside the liver. The cause of this condition is disputed in many cases. It may be congenital or acquired secondary to portal hypertension. Here we describe a case of portal-systemic encephalopathy due to a spontaneous large-caliber portal-hepatic venous shunt. The encephalopathy was corrected with the treatment of the shunt.

Case presentation: A 72-year-old man presented with recurrent episodes of change in mental status. His past medical history was unremarkable without history of hepatitis or cirrhosis. No history of trauma. Liver function was normal except for an elevated ammonia level. Hepatitis panel was negative. AMA, ANA and ASMA were all within normal limits. Abdominal ultrasonography showed a large caliber portal-hepatic venous shunt in the posterior right lobe. Percutaneous transhepatic portography and hepatic venous angiogram were confirmatory. The treatment with coil embolization was successful, and his encephalopathy resolved postoperatively. Patient has been doing fine on one year follow up without recurrence of his encephalopathy. Discussion: A large intrahepatic portal-hepatic venous shunt is a rare condition. Most of the cases are primary as a congenital fistula or secondary to blunt trauma, hepatic tumor or liver biopsy. Spontaneous portal-hepatic shunt is very rare especially in non-cirrhotic patients. Most of these are asymptomatic discovered incidentally during imaging study done for not related causes. Few cases of portal hypertension had been reported secondary to intrahepatic portal shunt. Non-cirrhotic intrahepatic portal hypertension is difficult to evaluate. Encephalopathy secondary to portal-systemic shunt is seen mostly in patients with concomitant cirrhosis. The dramatic improvement of this patient’s encephalopathy after the embolization of the shunt indicate that his encephalopathy was related at least in part to the shunt. Possibilities for treatment of such condition include embolization by interventional radiologist or surgery. The etiology of the shunt in this patient is unclear. Given the age of the patients and the absence of history of cirrhosis or trauma, the shunt is thought to be spontaneous.
A 69 year-old underwent a vertical banded gastroplasty to treat morbid obesity in 5/02. Approximately 3 months postoperatively, the onset of vomiting occurred after eating only ~0.5 oz of food. Her symptoms persisted and the patient progressively lost approximately 80 lbs over the subsequent 6 weeks. Her surgeon ordered an UGI series which revealed changes consistent with the previous bariatric surgery, however, there was severe stenosis of the stomal outlet (which measured only ~2 mm). Upper gastrointestinal endoscopy was performed to the stomal orifice, where severe stenosis was confirmed. A portion of the polytetrafluoroethylene (PTFE; Gortex) band was visualized in the proximal gastric pouch. Figure 1 shows the PTFE band which was eroded into the stomal pouch (arrowheads) and the severe outlet stenosis (large arrow). Approximately half of the PTFE band was displaced intraluminally, and both sides which were penetrating the gastric wall were fixed and immobile when movement was attempted with the use of forceps. The situation which occurred in our patient seems somewhat analogous to episodes of esophageal obstruction secondary to internal erosion of Angelchik anti-reflux prostheses. Multiple such cases have been reported and some have been managed endoscopically. After vertical banded gastroplasty, a variety of complications may occur, including stomal stenosis, foreign body (food bolus) obstruction of the stoma, staple-line disruption and, as in our case, band erosion. In the case under discussion, attempts to remove the eroded PTFE band endoscopically were not made, as the patient strongly desired surgical revision of the gastroplasty. Given the frequency with which bariatric surgery is being performed, similar cases will continue to occur. This case highlights the importance of prompt gastroscopic evaluation when patients who have undergone bariatric surgery, complain of inability to eat even tiny amounts of food. This will avoid unnecessary delay in diagnosis and treatment, in cases where a mechanical complication had occurred. [figure1]

368

MIRALAX: A NEW STANDARD IN BOWEL PREPARATION FOR COLONOSCOPY

Khoi M. Tran, M.D.∗, Harry Park, M.D. Oregon Medical Group, Eugene, Oregon.

Practicing gastroenterologists recognize that bowel preparation usually triggers significant anxiety for patients going through the colonoscopy experience. Accepted preparations using PEG 3350 with electrolytes (NULYTELY) and FLEET Phosphosoda are effective but tend to cause nausea, cramps and sometimes vomiting. Many patients also find the taste to be disagreeable. Patient acceptance of the standard bowel preparations is an ongoing issue. The frequent request for a better tolerated bowel preparation has led to consideration of PEG 3350, NF powder for solution (Miralax), which has been used exclusively for management of constipation. Miralax use for colonoscopy preparation has not been studied in a large trial. We have completed a pilot study of 1000 patients going through colonoscopy for various indications using Miralax based bowel preparation. Retrospective analysis indicates that Miralax based preparation produces excellent cleansing, comparable to FLEET Phosphosoda, with far superior tolerance and no clinically noticeable side effects. We believe that Miralax is the new standard in bowel preparation for colonoscopy. A large prospective, randomized comparative study to FLEET Phosphosoda is in progress.

Note: Miralax is not labeled for the usage being discussed.

369

COIL EMBOLIZATION THERAPY FOR ENCEPHALOPATHY SECONDARY TO A PORTACAVAL SHUNT


Instances of extrahepatic portal-systemic encephalopathy (EPSE) arising from congenital portacaval shunts are rare but have been previously reported, as have the surgical approaches to treatment. Little is known however, regarding the success of endovascular intervention for this condition. We describe a case of an 82 year-old man with a one-year history of intermittent encephalopathy associated with elevated serum ammonia levels. Radiographic and histologic evaluation of the liver revealed no evidence for cirrhosis. The patient was subsequently discovered to have a spontaneous portacaval shunt that was successfully treated with angiographic coil-embolization resulting in resolution of his encephalopathy and normalization of his serum ammonia levels. This is the first known report of successful coil-embolization therapy for treatment of a portal-systemic shunt as treatment for EPSE.

370

RECURRENT UPPER GASTROINTESTINAL BLEEDING AS THE FIRST PRESENTATION OF WHIPPLE’S DISEASE

Mohammad M. Alsolaiman, M.D., Firas Al Solaiman, M.D., Samah Bassas, M.D., Mark Delegge, M.D.∗. Medical University of South Carolina, Charleston, South Carolina and Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: Whipple’s disease is a rare systemic disease of infectious etiology. Its clinical presentation is highly variable. The most common symptoms are diarrhea, weight loss, abdominal pain and joint manifestations. Non-digestive manifestations frequently precede digestive symptoms by several years. For all these reasons, diagnosis is difficult.

Methods: A 28 year old male presented with recurrent upper gastrointestinal bleeding secondary to multiple duodenal ulcers refractory to treatment with high dose proton pump inhibitors.

Results: There was negative history for NSAID ingestion. His antral biopsy was negative for H. pylori. Gastrin level was within normal limits. CT scan of the abdomen and pelvis was unremarkable. On his last admission for upper gastrointestinal bleeding, patient reported also new weight loss. Random duodenal biopsies confirmed the diagnosis of whipple’s disease. Patient responded to 12 months of tetracycline without recurrent of his GI bleed. On repeat Endoscopy, there was no evidence of any duodenal ulceration with unremarkable random duodenal biopsies. Patient continued to do well on two years follow up.

Conclusions: Acute upper GI bleeding secondary to duodenal ulceration as a first manifestation of whipple’s disease is extremely rare. The diagnosis was established here by histological examination of random duodenal biopsies, which contained the pathognomonic PAS-positive macrophages. The duodenal ulcers healed after treatment with tetracyclines and bleeding stopped consequently. Although not generally emphasized, Whipple’s disease needs
to be considered in the differential diagnosis of acute gastrointestinal bleeding.

371
THE CASE OF THE MISLEADING MECKEL’S SCAN
Ericka E. Tung, M.D., Amindra S. Arora, M.B.B.C.*. Mayo Clinic College of Medicine, Rochester, Minnesota.

Purpose: This case presentation describes the workup of an obscure gastrointestinal bleed, which culminated in a false-positive Meckel’s scan. Although rarely seen in the adult population, Meckel’s diverticula are an important diagnostic consideration. The technique, indications, and limitations of Meckel’s scintigraphy will be examined.

Case: A 68-year-old gentleman presented with several days of melena and fatigue. After extensive evaluation at his local hospital, including endoscopy and small bowel follow-through, no source of bleeding was found. Extended upper and lower endoscopies as well as a tagged RBC scan were negative at our institution. However, a Meckel’s scan revealed a small focus of activity in the proximal small bowel. Given the atypical localization, the small bowel was re-imaged. An intraluminal filling defect within the second part of the duodenum was discovered. At surgery, the corresponding lesion was resected from the proximal ileum. Pathology confirmed the presence of a MALT-oma. This false-positive Meckel’s scan revealed the source of gastrointestinal hemorrhage.

Clinical Significance: The small bowel is a potential site of obscure gastrointestinal bleeding. Meckel’s scintigraphy is useful in detecting small bowel pathology when endoscopy and traditional radiographic techniques are non-diagnostic. It is performed by administering radioactive technetium, which is taken up by mucous-secreting cells of the gastric mucosa. Cases of false-positive Meckel’s scans have been reported. Non-diverticular foci of gastric mucosa, areas of inflammation, and localized hyperemia can lead to false-positive results. Our patient had a hemorrhagic small bowel lymphoma, without evidence of ectopic gastric tissue.

Conclusion: Meckel’s scintigraphy is a sensitive and specific test in children. Accuracy is lower in adults, but a false-positive result often leads to the discovery of unsuspected small bowel lesions. In our patient, the most likely cause of the positive Meckel’s scan was due to the hyperemia associated with the bleeding tumor.

372
PERITONEAL MALIGNANT MESOTHELIOMA PRESENTING AS ACUTE COLONIC DIVERTICULITIS
Neil C. Nagaria, M.D., Noresh Chander, M.D., Ravishankar Ramamoorthy, M.D., Sami Harawi, M.D., Sita Chokhavati, M.D., F.A.C.G.*. Hackensack University Medical Center, UMNJ-NJMS, Hackensack, New Jersey.

Introduction: Peritoneal malignant mesothelioma (PMM) is a rapidly fatal neoplasm associated with asbestos exposure. Being a rare malignancy of unusual nature, the disease has yet to be clearly defined in terms of natural history, diagnosis, and management.

Case: 68 year old Indian Asian male residing in the United States of America for forty years with a history of renal stones, initially presented with severe non-radiating right sided abdominal pain. A non-contrast abdominal CT showed pericolic fat around splenic peritoneum, with pericolic fluid suggestive of diverticulitis, no renal calculi. After one day of Ciprofloxacin and Metronidazole the pain worsened and he was hospitalized for further evaluation. Medications included atenolol and aspirin. He denied alcohol or tobacco use, and there was no environmental or occupational exposure to asbestos. Physical exam revealed a well nourished afebrile male, no localizing tenderness, normal bowel sounds, and no costo-vertebral angle tenderness. All laboratory data was unremarkable. A chest radiograph was normal, no evidence of pleural plaques or thickening of the pleura was noted. Abdominal CT with contrast revealed “caking” of the greater omentum along with perihilar and peri splenic free fluid. EGD was normal, polyps removed during colonoscopy were histologically benign adenomas. MRI of lower thoracic and lumbar spine showed degenerative changes. A laparotomy revealed infiltration of the greater omentum, biopsies of which confirmed PMM. Special immunohistological stains revealed a superficial papillary pattern of relatively well-differentiated mesothelial cells, occasional tubulopapillary structures, with early foci of solid growth best shown with calretinin and cytokeratin 5/6 stains. He declined chemotherapy recommended by oncology and is doing well at 6-month follow up visit. PMM has an incidence of 1–2 cases per million and typically presents with recurrent ascites, abdominal cramps, and gradual increasing abdominal girth. CT evaluation helped diagnose the rare etiology of this patient’s abdominal pain.

373
IMPERFORATE HYMEN PRESENTING WITH ACUTE ABDOMEN
Adil M. Choudhary, M.D.*, Frederick French, M.D. Digestive Disease Institute, Roswell, New Mexico.

Case: A 12 year old girl presented with complaints of lower abdominal pain of few days duration. The pain which was initially severe had completely settled down by the time she was seen in the office. Physical examination revealed normal vital signs, abdomen was soft with no significant tenderness or guarding. A pelvic examination done earlier by another physician was reportedly normal. Laboratory data was completely normal. An ultrasound abdomen and pelvis was normal. A month later she presented again with severe mid and lower abdominal pain. Physical examination revealed a diffusely tender abdomen with decreased bowel sounds. A three way abdomen x-ray and laboratory data were normal. A CT abdomen and pelvis showed a fluid filled pelvis and vagina suggesting hematocolpos consistent with imperforate hymen. A gynecologic consultation was obtained. She underwent incision of the imperforate hymen with uneventful recovery.

Discussion: Imperforate hymen is probably the most frequent obstructive anomaly of the female genital tract, but estimates of its frequency vary from 1 case per 1000 population to 1 case per 10,000 population. Diagnosis is often not detected before puberty. Menstrual blood will accumulate behind the imperforate hymen, and result in abdominal pain, distension and sometimes in acute urinary retention. The diagnosis and treatment is easy, but many patients end up seeing several doctors before diagnosis is established.

374
SPLENIC RUPTURE–AN UNUSUAL COMPLICATION RELATED TO COLONOSCOPY
Adil M. Choudhary, M.D.*, Frederick French, M.D. Digestive Disease Institute, Roswell, New Mexico.

Case: A 78 year old female with no significant past medical history underwent a colonoscopy for evaluation of constipation and heme positive stools. The examination was done using the Olympus CF-140 videocolonoscope. The examination revealed severe diverticulosis involving the sigmoid and descending colon. A 4 mm sessile polyp at 50 cm was biopsied and cauterized. Another 1 cm polyp at 20 cm was biopsied and cauterized. The patient tolerated the procedure well without any obvious complications. She was allowed to go home after recovering from sedation. The morning following colonoscopy she was complaining of mid abdominal pain and was noted to be pale and diaphoretic. She was evaluated in the emergency room. Physical examination revealed normal vital signs, abdomen was soft, mildly distended with generalized tenderness, bowel sounds were diminished. Labs showed an elevated WBC at 18000 k/m3 (4.5–11.0) and a decreased hemoglobin of 10 gm/dl (12–16). A three way abdomen x-ray was unremarkable. A CT abdomen showed a large collection of fluid posterior to the spleen and in the peritoneal cavity and pelvis. There was displacement of the spleen anteriorly, strongly suspicious for splenic injury and hemorrhage. A surgical consultation was obtained. Because of the massive intraabdominal bleeding, drop in hemoglobin and abdominal pain she underwent exploratory laparotomy. There was a large amount of clotted blood in the peritoneal cavity and around the spleen. The spleen was noted to be of normal size and was
not adherent to the splenic flexure of colon. A capsular tear was noted in the spleen. There was no other source of bleeding. A splenectomy was performed along with evacuation of all blood clots. She tolerated the surgery well and recovered uneventfully. She was discharged home 8 days later without any further problems. A follow up office visit confirmed complete recovery.

**Discussion:** Splenic rupture following colonoscopy is very rare. Diagnosis is often delayed and sometimes made only at laparotomy. Excessive traction on the splenocolic ligament or on preexisting adhesions, resulting in capsular tears, is the presumed mechanism of injury. Although computerized tomography may be helpful, a high index of suspicion is the key to the diagnosis of this rare but potentially lethal complication.

**Case:** A 16 year old boy with no significant past medical history underwent an upper GI endoscopy for evaluation of epigastric abdominal pain of five months duration. The EGD revealed a normal esophagus, mild antral gastritis and duodenitis in the bulb. The procedure was done under conscious sedation using meperidine 62.5 mg and midazolam 3 mg. The patient was returned to the recovery area in stable condition. He remained without complaints and was discharged home in about one hour. The next day he was complaining of chest and upper extremity discomfort. He was evaluated in the emergency room. Physical examination was remarkable for tenderness across anterior chest wall, left shoulder and left arm. Rest of the physical examination was normal. Electrocardiogram was normal. Three way abdomen across anterior chest wall, left shoulder and left arm. Rest of the physical examination was normal. Electrocardiogram was normal. Normal. Way abdomen was normal. There was no evidence of free air. CT chest and abdomen were normal. Cardiac Echocardiogram was normal. CK (creatine kinase) was elevated at 9680 U/L (38–174). CK MB (creatine kinase MB) was 6.8 ng/ml (0.0–5.0). Troponin I was 0.03 ng/ml (0.0–0.3). Rest of the laboratory data including liver and kidney function, ESR was normal. Urine for myoglobin was negative. Serum ANA was negative. He was admitted to the hospital and treated with aggressive intravenous hydration. He admitted that 2 days before endoscopy he had done some weight lifting which he has been routinely doing as part of his training for football. Next morning the CK continued to climb and was 17,090 U/L. CK MB was 10.1. Troponin I remained normal. By following morning his pain resolved and the CK started coming down.

**Discussion:** Rhabdomyolysis may be encountered in a wide variety of clinical settings, alone or in concert with other disorders of muscle. In this case, a possible mechanism of response even after failing in other TNFa-neutralizing agents (FIG.1) was admitted at a dose of 40mg s.c. self-administered q.4 weeks. The patients symptoms improved, and she could be tapered off steroids within 3 months. Cushing symptoms diminished. 3 months after discontinuation of adalimumab she is doing well on only 10mg q.d. of oral MTX and off systemic corticosteroids.

**Discussion:** Positive response to a different TNFa-neutralizing agent after failing another is a frequent observation in the treatment of rheumatoid arthritis. However, etanercept (a TNFa capturing IgG-fusion molecule), although being effective in the treatment of CD-associated arthritis, failed to show efficacy for Cronh’s IB. As our case supports, adalimumab which closely resembles infliximab, but in contrast to the latter is fully humanized, appears to be more promising for the treatment of Cronh’s IB. S.c. administration allows outpatient management of patients otherwise needing hospitalization.

**Conclusions:** Adalimumab has so far only received approval for the treatment of rheumatoid arthritis, but we think it should be considered in otherwise resistant cases of CD. Of particular interest is, as documented in our case, a possible mechanism of response even after failing infliximab - clearly deserving further studies.

**Case:** A 54 year old male presented to the ER with chest pain. He underwent an EGD revealing a large linear esophageal tear and a CT chest showed free air in the mediastinum. He was managed conservatively with NG suction and antibiotics and was discharged 2 days later. He had a history of asthma and intermittent dysphagia to solids.

**Investigation:** An UGI series revealed non-passage of a 13 mm barium tablet, and no tear. He was started on esomeprazole for gastroesophageal reflux symptoms and his dysphagia improved significantly. An EGD 4 months later, revealed multiple rings throughout the esophagus. Biopsies from the distal and mid-esophagus were normal.

**Discussion:** The underlying pathophysiology in patients with dysphagia and a “ringed” esophagus has evoked debate in the literature. Opinions range from underlying GERD to eosinophilic esophagitis (EE). Our patient had mild symptoms of heartburn and acid reflux. Moreover, his symptoms of GERD and dysphagia improved with PPI therapy. Normal histology excluded underlying EE. There have been a few case reports of esophageal perforation in patients with a “ringed” esophagus, and underlying EE. Perforations in the upper and midesophagus can usually be managed conservatively, while those in the distal esophagus often need surgery due to the high risk of developing peritonitis. However, our patient, despite sustaining a large tear in the distal esophagus, did surprisingly well with conservative management.

**Conclusion:** This case demonstrates that spontaneous perforation in the ringed esophagus with normal underlying histology can occur in the distal esophagus and may not require surgery. This case also underscores the importance of careful technique when examining these patients endoscopically.

---

**SPONTANEOUS PERFORATION IN THE RINGED ESOPHAGUS**

Ganapathy A. Prasad, M.D., Amandra S. Arora, M.B.B.Chir*. Mayo Clinic College of Medicine, Rochester, Minnesota.

**Case:** A 54 year old male presented to the ER with chest pain. He underwent an EGD revealing a large linear esophageal tear and a CT chest showed free air in the mediastinum. He was managed conservatively with NG suction and antibiotics and was discharged 2 days later. He had a history of asthma and intermittent dysphagia to solids.

**Investigation:** An UGI series revealed non-passage of a 13 mm barium tablet, and no tear. He was started on esomeprazole for gastroesophageal reflux symptoms and his dysphagia improved significantly. An EGD 4 months later, revealed multiple rings throughout the esophagus. Biopsies from the distal and mid-esophagus were normal.

**Discussion:** The underlying pathophysiology in patients with dysphagia and a “ringed” esophagus has evoked debate in the literature. Opinions range from underlying GERD to eosinophilic esophagitis (EE). Our patient had mild symptoms of heartburn and acid reflux. Moreover, his symptoms of GERD and dysphagia improved with PPI therapy. Normal histology excluded underlying EE. There have been a few case reports of esophageal perforation in patients with a “ringed” esophagus, and underlying EE. Perforations in the upper and midesophagus can usually be managed conservatively, while those in the distal esophagus often need surgery due to the high risk of developing peritonitis. However, our patient, despite sustaining a large tear in the distal esophagus, did surprisingly well with conservative management.

**Conclusion:** This case demonstrates that spontaneous perforation in the ringed esophagus with normal underlying histology can occur in the distal esophagus and may not require surgery. This case also underscores the importance of careful technique when examining these patients endoscopically.

---

**SUCCESSFUL TREATMENT WITH ADAHIMURUMAB IN INFILIXIMAB-RESISTANT CROHN’S DISEASE**


**Introduction:** We report the induction of remission with adalimumab in a patient whose Crohn’s disease (CD) had been resistant to other medical interventions.

---

**RABDOMYOLYSIS FOLLOWING UPPER GASTROINTESTINAL ENDOSCOPY**

Adil M. Choudhary, M.D.*, Digestive Disease Institute, Roswell, New Mexico.

**Case:** A 16 year old boy with no significant past medical history underwent an upper GI endoscopy for evaluation of epigastric abdominal pain of five months duration. The EGD revealed a normal esophagus, mild antral gastritis and duodenitis in the bulb. The procedure was done under conscious sedation using meperidine 62.5 mg and midazolam 3 mg. The patient was returned to the recovery area in stable condition. He remained without complaints and was discharged home in about one hour. The next day he was complaining of chest and upper extremity discomfort. He was evaluated in the emergency room. Physical examination was remarkable for tenderness across anterior chest wall, left shoulder and left arm. Rest of the physical examination was normal. Electrocardiogram was normal. CK (creatine kinase) was elevated at 9680 U/L (38–174). CK MB (creatine kinase MB) was 6.8 ng/ml (0.0–5.0). Troponin I was 0.03 ng/ml (0.0–0.3). Rest of the laboratory data including liver and kidney function, ESR was normal. Urine for myoglobin was negative. Serum ANA was negative. He was admitted to the hospital and treated with aggressive intravenous hydration. He admitted that 2 days before endoscopy he had done some weight lifting which he has been routinely doing as part of his training for football. Next morning the CK continued to climb and was 17,090 U/L. CK MB was 10.1. Troponin I remained normal. By following morning his pain resolved and the CK started coming down. By day 10 CK was completely normal.

**Discussion:** Rhabdomyolysis may be encountered in a wide variety of clinical settings, alone or in concert with other disorders of muscle. In this case there was no history of seizure activity, drug use (other than the meperidine and midazolam given during endoscopy), heat exhaustion, or hyperthermia. Careful review of the literature does not reveal any cases of rhabdomyolysis triggered by use of meperidine or midazolam. None of the known common causes of rhabdomyolysis explain the elevated CK in this case. The possibility of an exercise induced myopathy such as McArdle disease is certainly in the differential in which there is deficiency of Muscle Phosphorylase. It is characterized by exercise intolerance with muscle cramps and increased CK. It is possible that the interaction of exercise two days before endoscopy and administration of medications during endoscopy resulted in increased CK levels.

---

**SUCCESSFUL TREATMENT WITH ADALIMUMAB IN INFILIXIMAB-RESISTANT CROHN’S DISEASE**


**Introduction:** We report the induction of remission with adalimumab in a patient whose Crohn’s disease (CD) had been resistant to other medical interventions.
SELF-ADMINISTERED ALCOHOL (VODKA) ENEMA CAUSING SEVERE COLITIS


Alcohol has been used for many different purposes throughout history. There are rare reports of alcohol enemas being accidentally administered or being used as a part of sexual practice. We report a case of a 39-year-old male who self-administered an alcohol (vodka) enema and developed a severe colitis.

A 39-year-old male with no significant past medical history was at a party when he self-administered an enema consisting of one part vodka to twelve parts water with a rubber bulb (total volume 5 ounces). He retained the enema for ten minutes. Within fifteen minutes he experienced abdominal pain and fecal urgency and had a series of bloody bowel movements and abdominal pain. The patient’s white blood cell count decreased and he tolerated gradual advancement of his diet. Repeat flexible sigmoidoscopy done on the fifth hospital day revealed islands of regular mucosa amidst sloughed, ulcerated mucosa.

Alcohol can have a number of damaging effects on the GI mucosa. Laboratory studies on rodents have demonstrated significant damaging effects of alcohol on the jejunal and colonic mucosa. There are five case reports in humans of alcohol enemas causing severe colitis. This is the first reported case of alcohol-induced colitis in the United States.

COLLAGENOUS GASTRITIS ASSOCIATED WITH GASTRIC PERFORATION

K. Shiva Kumar, M.D., Harshad C. Devarbhavi, M.D., Jeffrey A. Alexander, M.D.*. Mayo Clinic, Rochester, Minnesota.

Purpose: Collagenous gastritis (CG) is an exceptionally rare clinicopathologic entity of unknown etiology characterized by thickening of the subepithelial collagen layer in the gastric mucosa. We report the first case of CG associated with gastric perforation.

An 18-year-old male was referred following two perforated gastric ulcers. He had undergone patch repair following the first and partial gastrectomy with highly selective vagotomy following the second perforation. EGD revealed nodular erythema involving the proximal stomach. Biopsy revealed active chronic gastritis with no H. pylori. Evaluation for known etiologies of gastritis was unrevealing. Gastric acid analysis: 1 hour basal acid 0.91 mEq/L, gastrin level, small bowel biopsy-normal, endomysial antibody-negative. EGD a year later showed persistent nodularity and biopsy revealed a thick layer of sub-epithelial collagen confirmed by trichrome staining (figure 1).

Therapy with Bismuth subsalicylate resulted in no endoscopic or histologic improvement. Colonic biopsies were normal.

First described in 1989, less than 20 cases of CG have been reported. It is defined histologically by presence of a thickened subepithelial collagen band at least 10 μm in thickness with an inflammatory infiltrate of the lamina propria. Some of the reported cases were associated with celiac disease, collagenous and lymphocytic colitis. The distribution of this band tends to be irregular, which may explain the delay in diagnosis in our patient.
The pathogenesis remains obscure and no effective therapy has been described. Postulated pathogenic theories include autoimmune injury and local abnormality of peri-cryptal collagen with leakage of plasma proteins and subsequent replacement with collagen. None of the reported cases were associated with perforation. Encasement of sub-epithelial blood vessels by collagen, as seen in our patient, could result in gastric mucosal ischemia making it more susceptible to acid related injury. Physicians should be aware of this entity during routine examination of gastric biopsies. CG should be considered in the differential diagnosis of unexplained H. pylori negative chronic gastritis. [figure 1]

380
INTERSTITIAL LUNG DISEASE WITH EOSINOPHILIA AS A PRESENTATION OF GASTRIC ADENOCARCINOMA: A CASE REPORT

Eric P. Frizzell, M.D., Michael J. Kilbourne, M.D., Mark H. Johnston, M.D.*. Walter Reed Army Medical Center, Washington, District of Columbia and National Naval Medical Center, Bethesda, Maryland.

Case Report: A 44-year-old Korean female immigrated to the United States at age 14, was in good health until two months prior to admission. She developed a dry cough with intermittent hemoptysis and dyspnea. Her dyspnea worsened and she developed an oxygen requirement. A high resolution CT scan showed interstitial thickening and a bilateral alveolar infiltrate. She reported fifteen pound weight loss, early satiety and increased reflux over the same period. Her past PMHx was notable for an untreated positive PPD. On admission, the patient was afebrile, her O2 sat was 90% on 2L O2, and she was dyspneic. Her physical examination was notable for bilateral inspiratory crackles and mild tenderness to palpation in the epigastrium. Laboratory data revealed an elevated white blood count of 12,100/mm3 with 51% neutrophils, 36% eosinophils and 8% lymphocytes. The patient was admitted with a presumptive diagnosis of eosinophilic pneumonia. Her work-up included blood, sputum, and stool cultures, which were negative for bacteria and parasites. Due to the patient’s history of a positive PPD, she was started on empiric tuberculosis treatment with INH and pyridoxine.

She was taken to the operating room where both bronchoscopy and EGD were performed under general anesthesia. On endoscopic exam, a large gastric mass with heaped, ulcerated mucosa was seen. Biopsies of the mass and antrum revealed gastric adenocarcinoma. The TBBx and BAL revealed metastatic adenocarcinoma indicating lymphangitic spread to the lung.

Discussion: This case is an unusual presentation of advanced gastric cancer. The patient was admitted with pulmonary symptoms of chronic cough and worsening dyspnea with radiographic evidence of interstitial lung disease (ILD) concerning for eosinophilic pneumonia. This is the second case in the medical literature of gastric cancer manifesting as dyspnea and ILD, and the first in the United States. Typical historical features most often associated with gastric cancer include weight loss, early satiety, nausea, vomiting, and dyspepsia. This patient presented with these complaints, which were overshadowed by her marked pulmonary process. This case illustrates a rare but important presentation of gastric adenocarcinoma, which should be considered in the differential of patients from high-risk area for gastric adenocarcinoma who present with ILD and eosinophilia.

381
ARGON PLASMA COAGULATOR FOR ESTABLISHING PATENCY OF OBSTRUCTED BILARY METAL STENTS

Rhody Fawaz, M.D.*. Comanche Memorial Hospital, Lawton, Oklahoma.

Purpose: Luminal patency of obstructed biliary metal stents is difficult to accomplish after either tumor ingrowth or intimal hyperplasia. Balloon dilation almost always fails and most often another stent, either plastic or metal is placed through the obstructed stent. We report three cases in which luminal patency of obstructed biliary metal stents was established using the Erbe-Argon Plasma Coagulator.

Case 1: 46 y.o. male presented with distal biliary obstruction secondary to pancreatic cancer. A 6 cm long 2A-stent (Wilson-Cook) was placed across the malignant stricture. Six months post stent placement, he presented with jaundice after his chemotherapy has failed to control the cancer. At ERCP, the stent was completely occluded with tumor ingrowth. Using the Erbe-APC, set at 60wts/1.4cc flow and giving short pulses with continuously moving the probe, the stent lumen was cleared after coagulating all tumor ingrowth. The patient had no recurrence of jaundice till he passed away three months later. Case 2: 75 y.o. male with obstructive jaundice thought to be secondary to pancreatic cancer had a Wallstent (Boston Scientific) placed across the distal biliary stricture. After a year he presented with jaundice, the stent was completely occluded and his local GI doctor referred him for a choledocho-duodenostomy. After his surgery he presented with multiple episodes of cholangitis secondary to Sump syndrome. At upper endoscopy the gastroscope was introduced to the biliary tree through the anastomosis. The proximal end of the Wallstent was localized and intimal hyperplasia was completely obstructing the stent lumen. Using the Erbe-APC set at 60wts/1.4cc flow, from a proximal anterograde cholecodochoscopic approach, and requiring two sessions, the lumen of the stent was cleaned. No complications occurred. He did well with no episodes of cholangitis since. Case 3: A non-surgical 86 y.o. female required a biliary 2A-stent (Wilson-Cook) for papillary adenocarcinoma. She presented 4 months later with jaundice. At ERCP the stent was occluded with tumor ingrowth and food debris. Using the Erbe-APC set at 60wts/1.4cc flow the lumen was coagulated and the stent cleaned. She tolerated the procedure well but died 6 weeks later from a cardiovascular insult.

Conclusion: At low flow rates, with short pulses and continuously moving the probe Argon Plasma Coagulator for obstructed biliary metal stents seem to be a safe and cheaper alternative to re-stenting. Care should be taken to lessen injury to the bile ducts.

382
INTRAMURAL GASTRIC AND DUODENAL HEMATOMA COMPLICATING THERAPEUTIC ENDOSCOPY

Rhody Fawaz, M.D.*. Comanche Memorial Hospital, Lawton, Oklahoma.

Purpose: Intramural hematoma complicating therapeutic endoscopy is a rare clinical entity. First reported in 1938, most cases have been reported following blunt abdominal trauma, few cases occurred following endoscopic duodenal biopsy and papillary adenocarcinoma. The patient complained of severe abdominal pain and became hypotensive. Bedside physical exam was consistent with peritoneal signs. Abdominal films failed to show free air. Fearing perforation, he was rushed to the operating room for exploration. Operative findings were notable for a large duodenal intramural hematoma with perforation of the serosal wall. Repair of the perforation and loop gastro-jejunostomy was performed. The patient did well.

Case 2: 75 y.o. female with oropharyngeal dysphagia following a cerebrovascular accident. The patient was on plavix, and her PT/INR was elevated secondary to Vitamin K deficiency. Prior to Percutaneous Gastrostomy tube placement, her PT/INR was corrected with Vit-K supplementation and her plavix withdrawn. At the time of the endoscopy while identifying an area of transillumination with the finder needle, a blebly rapidly expanding submucosal bulge appeared. The procedure was aborted and she was transfused with platelets. CT scan failed to show free air and EUS confirmed the intramural hematoma. Complete resolution of the hematoma occurred in five days, at that time a PEG was placed.
Conclusion: Though rare, intramural hematoma can complicate upper therapeutic endoscopy procedure, and seems more so in patients with coagulopathy.

383

LARGE INFECTED THROMBUS EXTENDING INTO RIGHT ATRIUM AFTER PLACEMENT OF A POLYTRIFLUOROETHYLENE (PTFE) COVERED STENT-GRAFT FOR TIPS

Jian Zhang, M.D., Donald J. Hillebrand, M.D., F.A.C.G.*, Waleed A. Ibrahim, M.D., Ramesh C. Bansal, M.D., F.A.C.C., Siddharth Gandhi, M.D. Loma Linda University Medical Center (LLUMC), Loma Linda, California.

Purpose: Transjugular intrahepatic portosystemic shunt (TIPS) has been widely used as a treatment modality for complications of portal hypertension from cirrhosis. Recent studies with PTFE covered stent grafts have shown increased patency. We present a case of an extensive thrombus with enterocollic bacteremia after placement of a PTFE coated stent for TIPS. The patient is a 61-year-old man with alcoholic liver disease related cirrhosis, Child-Pugh Class C, who had a TIPS created with a Viatorr expanded PTFE covered stent-graft for refractory ascites. He received antibiotic prophylaxis with cefazolin. Ten days later, he presented with a fever of 101° F. Physical examination was significant for ascites and lower extremity edema. Laboratory evaluation revealed a mild leukocytosis of 11.0 x 10^9/L. Abdominal doppler ultrasound showed a patent TIPS without any thrombus. Ascitic fluid analysis revealed no evidence of peritonitis, however two sets of blood cultures from different peripheral sites grew Enterococcus feacium. Vancomycin was initiated. He had intermittent bacteremia over the next eight days despite antibiotic treatment. Transesophageal echocardiography (TEE) revealed a highly mobile large clot from the TIPS projecting into the right atrium, measuring 1.2 x 5.0 cm. He was started on anticoagulation with heparin drip and continued on antibiotics. A subsequent abdominal ultrasound confirmed the nonocclusive thrombus, measuring 3.9 x 1.7 x 1.9 cm from the distal TIPS shunt extending into the IVC causing significant narrowing of the lumen. After a week of treatment, the abdominal ultrasound showed near complete resolution of the clot, while the TEE showed 90% resolution of thrombus with a residual string shaped mass, 0.2 x 2.0 cm. He was discharged on warfarin and a total of six weeks of intravenous vancomycin. The patient is doing well on warfarin with no further evidence of bacteremia. This is the first reported case of endotipsitis related enterococcal bacteremia. Endotipsitis is defined as persistent bacteremia associated with a thrombus within the stent. There are only a few reported cases of enterotipsitis related enterococcal bacteremia. This is the first reported case of enterotipsitis related enterococcal bacteremia in a PTFE coated stent for TIPS. Our case demonstrates that cautious use of anticoagulation is warranted.

385

LIVER FAILURE FROM ACUTE INTRAHEPATIC CHOLESTASIS IN SICKLE CELL ANEMIA: A FATAL ENTITY

Matthew M. Baichi, M.D., Razi M. Arifuddin, M.D., Parvez S. Mantry, M.D.*, University of Rochester, Rochester, New York.

Purpose: Although hepatic involvement in sickle cell anemia (SCA) is relatively common, acute end organ failure is a relatively rare complication. We report the case of an adult with SCA presenting with liver failure from sickle cell intrahepatic cholestasis requiring liver transplantation.

A 27-yr-old African American female with history of narcotic dependant sickle cell disease, autoimmune hepatitis, depression, and prior deep vein thrombosis presented with progressive mental status change over two to three days. There was no history of her using excessive narcotics, Tylenol, drugs, or alcohol. There was no history of gastrointestinal bleeding, fever, or new abdominal pain. She had been compliant with home medications including neomycin, lactulose, and azathioprine. Additional medications were folate, amitriptyline, metoprolol, paroxetine, controlled release morphine, and celecoxib. She was unresponsive and deeply icteric on examination with stable vital signs. Laboratory data revealed white count 8,900/ul, hematocrit 24% (baseline), platelet count 194,000/ul, INR 1.6, creatinine 0.8 mg/dl, glucose 109 mg/dl, total bilirubin 34 mg/dl (baseline 14), direct bilirubin 30.6 mg/dl, aspartate aminotransferase 169 IU/L, alanine aminotransferase 52 IU/L, alkaline phosphatase 321 IU/L, and ammonia 102 umol/L. Abdominal x-rays revealed no free air. Abdominal ultrasound showed patent vessels and no biliary obstruction. The patient was treated aggressively with steroids and lactulose without improvement. Liver biopsy was obtained revealing bridging fibrosis consistent with cirrhosis, marked cholestasis (d dual and cannicular), chronic hepatitis with HAI score 8/18, focally dilated sinuses with sickle cells (5% of tissue), and no steatosis. The patient’s condition progressively worsened and on hospital day forty she was transferred maintaining her HBS level below 10% throughout. Sepsis, pancytopenia, coagulopathy, and intra-abdominal bleeding complicated her postoperative course. She expired on day 35 after liver transplantation from sepsis and multi-organ failure.

Acute sickle cell intrahepatic cholestasis (SCIC) represents a severe form of “hepatic crisis” occurring in patients with SCA. This case highlights the challenges of managing the diverse metabolic derangements that occur in these patients and displays the fact that post-operative mortality remains high in patients with SCIC after transplantation even with aggressive treatment.

386

A CASE OF COLITIS INDUCED BY PEGINTERFERON ALPHA-2a

This is the case of a patient being with Hepatitis C who developed bloody diarrhea while on pegylated-interferon combination therapy. The diarrhea began 8 weeks into therapy and lasted for 6 weeks while on pegylated-interferon 2a (Pegasys). A flexible sigmoidoscopy done 3 days after the bloody diarrhea began showed a mild colitis. Multiple biopsies taken of the mucosa showed acute cryptitis and crypt abscesses. There was no evidence of any infectious process as a cause for the colitis. After discontinuation of the pegylated-interferon the patient’s symptoms rapidly improved.

Interferon has been known to cause colitis, although this side-effect of treatment is rather rare. There are only scattered cases throughout the literature, much of it from Japan. Little is known about interferon-induced colitis since the number of cases are so few. Exacerbation of Ulcerative Colitis due to treatment with interferons has been noted in a couple of published cases. Colitis has been noted as a class phenomenon, although this is the first reported case of colitis associated with pegylated-interferon 2a. Although rare, this is an important side-effect of interferon that physicians and patients need to be aware of.

387

HEPATOCELLULAR CARCINOMA IN A CAUCASIAN MALE WITHOUT RISK FACTORS

Rosalyyn K. Kim, D.O., Allen Parker, DO*. Brook Army Medical Center and Wilford Hall Medical Center, San Antonio, Texas.

A 67 yr old man diagnosed with hepatocellular carcinoma on June 2000 during routine physical examination found to have hepatomegaly. At the time of diagnosis patient was not having any symptoms, no weight loss, no history of alcohol intake, blood transfusion, tattoos, or illicit drug use. Hepatitis serology was negative, normal liver function test and alpha fetoprotein 2.9. CT scan showed a large heterogeneously enhancing mass replacing nearly entire liver. In August 2002 the patient underwent surgery and had 60% of his liver resected (tumor measuring 21x18x14cm). Tumor moderately differentiated hepatocellular carcinoma suspicious for angiolymphatic invasion. Follow up three phase CT scan in 2003 showed compensatory hypertrophy of caudate and left lobe with hypodensity measuring 2.8x2.2cm in left lobe. The liver biopsy showed recurrence of the tumor. The patient was started on experimental chemotherapy. In April 2004, the patient presented to an emergency room with a severe abdominal pain, nausea and vomiting without hematemesis. CT scan showed right hepatectomy, enlarged caudate lobe with central area of low attenuation, suspicious for hematoma, no hepatic artery or portal vein thrombosis. His physical examination revealed well nourished, anicteric with a benign abdomen. Admission laboratory showed WBC 11.7, HCT = 26.1, CR = 2.2, K = 3.0, Ca = 6.0, and ALB = 2.3. Liver function test and alpha fetoprotein were normal. His physical examination revealed well nourished, anicteric with a benign abdomen. Admission laboratory showed WBC 11.7, HCT = 26.1, CR = 2.2, K = 3.0, Ca = 6.0, and ALB = 2.3. Liver function test and alpha fetoprotein were normal.

A 72-year-old white male presented to the emergency department with active hematemesis. His past medical history was remarkable for autoimmune hepatitis with cirrhosis on liver biopsy, pure red cell aplasia on steroids, immune thrombocytopenia purpura status post splenectomy, and recent deep vein thrombosis with pulmonary embolism on anticoagulation. He had no prior history of gastrointestinal bleeding and no previous endoscopic evaluation. He was seen by hematology two weeks prior to admission for progressive anemia without evidence of gastrointestinal bleeding. Steroids were increased for suspected relapse of red cell aplasia.

On examination he was disoriented, tachycardic, and in respiratory distress. He was anicteric with a benign abdomen. Admission laboratory showed white blood cells 25,700/mcl, hematocrit 19% (27% two days prior), platelet 449,000/mcl, INR 6.8.

The patient was intubated and admitted to the intensive care unit. Red blood cells and fresh frozen plasma were transfused. Intravenous proton pump inhibitor and octreotide were started. Emergent EGD was performed showing a long adherent clot in the mid-esophagus that was removed by snare. An underlying non-ulcerated raised lesion with oozing blood was seen. Hemostasis was obtained after 3.5cc of epinephrine (1:10,000) was injected around the lesion followed by heater probe application (20 Joules x 3). There were no varices or ulcers noted.

Seven days later he experienced recurrent brisk hematemesis. EGD again showed a long adherent clot. After clot removal, a small lesion with active oozing was again seen in the mid-esophagus. Hemostasis was achieved with 2cc epinephrine (1:10,000). Patient developed a 30 second run of non-sustained ventricular tachycardia after epinephrine injection. An angiogram was subsequently performed showing normal left gastric artery. Evaluation of the thoracic aorta was technically difficult and bronchial arteries were not visualized. The patient had no recurrent bleeding and the remainder of his hospital course was uneventful.

Although rare, Dieulafoy’s lesions can occur in the esophagus. Here we report a case of massive upper GI hemorrhage from an esophageal Dieulafoy’s lesion that was successfully managed with endoscopic therapy.

389

FULMINANT CMV COLITIS DEVELOPING IN A PATIENT AGGRESSIVELY TREATED FOR FLARE OF ULCERATIVE COLITIS


Purpose: A 76 y/o female underwent colonoscopy for 3 weeks history of non bloody diarrhea, abdominal pain, and tenesmus which revealed severe pancolitis characterized by edematous and friable mucosa. Her PMH includes a remote history of ulcerative colitis diagnosed 18 years ago, CAD s/p MI 2 years prior and atrial fibrillation. Aside from a short course of hydrocortisone enemas at the time of initial diagnosis, no other therapy was instituted and her disease remained quiescent. Since the time of diagnosis, the only surveillance was flexible sigmoidoscopy 6 years ago by her PCP revealing no active disease. Medications include Zocor, Lopressor, Norpace, and ASA. There is no family hx of IBD. The severity of colonic findings coupled with clinical dehydration prompted admission. At admission, HR = 90, T = 36.9, BP 115/55 and sats = 97% RA. Her MM were dry and abdominal exam revealed normal active bowel sounds without guarding. Treatment included hydration, Asacol, and Unasyn. Steroids were deferred until pathology ruled out infectious etiology. Abdominal x-ray indicated nonspecific bowel gas pattern with no evidence of toxic megacolon. Laboratory data revealed WBC = 11.7, HCT = 26.1, Cr = 2.2, K = 3.0, Ca = 6.0, and ALB = 2.3. Stool studies revealed many WBC, but were negative for O&P and c-diff. Colonoscopic biopsies suggested chronic active colitis with crypt abcesses consistent with IBD. She was started on Hydrocorti- sone 100mg IV q8h. Shortly after admission, she developed hematocrits requiring blood transfusions. Diarrhea increased in frequency and volume necessitating daily electrolytes replacement. Rowasa enemas were added.
due to worsening symptomatology. ALB decreased to 1.7 and she developed anasarca despite the addition of parenteral nutrition. Incontinent diarrhea and clinical decompensation prompted relook colonoscopy and colorectal surgical consultation. Colonoscopy to mid transverse colon revealed fulminant colitis characterized by congestion and dusky appearance. The following day (7 of admission), she underwent total abdominal colectomy and construction of end ileostomy. Interestingly, biopsies from the second colonoscopy and resected colon revealed chronic active ulcerative colitis with active CMV infection by immunohistochemistry staining. She was not treated for CMV. Post-op anemia stabilized, anasarca subsided, malnutrition resolved. With a restored appetite, patient was discharged after learning ostomy care.

390

STERCORAL PERFORATION OF THE SIGMOID COLON: REPORT OF A COMMUNITY HOSPITAL SERIES
Michael T. Kram, M.D.*, Tiyada Sarabanchong, M.D., Nicholas Gennaoui, M.D., Alfred Hollander, M.D., Winson Lo, M.D., Louis May, M.D. Good Samaritan Hospital, Suffern, New York.

Stercoral perforation of the sigmoid colon is a rare result occurring in severe peritonitis and is associated with a high mortality rate. Since 1894 fewer than 90 cases have been reported in the medical literature, and a MEDLINE search revealed only 48 articles on this topic over the last 35-year time period. We present five cases of stercoral perforation of the sigmoid colon observed in a 350-bed community hospital over an eight-year period.

All our patients underwent urgent surgical procedures including peritoneal lavage, resection of as much colon as possible, along with Hartmann closure and colostomy. Histology showed the perforations to be distinctly different from a diverticular perforation.

Three of our patients died shortly after their initial presentation while our fourth patient had delayed mortality undoubtedly related to this illness. Our experience with this disease leads us to the following conclusions: (1) Patients with severe obstruction and absent bowel movements for over one week are at particular risk. (2) The severity of the abdominal pain in the absence of initial overt radiological signs of perforation may be an important clue to the diagnosis (3) The initial physical examination may not show peritoneal signs (4) Rectal examination frequently shows no stool because the impaction is above the rectosigmoid junction and (5) Absent stool in the rectal ampullae may cause physicians to underestimate the significance of the patient’s problem and contribute to a false sense of security in the face of an impending perforation.

We believe stercoral perforation of the sigmoid colon is an underreported entity and we urge our colleagues to report more cases of this illness.

Patient Characteristics

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Gender</th>
<th>Predisposing Conditions</th>
<th>Initial Clinical and Lab Findings</th>
<th>Perforation Site</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>75</td>
<td>M</td>
<td>Developmental delay, chronic constipation</td>
<td>No peritoneal signs, WBC 15,700</td>
<td>Sigmoid</td>
<td>Died 2 weeks postop</td>
</tr>
<tr>
<td>2</td>
<td>58</td>
<td>F</td>
<td>None</td>
<td>No peritoneal signs, WBC 6,700</td>
<td>Sigmoid</td>
<td>Alive, colostomy closure pending</td>
</tr>
<tr>
<td>3</td>
<td>77</td>
<td>M</td>
<td>Resected Barrett</td>
<td>No peritoneal signs, WBC 4,500</td>
<td>Sigmoid</td>
<td>Died 10 days after initial presentation</td>
</tr>
<tr>
<td>4</td>
<td>63</td>
<td>F</td>
<td>Kasai Hepatitis Series</td>
<td>Peritoneal signs</td>
<td>Sigmoid</td>
<td>Died 6 months postop after initial presentation</td>
</tr>
<tr>
<td>5</td>
<td>55</td>
<td>F</td>
<td>Resected Barrett</td>
<td>WBC 10,000, no peritoneal signs</td>
<td>Sigmoid</td>
<td>Died 6 months postop after initial presentation</td>
</tr>
</tbody>
</table>

391

“PSEUDOCIRRHOSIS”: A CASE OF DIFFUSE DESMOPLASTIC METASTATIC BREAST CANCER SIMULATING CIRRHOSIS WITH SEVERE PORTAL HYPERTENSION
David A. Sass, M.D., Kenneth Clark, M.D., Dana Gorybicki, M.D., Mordechai Rabinowitz, M.D., Thomas A. Shaw-Stiffler, M.D.*. UPMC, Pittsburgh, Pennsylvania.

Introduction: Hepatic metastases from breast cancer can occasionally simulate cirrhosis anatomically. We present a case of diffuse desmoplastic metastatic breast carcinoma (Ca) masquerading as cirrhosis presenting with severe portal hypertension.

Case Report: A 55-year-old female was admitted to our institution with a 2 week history of jaundice, dark urine and acholic stool. There was no history of alcohol or risk factors for viral hepatitis. Past history was that of locally invasive infiltrating ductal Ca of the left breast 4 years prior s/p left mastectomy with axillary node clearance, followed by 4 cycles of adjuvant chemotherapy and tamoxifen. Examination revealed jaundice, hepatomegaly and ascites with no stigmata of chronic liver disease. Lab data revealed: T bili 6.8 mg/dL, Albumin 2.4 g/dL, INR 1.4. Abdominal CT revealed a nodular, heterogeneous liver consistent with cirrhosis, ascites, no ductal dilation or splenomegaly. Viral and autoimmune serologies were negative but a markedly elevated SAAG level of 250 mg/mL raised suspicion for metastatic breast Ca. Ascites yielded a SAAG > 1.1 with equivocal cytology. A PET-CT scan showed inhomogeneous uptake consistent with cirrhosis with no focal areas of increased uptake to suggest malignancy. Prior to a planned liver biopsy, the patient had a massive variceal bleed, which could not be controlled endoscopically. Despite an emergent successful TIPS procedure in which the HVPG was reduced from 35 to 8mmHg, the patient demised. Autopsy revealed hepatomegaly with a nodular liver contour. Microscopic examination revealed diffuse infiltration by a poorly differentiated, highly desmoplastic adenocarcinoma with areas of necrosis. Immunohistochemical staining showed tumor cells positive for CEA and ER, but negative for PR, consistent with the patient’s original breast cancer. Despite the extensive tumor burden in the liver, there were no other sites of metastasis other than peri-portal lymph nodes and a single microscopic focus in the right frontal lobe of the brain.

Discussion: In patients with metastatic breast Ca, “pseudocirrhosis” may result from hepatic capsular retraction in response to chemotherapeutic agents in which histology shows NRH. In contrast, a second form of “pseudocirrhosis,” as depicted herein, has hepatic histology showing evidence of extensive fibrosis representing a profound desmoplastic response to the infiltrating tumor.

392

COMPLICATIONS AFTER TRACTION REMOVAL OF DIRECT PERCUTANEOUS ENDOSCOPIC JEJUNOSTOMY (DPEJ): SUBCAPSULAR ABSCESS AND GASTROINTESTINAL BLEEDING
Robert J. Hoyer, M.D., Amanda S. Arora, M.D., Todd H. Baron, M.D.*. Mayo Clinic, Rochester, Minnesota.

Case Presentation: Direct percutaneous endoscopic jejunostomy (DPEJ) is a recently established method for jejunal feeding, however the optimal method of tube removal has not been described. Removal can be performed endoscopically by removing the intraluminal bumper or by external traction. We present two case reports of complications after DPEJ removal by the traction method. A 77 year-old male presented with melena and a drop in hemoglobin from 13.0 to 8.8 g/dL 24 hours after DPEJ tube (20Fr BARD) removal by the traction method. He was taking aspirin, but no other anticoagulants. Extended EGD revealed a visible vessel at the site of the previously placed DPEJ. Three hemoclips were placed, however the patient had continued melena and a decrease in hemoglobin despite blood transfusion. Repeat EGD showed an adherent clot next to a hemoclip with active oozing. Bleeding was arrested with epinephrine injection and hemoclips placement.

A follow-up EGD 4 days later showed no evidence of recurrent bleeding at the DPEJ site. The second patient is a 45 year-old male who presented with epigastric abdominal pain and a WBC count of 19.8 × 10^9/L 6 days after traction DPEJ removal of the same type of tube which had been placed 9 weeks prior. Abdominal CT scan showed a 10.5 × 4.7 cm subcapsular fluid collection over the left lobe of the liver with nondependent air tracking toward the DPEJ removal site, consistent with a subcapsular abscess. 200 cc of purulent fluid was subsequently drained; culture of the fluid grew Enterococcus, Enterobacter Cloacae, and Prevotella Oris. A sinogram was negative for
connection with the bowel. A drainage catheter was left in place for two weeks with resolution of the abscess cavity on follow-up sigmoid.

**Discussion:** Although traction removal is the standard for removal of PEG tubes, it has been hypothesized that removal of DPEJ tubes by the traction method may be associated with a higher complication rate secondary to the thinner wall of the jejunum and the slower rate of spontaneous mucosal closure. A prior review of 36 patients who received DPEJs at our institution reported two persistent enterocutaneous fistulas following tube removal by both traction and endoscopic methods. The two complications reported here have not been previously reported. A review of DPEJ removals at our institution is planned to better characterize the frequency of complications associated with endoscopic versus traction removal.

**393**

**UNUSUAL GASTRIC MASS**

Robert G. Jones, M.D., Kathryn A. Peterson, M.D.*, Lyska L. Emerson, M.D. University of Utah, Salt Lake City, Utah.

A 77 year-old man presented with 3 weeks of epigastric pain, decreased appetite, bloating and 10 lb. weight loss. He denied nausea, vomiting, heartburn or melena. Physical exam was notable only for mild epigastric tenderness to deep palpation. The patient had a history of plasmacytoma involving the right scapula treated with radiation and resection. Further workup had not disclosed multiple myeloma.

Upper endoscopy was performed showing a 5 cm, exophytic, and friable mass involving the proximal greater curvature. Biopsies were consistent with plasmacytoma with immunohistochemistry similar to the patient’s prior plasmacytoma from his right scapular resection.

CT scans of the chest, abdomen and pelvis showed a large mass involving the greater curvature of the stomach, abutting the spleen. There were also mixed lytic sclerotic components of the T9 vertebrae consistent with metastases. The patient underwent partial gastrectomy with wedge resection and splenectomy. He was discharged without episodes of bleeding. Repeat serum protein electrophoresis was without a monoclonal spike, but his urine is now positive for Bence Jones proteins (negative 1 year earlier).

Extraduodenally plasmacytoma represents 3% of all plasma cell neoplasms. 90% occur in the head and neck. Gastrointestinal involvement occurs in only 5% of extraduodenally plasmacytomas. The small bowel is most common, followed by stomach, colon and esophagus. Endoscopically they can appear as ulcers, an ulcerated mass and rarely as polyps.

Plasmacytomas are radiosensitive and can be managed with local irradiation alone. The decision for resection was made in this case secondary to the risk for continued bleeding and fear of perforation following radiation therapy. Several case reports describe partial or complete regression of stage I gastric plasmacytoma following eradication of Helicobacter pylori. Our patient was negative for H. pylori.

The prognosis of extraduodenal plasmacytomas is good, with 70% of patients disease-free at 10 years. 30% of patients with extraduodenal plasmacytomas develop systemic disease with multiple extraduodenal lesions with or without bone marrow involvement. This patient’s bone marrow biopsy is pending.

**394**

**LAPARO-ENDOSCOPIC DRAINAGE OF LARGE PANCREATIC PSEUDOCYSTS**

Rhody Fawaz, M.D.*, John Carter, M.D. Comanche Memorial Hospital, Lawton, Oklahoma.

Large pancreatic pseudocysts with necrotic debris are difficult to drain endoscopically or percutaneously. Most are drained by creating a large cyst-enterostomy after surgical exploration. Post operative complications range between 12–15%, and prolonged recovery time are major disadvantages of the open surgical approach. Two prior reports by Libby and Atabek, have described a combined endoscopic-laparoscopic technique to create a large cyst-gastrostomy. We report two cases in which two large pancreatic pseudocysts were drained by creating a large cyst-gastrostomy via a percutaneous transgastric approach. Case 1: a 67 y.o. Hispanic male with chronic alcoholism presented with abdominal pain. CT scan showed a 9 cm pseudocyst in the pancreatic body, with septation and calcification. Case 2: 36 y.o. Native American female developed a 7 cm pseudocyst in the tail of the pancreas after an episode of severe gallstone pancreatitis. Both procedures were performed in the operating room with general anesthesia. First a therapeutic gastroscope was introduced. Then a 24 Fr gastrostomy tube (PEG) was inserted as opposite as possible to the bulge created by the pseudocyst on the gastric wall. The outer tubing of the PEG was cut to 5 cm and secured. Under endoscopic guidance a needle was passed thru the PEG port for aspiration of Cystic fluid, proper localization and as a starter point for the large incision. The needle is removed and again thru the PEG port a Harmonic scalpel (Ethicon, Ohio) was used to create a large 2 cm cyst-gastrostomy. The scope then was passed to the cyst, debris were removed with biopsy forceps and snare and the cyst washed with a jet washing probe. After cleaning the cyst, the PEG is removed transorally and the skin sutured. Procedure time ranged between 45–60 minutes, no complications occurred, and both patients were discharged within 3 days. A second look endoscopy was performed in 7 days to make sure that the incision was still open, and in both cases it was. A follow up CT scan was performed in 4 weeks and documented complete cyst resolution.

Conclusion: Percutaneous transgastric laparoscopic-endscopic approach should be added to the drainage options for patients with debris in their pancreatic pseudocysts.

**395**

**COLONOSCOPY AND A CAUSAL RELATIONSHIP TO CHOLECYSTITIS**


This is a case of a 75 year old male with a past medical history of Diabetes, Hypertension, and Coronary Artery Disease who presented 48 hours after a colonoscopy with increasing right upper quadrant pain for 24 hours. The patient denies nausea, vomiting, diarrhea, or constipation. On exam the patient had voluntary guarding in the right upper quadrant, but no rebound. A CT scan of the abdomen revealed only air inside the gallbladder. An emergent laparoscopic cholecystectomy was performed revealing a gangrenous gallbladder. He recovered without incident. Culture taken from the gallbladder showed that it was infected with Klebsiella Oxytosa and Enterococcus Facalis.

Cholecystitis is a complication known to occur with colonoscopy although the frequency is quite rare appearing in only a couple of case reports. The mechanism of the cholecystitis is unknown. It could be related to ischemia, dehydration, and translocation of enteric bacteria leading to gangrene of the gallbladder. Enterococcus was found in our patient as well as in a letter to the editor from the American Journal of Gastroenterology suggesting that translocation may be a factor in this complication. Our patient also has diabetes which is a predisposing factor for emphysematous cholecystitis, and coronary artery disease which suggests that he is at risk for ischemia. It is important for clinicians to be aware of and recognize that although rare, there are complications to colonoscopy other than perforation and bleeding.

**396**

**GRANULAR CELL TUMOR OF THE DUODENUM: A CASE REPORT**

John Woosley, M.D.*, Ian Grimm, M.D. University of North Carolina, Chapel Hill, North Carolina.

In the GI tract, the esophagus is the most common site for the presentation of granular cell tumor (GCT), with nearly 200 cases reported. Considerably
fewer GCTs have been reported in other regions of the GI tract. Only two reports have noted the presentation of GCT in the duodenum. The patient is a 38-year-old woman who underwent upper endoscopy for evaluation of abdominal discomfort and nausea. A submucosal nodule, approximately 5mm in diameter, was noted in the second portion of the duodenum, several centimeters distal to the ampulla of Vater. Pinch biopsies of the lesion revealed normal duodenal mucosa, however there was no deep submucosa identified on these initial biopsies. The mucosa overlying the nodule was tattooed with India ink and the patient was referred to the University of North Carolina for further evaluation with endoscopic ultrasonography (EUS). A 5mm oval intramural (subepithelial) lesion was visualized adjacent to the tattoo, at the junction of the second and third portion of the duodenum. Endoscopically, the lesion was hypoechoic, and located within the submucosa (Layer 3). Multiple biopsies were taken, using a bite-on-bite technique, until the nodule was no longer apparent endoscopically.

On histologic examination, a tumor nodule was noted in the submucosa. Tumor cells were arranged in solid sheets of spindled to polygonal cells filled with strikingly granular cytoplasm. The granular cytoplasm was strongly reactive to S-100 protein immunohistochemistry and was non-reactive to smooth muscle actin. There was no significant cytologic atypia. The tumor was incompletely excised, and follow-up endoscopy is planned to determine if the lesion is still present and growing.

Most of granular cell tumors have a submucosal location. Tumor size varies from a few millimeters to a few centimeters and most cases are asymptomatic and are discovered incidentally. Malignant granular cell tumors are very uncommon and are characterized by large size, rapid growth, invasion of the adjacent organs, nuclear and cellular pleomorphism, and multiple mitotic figures. Metastases have been reported. Recurrence is uncommon following complete local resection and even in tumors that are incompletely excised. Expectant management is advised for small, incidentally discovered GCTs that lack the concerning gross and microscopic features.

RELSAPING AUTOIMMUNE PANCREATITIS PRESENTING AS A LARGE PERIPANCREATIC MASS WITH SEROCONVERSION OF IgG4 LEVELS


Introduction: Autoimmune pancreatitis (AIP) is characterized by diffuse pancreatic enlargement, main duct abnormalities, elevated serum gammaglobulins or IgG levels, autoantibodies, other autoimmune diseases (Sjogren’s syndrome, primary sclerosing cholangitis), a periductal lymphoplasmacytic infiltrate, and responsiveness to corticosteroids. We describe a patient with AIP presenting with a large distal peripancreatic mass that relapsed after steroid withdrawal, developing IgG4 antibodies during relapse, though seronegative at presentation.

Case: A 65-year-old Caucasian male presented with bloating and painless jaundice. CT and MRI revealed diffuse pancreatic enlargement with a distal mass. EUS-guided biopsies revealed chronically inflamed pancreatic parenchyma. Repeated ERCPs showed evanescent strictures in the distal common bile duct, hiliar and pancreatic duct, with negative brushings. Tumor markers, gammaglobulins and autoimmune serologies were unremarkable. Prednisone was started for presumed autoimmune cholangiopancreatitis, with marked clinical and radiographic improvement. Six months after steroid cessation, the patient had bloating and weight loss. Repeat imaging revealed a large hypodense peripancreatic soft tissue mass with vascular encasement, biopsies again revealing chronic inflammation and fibrosis, with new elevation of serum IgG4. He was restarted on prednisone, with dramatic mass reduction after 6 weeks, at which time azathioprine was initiated to allow a steroid taper.

Discussion: The presentation of AIP with obstructive jaundice, weight loss, new-onset diabetes and pancreatic mass in the elderly male often mimics that of pancreatic adenocarcinoma. In reports from Japan, AIP is almost universally associated with autoantibodies (antinuclear antibody, rheumatoid factor, antilactoferrin antibody or antircarbonic anhydrase II antibody), with majority having hypergammaglobulinemia and isolated IgG4 elevation. In the West, seropositivity is less well described. Diabetes mellitus is present in 50%, which may improve after AIP treatment. CT or MRI shows a characteristic capsule-like rim around the inflammation, surrounding the pancreatic head in 80%, with calcifications or pseudocysts rarely seen. Patients typically have a prompt response to steroids, but treatment length, utility of other immunsuppressants and prognosis are not well known.

SEVERE HEPATOTOXICITY ASSOCIATED WITH THE USE OF A DIETARY SUPPLEMENT CONTAINING USNIC ACID


Dietary supplements containing usnic acid, including LipoKinetix (Syntrex Innovations Inc, Cape Girardeau, Missouri), are marketed for weight loss and have been associated with hepatotoxicity. LipoKinetix is a multi-component ingredient (containing norephedrine hydrochloride, sodium usnitate, 3,5-diiodothyronine, yohimbine hydrochloride, and caffeine) which was marketed as a weight loss aid and has been associated with several cases of severe hepatotoxicity, including one death. This led to its withdrawal from the market, but the mechanism of hepatotoxicity is unclear.

We report the cases of two patients who developed severe hepatotoxicity while using a dietary supplement containing usnic acid. The two patients were husband and wife, both age 38, and both otherwise healthy. They began using a dietary supplement called UCP-1 (BDC Nutrition, Richmond, Kentucky), which contains usnic acid, L-carnitine, and calcium pyruvate. Within 3 months of starting this supplement, the wife developed fulminant hepatic failure requiring emergent liver transplantation, and the husband developed sub-massive hepatic necrosis which eventually resolved without treatment.

Their liver histology was similar, and thorough investigation revealed no other potential causes of acute liver injury.

This report suggests that usnic acid may have been the hepatotoxic agent in these cases as well as in cases of LipoKinetix-associated hepatotoxicity. Though not well studied in humans, usnic acid has been shown to uncouple oxidative phosphorylation in a murine mitochondrial model, and is directly hepatotoxic to rat hepatocytes via a mechanism very similar to carbon tetra-chloride, involving free radical generation with resultant cell membrane and mitochondrial injury, lipid peroxidation, disturbed calcium homeostasis, and cell death.

While BDC Nutrition is no longer manufacturing UCP-1, many retailers still have the product in stock and available for purchase over the internet. Health care providers should continue to be vigilant in inquiring about health supplements and alternative medicines in cases of liver injury when there is not an obvious cause. Usnic acid hepatotoxicity needs to be considered as a possible etiologic factor in patients presenting with fulminating hepatic failure.

OMPHALOMESENTERIC DUCT REMNANT CAUSING LUQ ABDOMINAL PAIN

Christopher N. Dainiak, M.D., Leslie Trien, M.D., William Hale, M.D.*. Norwalk Hospital, Norwalk, Connecticut.

A 31 year old female presented to the emergency department with constant LUQ abdominal pain (7/10) for 3 days, associated with nausea but no vomiting and no diarrhea. She was three months post-partum from an uncomplicated vaginal delivery and had 2 other healthy children. She had a history of previous abdominal complaints, most recently three weeks prior to admission, when she had crampy intermittent pain associated with loose stools and stress. Past medical history was significant for a previous hospital admission for similar symptoms 16 years ago, but she had been discharged without a clear diagnosis. She had no prior operations and denied using
medications, including birth control pills. She did not drink alcohol and did not smoke tobacco or use illegal drugs. ROS was otherwise unremarkable. Her physical exam was unremarkable except for abdominal tenderness concentrated in the LUQ extending into the LLQ. Laboratory studies were unremarkable. CT scan of her abdomen and pelvis revealed some mild inflammation in the LUQ with twisting of the mesentery in that area, with possible twisting of her SMA. Colonoscopy revealed an area of extrinsic compression in the distal transverse colon, which could not be passed. Bowel mucosa appeared otherwise normal. Barium enema revealed an enlarged cecum and an area of narrowing in the transverse colon. This was concerning for a mobile cecum and possible intermittent cecal volvulus. She was kept NPO with IVFs, however her pain persisted for 24 hours, without changes in her laboratory studies or vital signs. Due to persistent symptoms, she underwent exploratory laparoscopy and for possible surgical management of a mobile cecum.

Surgical findings revealed a band a tissue extending from the umbilicus to the mesentery in the LUQ, which appeared to serve as a fulcrum for colonic and mesenteric twisting. This band was excised. The rest of her bowel appeared normal. Post procedure her pain had resolved and she underwent a normal post-operative course, including discharge home on regular diet within three days.

This represents an unusual case of a omphalomesenteric duct remnant presenting as acute abdominal pain, with imaging studies mimicking a cecal volvulus. There have been few case reports documenting this finding in adults, as symptoms usually lead to diagnosis in children, with some cases presenting in younger teenagers. We found no reports of omphalomesenteric duct remnants presenting as a possible cecal volvulus.

400

CAPSULE ENDOCOSCOPIC DIAGNOSIS OF ILEAL STRicture AND ENDOCOPIC RETRIEVAL OF capsule
Razi M. Arifuddin, M.D., Mathew M. Baichi, M.D., Parvez S. Mantry, M.D.*. University of Rochester, Strong Memorial Hospital, Rochester, New York.

Capsule Endoscopy (CE) with the M2A capsule has been used for the detection of obscure bleeding. The role of this new technique for diagnosis of other small bowel diseases is still under investigation. We describe the case of a young male in whom the video capsule became impacted, was removed endoscopically, and made a diagnosis when other imaging modalities had failed.

A 28-year-old white male with a total procto-colectomy with ileoanal anastomosis for familial adenomatous polyposis presented with recurrent episodes of right lower quadrant pain, constipation, and vomiting. His abdominal examination was benign and CT showed focal small bowel wall distention without a transition zone. A small bowel follow-through, enteroscopy and ileoscopy were unrevealing. A diagnosis of partial small bowel obstruction was made and he was treated with conservative measures and discharged.

Another episode of a few months later necessitated the above work-up to be repeated and was negative. Since no apparent etiology for the obstruction was found, a capsule endoscopy was pursued. The patient did not report passing the capsule. The capsule video showed a prolonged small bowel transit time and X-ray confirmed a retained capsule in the right lower quadrant. Repeat ileoscopy revealed a tight ileal stricture at 80 cm from the anal canal.

The capsule was visualized through the stricture, which was dilated sequentially using transpyloric balloons until the stricture was negotiated and the capsule was retrieved. (Figure 1) The patient did not experience any further episodes of obstruction and remains asymptomatic on one year follow up.

The most common indication for CE is evaluation of obscure bleeding. Reportedly, capsule impaction requires surgical extraction if the capsule does not pass. Since small bowel radiographs may not identify all strictures, in carefully selected cases the capsule can be used to localize strictures. Risks such as impaction and anticipation of surgery must be explained to the patient. We report the first successful endoscopic retrieval of the M2A capsule from the small intestine.[Figure 1]
Purpose: A 61 year old female nurse anesthetist with a long history of Rheumatoid Arthritis presented with unrelenting upper abdominal pain, intermittent diarrhea and 20 lb. weight loss of three months duration. Computerized tomography of the abdomen showed a very prominent tail of the pancreas. At EERC there was a tight stricture at the mid pancreatic duct. Endoscopic ultrasound-guided fine needle aspiration of the tail showed atypical ductal epithelial cells in a background of abundant necrosis and cholestatic inflammation. She underwent subtotal pancreaticoectomy, splenectomy and cholecystectomy. The final pathologic diagnosis revealed granulomatous inflammation with central fibrinoid necrosis and necrotic debris consistent with rheumatoid nodules.

Rheumatoid Arthritis is a rare cause of chronic pancreatitis. This case illustrates the difficulties and challenges involved in the management. The presence of rheumatoid nodules in the pancreas has not been previously described.

404

ENDOSCOPIC ULTRASOUND GUIDED TRUCUT BIOPSY DIAGNOSIS OF METASTATIC MELANOMA TO THE LUNG

Endoscopic ultrasound guided fine-needle aspiration biopsy is a widely accepted modality for staging gastrointestinal malignancies. A newly designed trucut needle device should improve tissue acquisition by endoscopic ultrasound. We present a case of EUS with trucut biopsy used to diagnose previously “cured” cutaneous melanoma with metastasis to the lung not within the reach of mediastinoscopy or bronchoscopy guided biopsy.

An 80 year old white male presented with a right lower lobe pulmonary mass seen on chest x-ray obtained for cardiac pacemaker evaluation. His medical history was significant for a stage I melanoma of the neck, diagnosed five years earlier and treated with wide excision. The patient had no prior smoking history. A chest computerized tomography was positive only for the right lower lobe consistent with malignant disease. The patient was referred for EUS guided biopsy. The procedure was performed using the GF-UC30P curvilinear scanning echoendoscope for tissue acquisition. Under linear array endosonography, a hypoechoic and well delineated mass measuring 46 × 30 mm was visualized arising from the base of the right lung adjacent to the esophagus. Two 10 millimeter core biopsies were obtained under real-time ultrasound guidance using a 19-gauge Trucut needle, without complication. The microscopic findings were of a malignant pigmented neoplasm consistent with metastatic melanoma.

EUS guided biopsy is a widely accepted technique to diagnose and stage patients with thoracic malignancies. The recent introduction of a trucut needle may improve tissue acquisition compared to fine-needle aspiration. The differential diagnosis of a metastatic melanoma versus a primary pulmonary malignancy was crucial, as recurrent melanoma yields a low likelihood of long-term cure. This is one of the first reports of EUS guided trucut biopsy of a lung mass for the diagnosis of metastatic melanoma.

EUS guided trucut biopsy appears to be a safe and effective technique to sample pulmonary masses adjacent to the esophagus. EUS guided trucut biopsy should be considered in the primary diagnosis of lung masses adjacent to the esophagus. Prospective studies are needed to compare the yield and safety of fine-needle aspiration and trucut biopsy in patients with thoracic malignancies.

405

STRONGYLOIDOSIS MIMICKING AS EOSINOPHILIC GASTRODUDENITIS
Aman Ali, M.D., Ali Usmani, M.D., Michael Yaezi, M.D.*. Cleveland Clinic, Cleveland, Ohio.

Strongyloidiasis, an important helminthic infection caused by strongyloides stercoralis, is usually seen in tropical regions and southeast US. It commonly involves small intestine however gastric involvement is possible in immunosuppressed patients. Immunosuppression, iatrogenic or otherwise may worsen the outcome by disseminating the mild or asymptomatic strongyloidiasis.

68 year old Hispanic male with 4 months history of nausea, vomiting, abdominal bloating and weight loss presented with dehydration and diffuse abdominal pain. Three months ago, he was diagnosed with eosinophilic gastritis by EGD and was being actively treated with prednisone without improvement. Two weeks prior to the admission, he developed culture-negative meningitis and was treated with IV antibiotics. Upon admission he complained of early satiety, mild cough and wheezing. He denied diarrhea, dyspnea, hemoptysis, skin rash or seizures. Physical examination was normal except mild epigastric tenderness. Initial investigations revealed hypomagnesemia, normal WBC count, hemoglobin and eosinophilia (6%). Stool specimens failed to show ova or parasites. Chest X ray and abdominal films were normal. Repeat EGD revealed friable gastric and duodenal mucosa. Biopsies revealed multiple adult strongyloides, larvae and eggs at various stages of development. Strongyloides IgG was positive at 1.45 (normal < 1). Serum was non reactive for HIV, HTLV1 and II. He was treated with ivermectin and steroids were tapered off with significant improvement in symptoms and resolution of eosinophilia.
In this patient, steroids facilitated the dissemination of infection as manifested by the intensification of gastrointestinal symptoms, mild pulmonary symptoms and meningitis that likely resulted from the bacteremia originating from GI tract. Prompt recognition, treatment and withdrawal of steroids resulted in uneventful recovery. Additionally, peripheral eosinophilia was seen that is typically absent in eosinophilic gastritis. As emphasized in our case, it is important to exclude parasitic infections in high-risk patients with vague gastrointestinal symptoms and eosinophilia, especially before starting immunosuppressive agents. [figure 1]

---

**A CASE OF HEPATIC EPITHELIOID HEMANGIOENDOTHELIOMA [HEHE] – A DIAGNOSTIC DILEMMA**

Bhavesh B. Shah, M.D.*, Tsu-Hon Wang, M.D., Sita Chokhavatia, M.D.
Albany Medical College, Albany, New York and University of Medicine & Dentistry of New Jersey, University Hospital, Newark, New Jersey.

50-year-old alcoholic male with end stage liver disease with one-week history of abdominal pain, increasing abdominal girth and pedal edema. He denied nausea, vomiting, fevers, chills, diarrhea, recent alcohol use. Examination revealed cachexia, massive abdominal distention, abdominal tenderness and pedal edema. MELD score was 27. Ultrasound revealed ascites, multiple non- calcified liver masses with echogenic rims, and areas of infarction. CT scan revealed an enlarged left hepatic lobe, multiple dense calcifications throughout the right hepatic lobe, irregular low attenuation lesions throughout the liver, right portal vein thrombosis, 1.4cm aortocaval lymph node, thickened omentum, splenic lesions. MRI revealed multiple non-specific hepatic and splenic lesions. Peritoneal fluid revealed benign mesothelial and inflammatory cells. A biopsy of one hepatic lesion was non-diagnostic. A second guided biopsy initially reported to show large areas of necrosis and inflammatory cells. The final diagnosis after consultation with a second pathologist was hepatic epithelioid hemangioendothelioma [HEHE]. The patient’s condition continued to rapidly deteriorate, and he expired soon thereafter.

HEHE is a rare clinical entity. It is a neoplasia of vascular origin with unpredictable malignant potential. It usually affects adult women (61% women in a series of 137 patients by Makhlouf HR et al), and presents as multiple hepatic nodules with peripheral distribution. It poses difficulties in clinical diagnosis because of its non-specific clinical manifestations and imaging findings (Shen CH et al). Diagnosis is made histologically with staining of tumor cells for factor VIII-related antigen, CD34, and/or CD31. Histology of the tumor is not valuable in predicting outcome. Antineoplastic agents have been proposed for cases of nonresectable HEHE; with one report of success with Adriamycin (Idilman, R et al). Definitive treatments are radical resection or liver transplantation. 5-year survival in patients who underwent liver transplantation was 71.3% (Madariaga JR et al); long-term survival results obtained in this series justifies OLT. Overall 5-year survival of 55.5% is better than for other hepatic malignancies (Lauffer, JM et al). This patient did present us with a diagnostic dilemma, as two needle biopsies were done before he was diagnosed.

---

**GALLBLADDER ADENOCARCINOMA PRESENTING AS BOUVERET’S SYNDROME**

Rahil D. Shah, M.D., Roberto Gammara, M.D., Laurence Stawick, M.D., Luis Maas, M.D.*. Providence Hospital, Southfield, Michigan.

**Introduction:** Cholelithiasis is a common problem in the United States. In rare instances a choledochoenteral fistula may form. A large gallstone may pass through this fistula and move into the duodenum. These patients may present with gastric outlet obstruction (Bouveret’s Syndrome).

**Case Report:** A 72-year old woman with a history of coronary artery disease and hypertension presents with acute onset of bilious vomiting and abdominal pain. She denied any prior gastrointestinal symptoms or weight loss. A CBC revealed a white blood cell count of 12,100; hemoglobin of 13.7, hematocrit of 42.9, and a platelet count of 434,000. Total bilirubin was 0.4 and alkaline phosphatase of 202. An ultrasound of the gallbladder showed cholelithiasis without common bile duct dilatation or evidence of cholecystitis. An esophagogastroduodenoscopy revealed a large obstructing stone composed of both black and brown pigment in the second part of the duodenum. A lithotriptor cracked 25–30% of the 8 × 4 cm stone however; the entire stone could not be obliterated. The patient was taken to surgery later in the day. She had an open cholecystectomy and repair of a choledochoenteral fistula. The pathology showed gallbladder adenocarcinoma, invasive into the submucosa.

**Discussion:** Bouveret’s syndrome is a rare occurrence in patients with cholelithiasis. It occurs most commonly in women (65%) with a median age of 68 years. A specific etiology has not been discovered. The diagnosis is made by endoscopy (60%), upper GI series (45%) or x-ray (23%). Mortality has improved from 33% in 1968 to 12% in recent years. The pathogenesis of Bouveret’s syndrome is formation of a choledochoenteral fistula secondary to inflammation of the gallbladder wall. The inflammation may be due to a number of causes including cholecystitis or possibly adenocarcinoma as in this case.

**Conclusion:** Bouveret’s syndrome may be suspected in a patient with known gallstone disease who presents with recent emesis. However, most cases of gallstone obstruction occur in the ileus. Radiologic or endoscopic workup may be necessary to confirm the diagnosis. Therapy includes multiple types of intervention, ranging from endoscopic laser or lithotriptor ablation to surgery.

---

**INTRADUCTAL PAPILLARY AND MUCINOUS TUMOR OF THE PANCREAS: A CASE REPORT**


Intraductal papillary mucinous tumor (IPMT) is a rare mucin-producing tumor of the pancreas that arises in the pancreatic duct and results in obstruction and progressive ductal dilatation or cyst formation. Long-term obstruction of pancreatic ducts leads to fibrosis and atrophy mimicking chronic pancreatitis. Most patients have no symptoms and it is detected incidentally at imaging studies performed for unrelated indications. However IPMT associated with acute pancreatitis is rare. We present a case of acute pancreatitis associated with IPMT in a 76-year-old woman with a history of dementia, COPD, DVT and CAD. She had a 1-day history of epigastric abdominal pain, which did not radiate, was associated with anorexia, but no other constitutional symptoms. A physical exam revealed tenderness in the epigastrium, mental status changes of dementia but was otherwise normal. Her initial pancreatic amylase was 583 U/L with a lipase of 707 U/L. Other labs were normal. An ultrasound scan of the abdomen showed an abnormal pancreas with ductal dilatation to 5–6 mm, and it was undulating in character with beading. It was filled with low-level echogenic material of variable texture; this was suspicious for a mucinous ductal euctasia. Evaluation with a CT scan revealed no evidence of acute
pancreatitis, a pancreatic duct dilated to 4–5 mm, “somewhat beaded” but the radiologist ruled out ductal ectasia.

After the acute pancreatitis had resolved, she underwent an ERCP. This revealed 5–6 mm dilatation of the main pancreatic duct from the level of the head to the tail of the pancreas with an erratic and ectatic course, multiple side branches and cystic dilatations. The duct of Santorini was normal. Turbid flocculated material was aspirated from the duct and a 3 mm selective pancreatic sphincterotomy done. Cytology of a brushing revealed no tumor cells. Given the patient’s multiple co-morbidities she was not an ideal surgical candidate and a conservative approach was taken. Three months after the sphincterotomy, the patient continues to be pain free. Although rare, IPMT can present with acute pancreatitis. Radiologic studies are not always conclusive in diagnosis; ERCP remains the gold standard. In nonoperative candidates, treatment options for pain relief are limited. Pancreatic duct stenting is often unsuccessful due to stent clogging with thick mucoid secretions. Pancreatic sphincterotomy may give short to intermediate term pain relief as seen in our patient.

409

PALLIATION OF POLYPOID ESOPHAGEAL CANCER BY ENDOLOOPING - A NEW TECHNIQUE
Binh V. Pham, M.D., Gottumukkala S. Raju, M.D., F.R.C.P., F.A.C.G.*
University of Texas Medical Branch, Galveston, Texas.

Self expanding metal stents are widely used for palliation of esophageal cancer. Patients with focal polypoid cancer of the esophagus are at increased risk of stent migration; debulking of the tumor would be a better option in this group. Current options for debulking include laser, argon plasma coagulation, photodynamic therapy, and snare polypectomy. We describe a new method of palliation of polypoid esophageal cancer using endoloops to cause ischemic necrosis and debulking of the tumor.

Case Report: A 57-year old man was admitted with melena, dysphagia, and weight loss. Examination revealed ascites and stigmata of cirrhosis. Laboratory data: Hb: 6.2 gm/dL, PT: 17.2 secs, and albumin of 2.2 gms/dL. An EGD revealed a large multilobulated, friable, polypoid mass with a thick stalk just above the GEJ. Biopsies revealed mucoepidermoid cancer. Further workup revealed distant metastasis.

Endolooping for Palliation of Polypoid Cancer of Esophagus: Stenting was deferred because of high risk of stent migration with non-circumferential polypoid tumor of the esophagus. Snare resection was contraindicated due to severe coagulopathy. Endolooping of the stalk resulting in devascularization of the tumor and consequent debulking of the tumor was considered as the only viable option. Two endoloops were applied easily to the base of the polypoid cancer (fig 1). Nine days later, there was significant necrosis of the tumor resulting in a widely patent lumen (fig 2). He was able to eat regular food without any dysphagia. Patient's hemoglobin remained stable. He was discharged to hospice care.

Discussion: This case demonstrates the effectiveness of endolooping in the palliation of polypoid cancers of the esophagus. It is a simple and easy technique that can be employed by any one conversant with snare polypectomy.[figure1][figure2]

410

CHOLECYSTO-CHOLEDOCHAL FISTULA COMPLICATING CHOLELITHIASIS

A 31 year old woman, without significant past medical history presented to the hospital with severe right upper quadrant pain, jaundice, fever and chills. Right upper ultrasound revealed cholelithiasis. An ERCP showed dilated intra and extra hepatic ducts, without filling defects or strictures. The cystic duct was patent and the gallbladder was opacified. A biliary sphincterotomy was carried out and a 7 F 7 cm plastic stent was placed. After making clinical and biochemical improvement she was discharged with plan to undergo elective cholecystectomy. Five weeks later she returned with similar complaints. Repeat ERCP[figure1] showed a patent biliary stent and a filling defect at the level of the cystic duct. Attempts at removing the stone were all unsuccessful as the stone appeared to be tightly wedged in the CBD and could not be moved with with a balloon, a basket and a mechanical lithotripter. The patient then underwent same-day open cholecystectomy. At surgery, it was found that the stone was impacted in the cystic duct and had eroded into the common bile duct. Pathologic examination of the gallbladder confirmed the cholecystocholedochal fistula [figure2]. The patient underwent cholecystectomy, common bile duct exploration with stone removal and primary common bile duct repair over a T-tube and has thereafter done well.
MULTIFOCAL GASTRIC CARCINOID TUMOR IN A PATIENT WITH PERNICIOUS ANEMIA RECEIVING Lansoprazole

Timothy R. Koch, M.D., Tan Attila, M.D., Raj Santharam, M.D., Dennis Blom, M.D., Richard Komorowski, M.D.*. Medical College of Wisconsin, Milwaukee, Wisconsin.

In an international consensus statement, determination of serum gastrin levels in patients receiving H, K-ATPase inhibitors was not advised since gastrin levels greater than 1000 pg/ml. This is a discussion of a patient with type I diabetes mellitus being treated with once daily, oral lansoprazole, 30 mg. This patient underwent upper endoscopy for evaluation of nausea and was found to have multifocal gastric carcinoid tumor involving the cardia and fundus of the stomach, with no evidence for Helicobacter pylori on gastric biopsies. Subsequent investigation then revealed the presence of parietal cell antibodies (1:320 titer), elevation of serum chromogranin A level (53.5 ng/ml), and hypergastrinemia (1111 pg/ml). Computerized tomography of the abdomen showed gastric wall thickening with no lymphadenopathy, ascites, or liver abnormality. [In-111]-Octreotide scan was unrevealing. Off of lansoprazole, the patient's gastric pH was 2.0, and there was a marked reduction in her hypergastrinemia (to 483 pg/ml). These findings support the notion that achlorhydria is not a prerequisite for hypergastrinemia with subsequent formation of multifocal gastric carcinoid tumor in patients with pernicious anemia. Treatment of non-specific symptoms with a H, K-ATPase inhibitor could increase the risk of developing gastric carcinoid tumor by facilitating hypergastrinemia. In select patients, consideration should be given to obtaining a fasting serum gastrin level prior to initiation of treatment with a H, K-ATPase inhibitor.

DIFFUSE TYPE OF HEPATOCELLULAR CARCINOMA PRESENTING WITH ACUTE SEVERE HEPATITIS IN A PATIENT WITH CHRONIC HEPATITIS C AND ALCOHOL RELATED CIRRHOSIS

Osvaldo F. M. Couto, M.D., Jaideep Behari, M.D., Paramjeet Randhawa, M.D., Jennifer Hadam, M.D., Neeraj Kaushik, M.D., Frank L. Thaete, M.D., Kapil Chopra, M.D.*. University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.

A 53 year-old Caucasian male presented a history of increasing abdominal pain, fatigue and worsening jaundice for a period of two weeks. His initial laboratory tests at the time of admission revealed: serum AST 514 U/l; ALT 530 U/l; alkaline phosphatase 552 U/l; total bilirubin 13.5 mg/dl; albumin 2.3 g/l; INR 2.6. His serum alpha-feto protein was elevated to 69 ng/ml. Possible causes of acute worsening of liver function tests (viral, autoimmune etiologies) were excluded. His serum transaminases peaked at 2778 U/l (AST) and 4946 U/l (ALT). A contrast CT scan of the abdomen showed multiple geographic areas of hypoattenuation in the setting of a cirrhotic liver suggesting focal fatty swelling but were unable to exclude a primary hepatic diffuse neoplasm with portal vein thrombosis. A random needle biopsy of the liver via a transjugular access revealed a moderately differentiated hepatocellular carcinoma with no vascular invasion and fibrotic liver parenchyma. The final diagnosis was severe acute hepatitis caused by a diffuse type of hepatocellular carcinoma in a patient with cirrhosis of the liver secondary to chronic hepatitis C and alcoholic liver disease, with portal vein thrombosis. Discussion: Hepatocellular carcinoma (HCC) usually develops insidiously in a patient with liver cirrhosis and may present with an elevated serum alpha-feto protein, hepatomegaly, portal vein thrombosis or decompensation of liver disease. Rarely, liver malignancies may present within an acute severe hepatitis clinical presentation simulating acute liver failure, characterized by a predominant hepatocellular injury pattern with elevation of liver enzymes, jaundice and clinical worsening. In such cases it could pose a diagnostic challenge.

We highlight the imaging features of diffuse type HCC mimicking focal fatty infiltration, the role of liver biopsy in obscure cases of acute severe hepatitis and the importance to include liver malignancies in the differential diagnosis in such cases.

A 65 YEAR-OLD-MAN WITH FULMINANT LIVER FAILURE AND HEPATIC ANGIOSARCOMA

Yasser M. Bhatt, M.D., Jennifer Dorfmeister, M.D., Michael Nalesnik, M.D., Kapil Chopra, M.D.*. University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.
A 65-year-old retired insurance agent presented with a three week history of jaundice with associated fevers, chills, nausea, vomiting and fatigue for five days. Fifteen years prior, he had presented with massive splenomegaly, hypercalcemia and was diagnosed with sarcoidosis by liver and spleen biopsies. He was treated with prednisone for two years with good results. He had worked in a plastics manufacturing factory with exposure to vinyl chloride for seventeen years, from age 27–44. Pertinent positives on examination included icterus and a tender liver edge 3 cm below the costal margin. Laboratory data included creatinine 1.7 mg/dL, calcium 9.2 mg/dL, hemoglobin 9.9 g/dL, albumin 2.3 g/dL, bilirubin 12.9 mg/dL, ALT 179 IU/L, AST 416 IU/L, ALP 394 IU/L and INR 1.6. Right upper quadrant sonography showed a coarse, heterogeneous liver with patent hepatic vessels. MR abdomen revealed a liver replaced by innumerable nodules. Viral and autoimmune serologies for acute and chronic liver disease were negative. Hospital Course: Percutaneous liver biopsy confirmed the diagnosis of angiosarcoma. The patient developed encephalopathy and his condition deteriorated over the next week. As he was not a candidate for chemotherapy, palliative measures were instituted and he died eight days after admission.

**Discussion:** Hepatic angiosarcoma is a rare tumor of mesenchymal origin. It comprises less than 2 percent of all primary liver tumors and about 25 cases are diagnosed annually in the United States. It is strongly associated with exposure to gaseous vinyl chloride monomer during its polymerization to polyvinyl chloride, first noted in 1974. There may be a latency period of 19–22 years prior to development of tumor after exposure. Established treatment protocols do not currently exist. Adriamycin based chemotherapy has been tried with poor results. Rarely a tumor may be amenable to surgical therapy if it is localized. Liver transplantation has been attempted but carries a high rate of recurrence and is contraindicated. Median survival is about six months without treatment. Our patient appeared to have a more aggressive form of the disease and presented with severe liver dysfunction leading to death.

### 414

**HEMOPHAGOCYTIC SYNDROME: A COMPLIATION OF ULCERATIVE COLITIS OR SIDE-EFFECT OF 6-MP THERAPY?**

A 29 year old male with ulcerative colitis presented with fatigue, fevers, diarrhea, nausea and a rash. He had pan-ulcerative colitis refractory to 5-ASA agents requiring the intermittent use of steroids. Nine months prior to presentation he began 6-mercaptopurine (6-MP) and tapered prednisone to ASA agents requiring the intermittent use of steroids. Nine months prior to admission he began 6-MP and tapered prednisone to 5 mg qd. He tolerated 6-MP well with persistently normal complete blood counts and liver tests. He otherwise had no significant past medical history and was on no other medications.

On examination, he appeared fatigued but non-toxic, with a temperature of 39.1 C, heart rate 106 and blood pressure 104/64. There was a confluent erythematous rash over his forehead, face and shoulders. The remainder of the physical exam was unremarkable. Laboratory evaluation was significant for a white blood cell count of 1700 with 68% band forms, hemoglobin of 12.0 g/dL and platelets of 40,000. He had an elevated aspartate aminotransferase of 181 U/L and alanine aminotransferase of 205 U/L. He was admitted to the hospital with presumed 6-MP toxicity and a superimposed viral infection.

He continued to spike fevers and developed profound panerythromia with an absolute neutrophil count of 420, hemoglobin of 8.7 g/dL and platelets of 8,000. Blood cultures and viral studies were negative including parvovirus, CMV, HIV, HVS, hepatitis A, B, C and a monospot. However, Epstein-Barr Virus (EBV) IgM, EBV IgG and EBV nuclear antigen were all positive. A bone marrow biopsy showed infiltration with CD68 positive macrophages filled with phagocytosed hematopoetic cells diagnostic of hemophagocytic syndrome. Despite treatment with IVig, etoposide and dexamethasone, he decompartmented and was intubated for respiratory failure. On hospital day 15 he died.

A post-mortem examination confirmed extensive infiltration of atypical macrophages in multiple organs consistent with hemophagocytic syndrome. Hemophagocytic lymphohistiocytosis is a rare syndrome that involves the accumulation and infiltration of activated T-cells and macrophages. The familial form usually affects young children, while the acquired form is associated with infections, most frequently EBV. There are rare reports of this syndrome in patients with inflammatory bowel disease. This case raises concern that hemophagocytic syndrome is a life-threatening complication of ulcerative colitis and/or immunomodulator therapy.

### 415

**EXTENSIVE COLONIC ULCERATION COMPLICATING SARCOIDOSIS IN A PATIENT TAKING NON-STEROIDAL ANTI-INFLAMMATORY MEDICATIONS**

Although widely prescribed, nonsteroidal anti-inflammatory drugs (NSAIDs) have been shown to cause serious complications, including peptic ulcer disease (PUD), hemorrhage and renal insufficiency. It has been shown that the use of NSAIDs should be limited in selected patients, such as those with PUD, inflammatory bowel disease, and high risk of bleeding. We report a serious gastrointestinal complication with the use of the NSAID indomethacin in a patient with sarcoidosis. The patient was a 44 year old woman with a history of cutaneous and pulmonary sarcoidosis who presented to the emergency room with complaints of left lower quadrant abdominal pain and gastrointestinal bleeding. The symptoms began suddenly two days prior. The pain was dull, aching in character and non-radiating. There was scant hematochezia, no melaena, fever, chills, diarrhea. The patient’s past medical history was significant for sarcoidosis for 10 years involving both the skin and lungs. Current medications included prednisone, plaquenil, amiodopane, and indomethacin. Physical examination was remarkable for violaceous hyper-pigmented nodular lesions on the legs, thighs and forearms. On abdominal examination, there was left lower quadrant tenderness without guarding or rebound. There was bright red blood mixed with stool on rectal exam. Computed tomographic scan of the abdomen showed a long sement of the descending colon with markedly thickened wall and adjacent inflammatory changes. Colonoscopy showed extensive, deep ulceration involving the descending and sigmoid colon. Indomethacin was held. Symptoms quickly resolved. Follow-up colonoscopic examination demonstrated complete resolution of the ulceration. Although NSAID induced colonic ulceration has been reported, this is the first case of a severe NSAID induced colonic ulceration in a patient with Sarcoidosis. The extensive ulceration is unusual and may be related to the underlying disease. Physicians caring for patients with Sarcoidosis may need to be vigilant about this potential complication.

### 416

**ENDOCLIPPING OF A LARGE FEEDING VESSEL TO CECAL AVM TO PREVENT REBLEEDING DURING AGGRESSIVE ANTICOAGULATION TO MAINTAIN CORONARY STENT PATENCY**
Bhavani Moparty, M.D., Gottumukkala S. Raju, M.D., F.R.C.P., F.A.C.G.∗. University of Texas Medical Branch, Galveston, Texas.

Until recently, coartation was the only endoscopic management option for bleeding cecal AVMs. Ulceration following cautery could predispose to rebleeding, especially in patients on anticoagulation. We describe the potential role of mechanical hemostasis in the management of bleeding from cecal AVMs in a high risk setting for rebleeding. **Case Report:** A 73-year-old male with history of CAD and atrial fibrillation on coumadin was admitted with MI. He was started on IV heparin. During hospitalization, he developed hematochezia with a 3 g/dl drop of hemoglobin. An EGD revealed an antral ulcer with a clean base. A colonoscopy revealed a large cecal AVM with a big feeding vessel (fig 1).
Endoscopic Clipping of Feeding Vessel: Initially, 4 endoclips were placed on the feeding vessel with the first 2 clips placed away from the AVM; 3rd clip was placed close to the AVM and the last one in between the first two applications. A 4th clip was placed on a fold leading to the AVM (assuming that the fold could contain a draining vessel). Cautery was applied to the AVM after cutting off its blood supply by the application of endoclips to the feeding and draining vessels. Subsequently, the cauterized area was closed with a clip to prevent delayed ulceration and bleeding (fig 2).

Follow-up: Capsule endoscopy was normal. He underwent coronary stenting followed by intensive therapy with Plavix and Aspirin and Coumadin to keep the stent patent without any further rebleeding during follow-up (3 mo).

Conclusions: Mechanical hemostasis with endoclipping of feeding vessel to the cecal AVM has been shown to be useful in this patient who is at high risk of rebleeding from intensive antiplatelet therapy and anticoagulant therapy.[figure1][figure2]

COLLAGENOUS SPRUE AND COLITIS RESPONDING TO INFlixIMAB THERAPY

A 76 year old, Caucasian male with known CLL presented in March of 2003 with intractable diarrhea for six to eight weeks and with a weight loss of seventeen pounds. There was no history of exposures or travel. On admission he was severely dehydrated and in metabolic acidosis. Stool volume was in excess of 7.0 liters/twenty-four hours. Serum gastrin and VIP levels were normal. Twenty-four hour urine 5-HIAA was normal. Stool exam was negative for fat, parasites, WBC, and pathogenic organisms. Giardia antibody was 1:16. CT of the abdomen showed no pancreatic lesions. Thyroid studies were normal. Celiac serology studies were all normal. UGI/SBS x-ray was unremarkable. EGD and Colonoscopy were unremarkable. Biopsy showed collagenous sprue and collagenous colitis. The patient was treated with fluid replacement and TPN. Prednisone provided no benefit. Many anti-diarrheal medications, Lithium and herbal remedies, were tried without benefit. The patient was started on treatment with Infliximab 0.5 mg/Kg. by infusion on standard protocol and had rapid reduction in stool volume. I.V. fluids and TPN were discontinued. He has been maintained for over one year now on eight-weekly infusions of Infliximab and oral Azathioprine. He has formed stools once daily. He has regained all of his lost weight. Repeat biopsies performed in October 2003 showed disappearance of collagen from the colon and duodenum. The patient is in excellent health as of June 2004.

SCHISTOSOMAL COLONIC POLYPsis
Jeffrey L. Kim, M.D., Irwin Grosman, M.D., Richard Alexis, M.D., Adnan Khdair, M.D.∗. Long Island College Hospital, Brooklyn, New York.

A 24 year old male who recently moved to the United States from Yemen presented complaining of change in bowel habits, fatigue and hematochezia. He denied any associated melena, weight loss, nausea, vomiting or abdominal pain. The patient denied any family history of cancer. The patient’s laboratory values were significant for WBC of 4.4 Thous/mcL with an absolute eosinophil count of 691 Cells/mcL. The patient’s basic metabolic panel and liver function tests were normal. Physical exam was only significant for hemato positive brown stool.

Colonoscopy was performed and revealed two large pedunculated polyps in the distal descending colon measuring 4 centimeters each. One polyp was removed successfully by snare cautery. The second polyp was removed partially by snare cautery with the intention to repeat the colonoscopy for completion of the polypectomy after the pathology results returned. Several random biopsies were obtained in the terminal ileum, cecum, ascending colon, transverse colon, descending colon and rectum. Microscopic examination of the random biopsies revealed intestinal colonic schistosomiasis with moderate chronic inflammation. The two descending colon polyps were diagnosed as inflammatory pseudopolyps due to extensive intestinal schistosomiasis. There was heavy egg burden noted in the mucosal vascular spaces associated with the presence of several adult worms in the submucosal vessels.

The patient was started on praziquantel and noted clinical improvement. One month later, the patient presented for a follow-up colonoscopy which revealed complete resolution of the partially resected descending colon polyp. In addition, there was evidence of colitis in the rectum, rectosigmoid and descending colon which was biopsied. The biopsies revealed nonspecific chronic inflammation with occasional ova (mostly parasitic shells) of Schis-tosoma. There was no evidence of parasites in the terminal ileum or ascending colon.

Schistosomal colonic polypsis is a common complication of chronic Schis-tosoma mansoni infection in endemic areas, but it is rarely encountered in the United States. Colonoscopy typically shows primary involvement of the distal colon and polyps can be pedunculated or sessile, few or numerous. Our case demonstrates that colonoscopic polypectomy is safe and effective and may be required in combination with medical therapy for complete symptom relief and prevention of complications.

A CASE OF RECURRENT INTRAMURAL GASTROINTESTINAL HEMORRHAGE
Rajinder Parmar, M.D., Irwin Grosman, M.D., Jeffrey Kim, M.D., Adnan Khdair, M.D.∗. Long Island College Hospital, Brooklyn, New York.
Intramural gastrointestinal hemorrhage is a rare entity with only a few reports in the literature. Recurrent intramural gastrointestinal hemorrhage has only rarely been described. We herein report a case. A 68-year-old female with a history of hypertension and aortic valve replacement presented in February 2004 with diffuse abdominal pain and vomiting of 4 days duration. The abdominal pain was severe and constant and associated with obstipation. The patient reported similar symptoms in 2000, which resolved with conservative management. Medications included metoprolol and Coumadin. On physical examination, the patient appeared pale and anxious. The abdomen was not distended. Bowel sounds were hypoactive. There was tenderness and guarding in both lower quadrants. Rectal examination revealed guaiac negative stool. Laboratory data included a normal CBC, electrolytes, liver function tests, amylase and lipase. The PT/INR was 70s/15.6. A CT scan of the abdomen revealed thickening of small bowel loops in the lower abdomen with free fluid in the pelvis. Repeat labs revealed PT/INR = 99s/27. Six units of fresh frozen plasma were transfused. The hemoglobin decreased to 7.0 g/dL the next day. Abdominal distention was noted and the fecal occult blood test remained negative. Four additional units of fresh frozen plasma and 3 units of packed RBCs were transfused. A colonoscopy revealed a large submucosal hematoma in the proximal ascending colon and a normal terminal ileum. Anticoagulation was optimized, the patient progressively improved and she was discharged home in a stable condition. Review of the medical record revealed that the patient had the same presentation in 2000 and was diagnosed with intramural gastrointestinal hemorrhage. Intramural gastrointestinal hemorrhage is usually located in the submucosal layer of the bowel. It typically originates from a small vessel that produces slow bleeding. Intraluminal, intramesenteric and retroperitoneal hemorrhage can occur. Hemorrhagic ascites can be present with submucosal bleeding extending into all layers. Coumadin toxicity is often an associated finding. The triad of Coumadin toxicity, intestinal obstruction and thickening of small bowel loops is characteristic of intramural gastrointestinal hemorrhage. The management is conservative and surgery should be avoided as most patients recover with supportive measures.

420

ENDOSCOPIC FINDINGS IN A MYCOBACTERIUM AVIUM COMPLEX (MAC) INFECTION

Our patient is a 48 y/o AA female with a medical history including HIV/AIDS (CD4 count < 50), Hepatitis C, COPD, and multisubstance abuse. She presented to our hospital with fevers, chest pain, and dyspnea. Her PE revealed a cachectic but comfortable appearing patient with a non-focal exam. With a concern for TB, the patient was placed in respiratory isolation. Initial work-up revealed severe anemia, an elevated WBC and Alkphos, and sputum with subsequent 2+ AFB via fluorochrome stain. Due to the patient’s clinical condition and persistent fevers a continued infectious work-up was performed. A CT revealed scattered areas of patchy lung disease, diffuse lymphadenopathy and small bowel wall thickening. An upper endoscopy was then obtained. The small bowel contained prominent and diffuse punctate white plaques. They were circumferential throughout the visualized small bowel. Plaques were approximately 1–2 mm in size (endoscopic photos available). The intervening mucosa appeared normal. Biopsies showed abundant acid fast intracellular bacilli. On hospital day #28 the sputum revealed MAC (via DNA probe). The final diagnosis was disseminated MAC infection. Disseminated MAC is often a difficult diagnosis. Descriptions of endoscopic findings of disseminated MAC are rare in the literature. The diagnosis is usually made through isolation of MAC from the blood cultures. The mean time for positive blood cultures is 24 days (1). It is known that a low CD4 count is one of the primary risk factors for MAC infection. Disseminated infection usually presents with non-specific symptoms and laboratory abnormalities. Other studies such as stool studies and CT scans can be of assistance. One study showed that 14% of disseminated MAC had small bowel wall thickening on CT scan (2). Many patients with disseminated MAC will undergo an endoscopic work up prior to a definitive diagnosis. With the era of HAART, the evaluation of HIV patients is an evolving practice. Nevertheless, endoscopic evaluation is a key component in the work up of many signs and symptoms. Several studies have evaluated the yield of upper endoscopy for Opportunistic Infections (OI) in HIV patients (3). The diagnostic yield of upper endoscopy for OI is about 25% (4).

This case provides us with the impressive visual appearance and histological findings in disseminated MAC with prominent intestinal involvement.

References
1–4 available upon request.

421

THREE BROTHERS WITH DYSPHAGIA
Sonal M. Patel, M.D., Kenneth R. Falchuk, M.D.∗. Beth Israel Deaconess Medical Center, Boston, Massachusetts.

Introduction: The purpose of this report is to describe the presentation of three adult brothers with dysphagia all of whom were ultimately diagnosed with eosinophilic esophagitis.

Case 1 - Brother number one: A 41-year-old man presented with symptoms of heartburn and intermittent dysphagia. Past medical history was notable for asthma as a child. Physical exam and laboratory data were within normal limits. An upper endoscopy revealed narrowing of the distal esophagus. Biopsies were notable for active esophagitis with marked infiltrate of eosinophils (>20 per high power field). Biopsies of the antrum were normal. He was diagnosed with eosinophilic esophagitis and is now maintained on ingested inhaled fluticasone with adequate relief in his symptoms.

Case 2 - Brother number two: A 34-year-old man is referred to our clinic by his brother for a ten-year history of intermittent dysphagia. He reports dysphagia for solids greater than liquids. He had no other past medical history and physical exam was unremarkable. Labs were notable for a white blood cell count of 6.1 with 11.5% eosinophils. Upper endoscopy revealed linear ulcers in the esophagus. Biopsies of the distal and middle esophagus revealed numerous, degranulating intraepithelial eosinophils. He was diagnosed with eosinophilic esophagitis and treated successfully with ingested inhaled fluticasone.

Case 3 - Brother number three: A 44-year-old man presented to the emergency department with a food impaction. He had been eating a hot dog when he noted he was unable to swallow the bolus. Family history was notable for two brothers with eosinophilic esophagitis. Physical exam revealed a gentleman in mildly acute discomfort. An urgent upper endoscopy was performed and the foreign body was extracted from the middle third of the esophagus. Biopsies from a repeat endoscopy following resolution of his acute symptoms revealed a predominant infiltrate of eosinophils (<40 per high power field). Treatment for eosinophilic esophagitis was initiated.

Discussion: Eosinophilic esophagitis is an emerging entity that is likely underdiagnosed in the adult population. Comparisons between the immunopathogenesis of asthma and eosinophilic esophagitis assist in elucidation of the potential hereditary component of eosinophilic esophagitis. This series of three brothers with eosinophilic esophagitis highlights potential hereditary features of the disease. This association has not been previously reported.

422

ADENOMYOMATOSIS OF THE AMPULLA OF VATER IN CHRONIC HEPATITIS C: IS THERE ANY RELATIONSHIP?

Adenomyomatosis of the ampulla of vater is a rare condition with only a few case reports in the literature. It is a benign tumor originating from connective
tissue of the ampulla of vater. The etiology is unknown. Benign neoplasms involving the extrahepatic biliary tree are extremely rare. Adenomyomatosis has been reported as the cause of bile duct obstruction, recurrent acute pancreatitis, and jaundice.

An increased frequency of adenomyomatosis of ampulla is seen in patients with familial adenomatosis polyposis syndrome. The major importance of the lesion is the possibility that it may be confused with carcinoma which would lead to unnecessary extensive surgical resection.

We are reporting two patients with Chronic hepatitis C and adenomyomatosis of the ampulla seen in our institution (see table).

In light of these findings, chronic hepatitis C patients with lesions in the periampullary region presenting with all or some of the following findings: (1) abdominal pain, (2) weight loss, (3) worsening liver function tests, (4) pancreatic duct or CBD dilatation, should have diagnostic intervention to evaluate the presence of adenomyomatosis of the ampulla of Vater. This evaluation may be best accomplished by performing ERCP with biopsies of the periampullary lesion that can undergo histopathological evaluation and grading of dysplasia if present. This should be performed before major surgical intervention to avoid unnecessary major surgical resection.

We hereby report two cases of Chronic hepatitis C and adenomyomatosis of ampulla of vater and we think there might be a causal relationship. This relationship should be confirmed by a large observational study.

**Case summaries**

<table>
<thead>
<tr>
<th>Patients and Comorbidities</th>
<th>Presenting Symptoms</th>
<th>Radiologic Findings</th>
<th>ERCP Findings</th>
<th>Endoscopic therapy</th>
<th>Histopathology</th>
<th>Management</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female, 65 yr, Chronic Hepatitis C</td>
<td>Abdominal pain, weight loss, malaise</td>
<td>Periampullary mass, stenosis of pancreatic, bile duct dilation (5cm)</td>
<td>Adenomyomatosis, mucosal tissue</td>
<td>Whipple procedure</td>
<td>No surgery</td>
<td>Recurrence occurred in 6 cases (67%), but not in our case so far.</td>
<td></td>
</tr>
<tr>
<td>Male, 51 yr, Chronic Hepatitis C, C. Cirrhosis, Diabetes</td>
<td>Abdominal pain, weight loss, malaise</td>
<td>Ampullary mass, no stenosis, normal ERC and ERP</td>
<td>Adenomyomatosis, mucosal tissue, dysplastic changes</td>
<td>Whipple procedure</td>
<td>No surgery</td>
<td>Recurrence occurred in 6 cases (67%), but not in our case so far.</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion:** Heterotopic mesenteric ossification may be considered as one of the differential diagnosis in the intestinal obstruction, especially in the male (figure 1).

---

**HETEROTOPIC MESENTERIC OSSIFICATION (INTRA-ABDOMINAL MYOSITIS OSSIFICANS)**

**Peter Chen, M.D.**, **Jian-Chiou Su, M.D.**, **Man-Kuang Chang, M.D.**, **Su-Wen Ke, Shao-Tan Liew, M.D.** Central-Medicine Hospital Group, Taipei and Kaung-Tien General Hospital, Taichung, Taiwan.

**Background:** Heterotopic ossification (also referred to as myositis ossificans) is an uncommon condition characterised by new bone formation in a tissue which does not normally undergo ossification. Heterotopic ossification in the abdomen, particularly in the mesentery (mesenteritis ossificans) is more uncommon. We report a case of heterotopic mesenteric ossification, occurring in a young man, presenting with intestinal obstruction.

**Case Report:** A 34-years-old Asian male presented with pain in RLQ, gradually migrating to the whole abdomen 3 days prior to admission. He had history of alcoholism for 10 years without previous history of acute pancreatitis, abdominal injury and surgery. On physical examination, the abdomen was soft, distended with diffuse tenderness and hyperactive bowel sounds. CT scan of abdomen showed soft tissue density over proximal ascending colon. Colonoscopy was attempted but failed. LGI series revealed segmental narrowing in ascending colon. On exploratory laparotomy, a gray-yellowish firm mass, 7.3 × 6.1 × 4.2 cm was found in the mesentery near ascending colon, adherent to surrounding structures. Adhesiolysis, right hemicolectomy and ileo-colic anastomosis were performed. Pathology showed fibrous septa of variable thickening that entrapped bone, adipose tissue, nerves and vessels. On the 9th postoperative day, he developed enterocutaneous fistula which healed one month later with conservative treatment. Otherwise, the post-operative course was uneventful. No recurrence noted after one year of follow-up.

**Discussion:** Nine cases have been previously reported in the English literature. Age varied from 43 to 80 years (mean 59.56 ± 14.82). Our case was younger than any of those reported. All cases, including ours, were exclusively male. Six of the nine previously reported cases (67%) were associated with previous abdominal surgery, two (22%) with abdominal malignancy and one (11%) with pancreatitis. None of them was found in our case. Enterocutaneous fistula developed in 3 cases (33%), as in our case. Post-operative recurrence occurred in 6 cases (67%), but not in our case so far.

**Conclusion:** Heterotopic mesenteric ossification may be considered as one of the differential diagnosis in the intestinal obstruction, especially in the male (figure 1).

---

**BALL-VALVE BEZOAR COMPLICATING BARIATRIC SURGERY**

**Greg Guthrie, M.D., Roger Montenegro, M.D., Mary Jo Atten, M.D., Benjamin T. Go, M.D., Bashar M. Attar, M.D., F.A.C.G.*,” John H. Stroger Hospital of Cook County and Rush Medical College, Chicago, Illinois.**

Gastric bezoars are rare, found in < 1% of patients undergoing upper endoscopy. However, in patients with gastric motility and/or anatomic abnormalities, the incidence may be much higher. To date there have been few reports of gastric bezoar as a complication of bariatric surgery.

A 50 year-old female with a history of vertical banded gastroplasty 5 years earlier presented with 3 months of nausea, vomiting, weight loss and abdominal pain. At EGD the patient was found to have a 2 × 4 cm concretion obstructing the surgical opening of the gastric pouch. This concretion was almost completely obstructing the opening to the gastric pouch and in effect formed a ‘ball-valve’ falling back into the opening if displaced. Due to its size, this bezoar could not be removed in one piece. It was subsequently fragmented by cold snare, removed piecemeal, and found to be composed in large part of cellophane-like material. The patient had complete resolution.
of her symptoms. On further questioning she admitted to eating tripe or cow stomach frequently.

Nausea and vomiting are common symptoms in the immediate post-operative period after bariatric surgery. However, these symptoms resolve over time. The return of these symptoms associated with accelerated weight loss should prompt further investigation. Gastric bezoars are well documented complications of vagotomy and antrectomy with pyloroplasty. The composition of bezoars can be of any indigestible foreign material including plant material, hair, medications, and plastic or paper products. It is unclear if the incidence of bezoar formation is greater after bariatric surgery. Despite the dramatic increase in bariatric surgery over the past few years, relatively few cases of bezoars have been reported in the literature. This case illustrates the propensity for gastric bezoar formation in the post-gastrostomy proximal gastric pouch in a patient ingesting large amounts of indigestible animal matter.

425

VOLVULUS OF SMALL INTESTINE PRESENTING WITH ABDOMINAL PAIN AND MASS

A 61 year old White Female presented to office with Left sided abdominal discomfort which is ongoing for couple of months getting to the point, it is kind of constant. She was ordered for Out Patient workup. CT Scan of abdomen showed mass on Left side of abdomen, encasing small intestine suggesting lymphoma or malignancy. She also has on-off constipation problem. No weight loss. No Nausea or Vomiting. No Blood in the stools. No Urinary symptoms. No fever or chills. Past History of generalized lymphadenopathy for which she had Biopsy done which showed nonspecific lymphadenitis. Other Past Medical History includes Depression. Physical Exam is Unremarkable except for vague abdominal discomfort in Left sided abdomen.

Hepatic Hereditary Hemorrhagic Telangiectasia (HHT), also known as Osler-Weber-Rendu disease, is an autosomal dominant disorder characterized by angiodysplasia (arteriovenous malformations) involving multiple organs. HHT involves the skin, mucous membranes, lungs, liver, and brain. The clinical triad includes recurrent epistaxis, mucocutaneous telangiectasias, and heritable transmission. Hepatic involvement exhibits diverse clinical presentations. This case illustrates HHT manifest as high output cardiac failure secondary to liver involvement.

Case: A 43 year-old woman whose mother was recently diagnosed with HHT presented with recurrent epistaxis, orthopenia, abdominal distension, right upper quadrant pain, non-productive cough, and lower extremity edema. She denied hematemesis, hematochezia, or chest pain. Physical examination revealed peripheral edema, jugulovenous distention, ascites, and pulsatile hepatomegaly. Lab evaluation, echocardiogram, and cardiac catheterization diagnosed high output cardiac failure, and ruled out hyperthyroidism, anemia, or intra-cardiac shunt. Imaging revealed ascites, multinodular hepatic hyperplasia, pulmonary arteriovenous malformations, and prominent hepatic arteriovenous shunting. Paracentesis revealed spontaneous bacterial peritonitis. The diagnosis of HHT with hepatic involvement causing arteriovenous shunting and high output cardiac failure was made based on the liver findings, family history, and recurrent epistaxis. The patient responded to medical therapy for congestive heart failure with hepatic decompensation.

Discussion: HHT represents a rare condition characterized by multiple organ angiodysplasia. Non-hepatic features may include migraine, stroke, recurrent gastrointestinal bleeding, cyanosis, and mucocutaneous bleeding. Hepatic involvement occurs in 8–31% of patients. Symptomatology varies with shunt size and type, but may include portal hypertension, biliary disease, and high output cardiac failure. A hyperdynamic state may result from significant arteriovenous shunting, portovenous shunting, or both. In this case, HHT manifested as high output cardiac failure, probable nodular hyperplasia of the liver, and hepatic decompensation. Workup of sudden high output cardiac failure with concomitant hepatic disease should include HHT in the differential diagnosis.

428

GIANT ULCERATED COLONIC LIPOMA MIMICKING MALIGNANCY

Lipomas of the colon are rare. The majority remain asymptomatic, although large (>2 cm) colonic lipomas may present with symptoms such as pain,
obstruction, and bleeding. Giant lipomas of the colon may be misinterpreted as malignant masses. A 54-year-old female was referred for colonoscopy for evaluation of a 2-month history of hematochezia, intermittent diarrhea and right-sided abdominal pain, associated with weight loss. Colonoscopy showed a large ulcerated, obstructing mass in the ascending colon. Abdominal CT scan revealed intussusception within the right colon adjacent to a lipomatous-appearing mass. The patient underwent a right hemicolecetomy and histopathology revealed an ulcerated submucosal lipoma measuring 6 × 3.5 × 3 cm. The patient did well postoperatively.

A lipoma may mimic carcinoma on colonoscopy and this alone warrants surgical removal. Colonic lipomas arise in the submucosa but occasionally extend into the muscularis propria. Endosonographic demonstration that the muscularis propria is not involved may allow for safe endoscopic resection after elevating the lesion with submucosal injection of saline. Large size (>2 cm), thick stalk, and involvement of muscularis propria are features associated with increased risk of perforation by endoscopic resection. When colonoscopy reveals a large or ulcerating mass that is suspicious for malignancy, surgical resection is recommended even if its composition is lipomatous on imaging studies.

AN UNUSUAL PRESENTATION OF WHIPPLE’S DISEASE
John Coombes, M.D., David Gatoj, M.D.*. University of Colorado Health Sciences Center and Department of Veterans Affairs Medical Center, Denver, Colorado.

Whipple’s disease is an uncommon cause of malabsorption due to Tropheryma whipplei infection. The common clinical manifestations include arthralgias, abdominal pain, diarrhea, and weight loss. This vignette describes an unusual presentation of this rare disorder. A 45-year-old white male presented with one year of intermittent, crampy, epigastric abdominal pain. There was no history of emesis or diarrhea despite a 30-pound weight loss, and no rheumatologic or neurologic complaints. Abdominal exam revealed only mild epigastric tenderness. Pertinent laboratories included: hct 30.2, mcv 75, albumin 2.9, with normal lipase and LFTs. FOBT and HIV tests were negative. Abdominal CT showed patchy thickening of the small intestine (Fig 1a) and <1 cm mesenteric lymphadenopathy. The differential diagnosis included lymphoma, infection, inflammation, and ischemia. Endoscopy was performed which revealed an edematous jejunum with patchy leukoplakia (Fig 1b). Biopsy specimens from the areas of patchy leukoplakia demonstrated foamy macrophages with strong PAS-positivity (Fig 2a). AFB stains for mycobacterial infection were negative. Whipple’s disease was suspected and additional specimens were sent for electron microscopy and PCR. Electron microscopy demonstrated the classical Whipple’s bacilli (Fig 2b), and PCR confirmed the diagnosis of Tropheryma whipplei infection. The patient was treated with 2 weeks of IV ceftiraxone, followed by 12 months of twice daily trimethoprim–sulfoxazole. At 6 weeks follow up, the patient was gaining weight and had resolution of his symptoms. This case highlights an uncommon presentation of an uncommon disease utilizing electron microscopy and tissue based PCR to establish the correct diagnosis.

GASTROINTESTINAL AUTONOMIC NERVE TUMOR AS A RARE SOURCE OF UPPER GI BLEEDING: CLINICAL CASE AND REVIEW OF THE LITERATURE

To discuss a rare source of upper gastrointestinal bleeding from a Gastrointestinal Autonomic Nerve Tumor. A 72-year-old man with no significant gastrointestinal history was admitted for a possible myocardial infarct. During his hospitalization the patient developed upper gastrointestinal bleeding with a significant drop in his hemoglobin from 10.4 gm/dl to 7.4 gm/dl. An emergent upper endoscopy was performed revealing a large ulcerated submucosal mass at the body of the stomach that was actively bleeding. After an unsuccessful attempt at controlling the bleeding, the patient was taken to the operating room for resection. The mass measured 7 × 7 × 5 cm with a 1-cm-ulcerated crater extending 7 mm into the tumor; the serosa was intact. Histology revealed a gastric spindle cell mass arranged in a whorling pattern with less than 2 mitoses per high power field. Immunohistochemistry revealed that the mass was Vimentin, and S-100 protein positive with a strongly positive glial fibrillary acidic protein (GFAP). C-kit, CD34, Smooth Muscle Actin, Melanin-A staining were negative. These results were consistent with a Gastrointestinal Autonomic Nerve Tumor (GANT).

GANT was first described by Herrera et al. in 1984 as a distinct entity from gastrointestinal stromal tumors. They are derived from myenteric, or autonomic neural plexuses and have also been called Plexosarcomas. This is a rare tumor that is usually confined to the muscular wall of the stomach and small bowel. Grossly, they are well demarcated, not encapsulated, uniloculated or multinodular soft tissue masses that may ulcerate the overlying mucosa, or extend beyond the serosal surface into the surrounding mesenteric fat and surrounding structures. They may present as an enlarging abdominal mass with abdominal fullness and pain, iron deficiency anemia, or with gastrointestinal bleeding. On histology the tumor cells have a spindled growth pattern arranged in a fasciculated or whorled configuration. Immunoperoxidase staining is positive for vimentin, neuron-specific enolase, GFAP and variable for S-100. GANT are more aggressive when compared with other histological similar tumors with recurrence and metastasis to the liver within the first year of diagnosis. Studies with chemotherapy have resulted in mixed outcomes and require further long-term evaluation.

THE USE OF A COATED ESOPHAGEAL STENT IN THE MANAGEMENT OF COLONIC ANASTOMOTIC LEAK
Thomas A. Schleppi, M.D., Scott Tener, M.D., F.A.C.G., Joel Horowitz, M.D., K. Ishura, M.D., F.A.C.G.*. Mount Sinai School of Medicine, Brooklyn, New York.

Increased screening for colon cancer has led to early identification of tumors amenable to surgical intervention. Anastomotic leakage from the line...
of resection is a known and feared complication requiring repeat laparotomy. We present a case of an anastomotic leak treated with a novel, non-invasive approach: stent placement. A 52-year-old gentleman, immediately status-post low anterior resection for colon cancer recurrence, presented with complaints abdominal pain and nausea. After being found to have colon cancer four years earlier, he had undergone local resection. Three weeks earlier, an anastomotic recurrence was found and the patient underwent left hemicolectomy. The patient was on no medications at the time of admission. There was no family history of colon cancer. His social history was significant for smoking a half pack of cigarettes per day for 25 years. On admission he had a fever of 39°C and pulse of 90 beats/min and blood pressure was 110/65. Physical exam revealed abdominal distention, a midline scar and epigastric tenderness. There was no guarding, rebound or organomegaly. Bowel sounds were hyperactive. Rectal exam had loose brown stool, guaiac negative. Laboratory examination showed a white cell count of 19,000, 80% neutrophils. Abdominal/pelvic CT scan, with oral contrast, revealed a large collection within the pelvis measuring 14.6 cm × 5.7 cm. Contrast was seen within the collection, consistent with anastomotic leak. Free air was also noted in the abdomen. The patient was started on broad spectrum intravenous antibiotics and a surgical repair of the anastomotic leak was recommended. However, the patient refused surgery. A CT guided pigtail catheter was placed into the abscess and feces accumulated in the drainage bag. A colonoscopy was performed and the anastomotic leak was identified at 15 cm. A 21 cm coated polyflex esophageal stent was placed over the leak. Within 24 hours, there was no further drainage of stool. One week later the stent dislodged and passed with a bowel movement. Repeat CT scan demonstrated resolution of the pelvic collection and no leakage of contrast. The patient was discharged home in good condition and remained well. This is the first case reported of a colonic anastomotic leak treated successfully with a coated esophageal stent.

In this case, as with all cases of GI bleeding, it is important to consider all possibilities and to continue to evaluate the patient in a dynamic manner with the realization that Occam’s razor may not always apply.

432
SIR OCCAM IT’S DOUBLE JEOPARDY: HEMOSUCCUS PANCREATICUS ASSOCIATED WITH DIEULAFYO’S LESION OF THE DUODENAL BULB
Robert A. Shaffer, M.D.* Vivek Raj, M.D. University of Arkansas for Medical Sciences, Little Rock, Arkansas.

We describe a patient with two obscure sources of bleeding at once.

Case report: A 73-year-old African American man with a hx of alcoholism and chronic pancreatitis (CP) was transferred to our institution with the diagnosis of UGI bleeding with large transfusion requirement. The patient had been admitted to an outside hospital with a hgb of 5.3 after complaining of mid-epigastric abdominal pain and melena occurring for 1 month. EGD was performed twice prior to transfer along with sfbt and colonoscopy that failed to reveal a source of bleeding. A CT of the abdomen revealed a dilated PD with ‘chain of lakes’ and CP. Repeat EGD was performed at our institution and revealed an actively bleeding Dieulafoy’s lesion (DL) in the region of the posterior duodenal bulb that was treated with injections of epinephrine and gold probe application with good hemostasis. The next week he again experienced melena and was admitted with an hgb of 4. EGD was performed for the fourth time finding fresh blood in the duodenal bulb and ulceration from the previous endoscopic therapy. A side viewing ERCP scope revealed bright red blood intermittently welling up from the ampulla admixed with bile.[Figure1] Embolization was unsuccessful and the patient was not an operative candidate. Post-mortem examination revealed a 2 cm hemorrhagic pseudocyst.

Discussion: This is the first case described of a bleeding DL in association with HP. In addition, this case highlights the difficulty and pitfalls in obtaining a diagnosis in HP emphasizing the need for a high index of suspicion in patients with obscure bleeding. Occam’s razor is a logical principle attributed to the mediaeval philosopher William of Occam. The principle states that, “One should not increase, beyond what is necessary, the number of entities required to explain anything.” It underlies all scientific modeling and theory building.

A 65 year-old man presented for evaluation of oily diarrhea and weight loss. Previous evaluation was nondiagnostic. He had been treated 14 years earlier for locally advanced cholangiocarcinoma with palliative biliary bypass, chemotherapy and local radiotherapy with complete response. The patient also had been treated with surgery alone for right breast cancer with invasion of the skin 5 years earlier and had essential hypertension. He was on chronic antibiotics after repair of an infected incisional hernia a year-and-a-half before presentation. Fecal fat was 168 g/day, and small bowel biopsies and fluid sampling for bacterial colony counts were nondiagnostic. Rotating antibiotics did not help. He soonafter developed nausea and epigastric pain radiating to the back. He had no personal or familial history of pancreatic disease, and he rarely drank alcohol. Diarrhea responded completely to pancreatic enzymes, but some pain and nausea persisted. CT scan showed pancreatic atrophy (which could be traced back 6 years on previous imaging) as well as a distended stomach; CA19-9 was elevated to 296 u/ml. EUS showed a markedly atrophic pancreatic body and tail and a mottled, hypervascular pancreatic head; EUS-FNA of the head was diagnostic for adenocarcinoma. PET scan demonstrated abnormal FDG-uptake in the pancreatic head only, and the patient was referred for surgical resection. The entire right retroperitoneal area including pancreatic head, duodenum, porta hepatitis, major vasculature and right colon was enmeshed within dense fibrosis, necessitating extensive dissection as well as right hemicolectomy, and preventing attempt at curative resection. Biopsies showed carcinoma in the pancreatic head but not elsewhere. Palliative gastroenteric bypass was performed for gastroparetic symptoms. The patient developed multiple postoperative complications including bleeding, enterocutaneous fistulization and infections, and subsequent imaging suggested new liver metastases. He never left the hospital and died of sepsis on postoperative day 58. Radiation pancreatitis is a rare cause of chronic pancreatitis, and cancer can occur in this setting. Therapy for this disease may be quite difficult. Our patient presented initially with malabsorption symptoms and had a rapidly progressive course.
A 64-year-old white female presented with a 3-day history of symptoms suggestive of pyelonephritis. An ultrasound abdomen was performed and was reported to have multiple small suspicious looking lesions in the liver. Her past medical history was significant for GERD and depression. Her medications included omeprazole and trazodone. She was also on hormone replacement therapy with conjugated estrogens (Prempro). Physical examination was unremarkable. Laboratory studies showed a normal metabolic panel and normal hematological count. Liver function tests revealed: albumin 3.9 g/dl; total protein 6.6 g/dl; total bilirubin 0.5 mg/dl; alkaline phosphatase 82 (20–125 U/L); AST 32 (2–35 U/L); ALT 31 (2–40 U/L). Alpha feto-protein and CEA levels were normal. A follow-up computerized tomographic scan of the liver showed innumerable hypodense lesions up to 2 cm. A subsequent CT-guided liver biopsy was negative for malignancy. A repeat CT scan of abdomen three months later remained unchanged. In view of normal liver biopsy, a normal PET scan, these findings were attributed to peliosis hepatis. Follow-up CT scan one year later remained unchanged. Discussion: Peliosis is characterized on microscopic examination by cystic dilated sinusoids filled with red blood cells and bound by cords of liver cells. Currently, the most frequent cause is therapy with androgenic/anabolic steroids and estrogens. Our patient was on hormone replacement therapy (prempro) for several years up until the presentation. She was advised to discontinue prempro since regression has been described after discontinuation of the offending agent. Radiographic findings are non-specific and can resemble other hepatic processes such as cysts, abscesses, metastases and hemangiomatosis. Knowledge of the imaging features is important since early diagnosis can avoid unnecessary investigations and interventions as happened in this case.
was found to have extrinsic compression of the proximal/mid portion of the esophagus obstructing nearly all of the lumen. A CT scan of the chest revealed an aberrant right subclavian artery compressing the esophagus at the T3 level. A right subclavian bypass with anastomosis to the right common carotid artery was performed. Two days post-surgery the patient was able to eat solid foods. Though developmental anomalies of the aortic root are not uncommon they are usually asymptomatic. In the rare instances in which they cause dysphagia, symptoms usually present in adulthood. This case of dysphagia lusoria is unusual in that the patient had symptoms from an aberrant subclavian artery and symptoms remained undiagnosed for decades. In addition, the symptoms began at unusually young age. After surgery, the patient remained asymptomatic.

438

AN UNUSUAL CASE OF ADULT SIGMOID INTUSSUSCEPTION SECONDARY TO NEUROFIBROMATOSIS OF THE COLON
Herve C. Boucard, M.D., Neil Nagaria, M.D., Robert Richards, M.D., F.A.C.G.*. UMDNJ, New Jersey Medical School, Newark, New Jersey.

Adult colonic intussusception is rare. Over 65% of cases are secondary to neoplasms. Neurofibromatosis (NF) has gastrointestinal involvement in 1/3 of cases and only 5% of those are symptomatic. Lesions are mainly confined to the stomach and the jejunum and symptoms reported usually include occult bleeding or obstruction. We report a case of NF leading to intussusception of the sigmoid colon.

A 52-year-old man with NF, type II, underwent acoustic neuroma resection. The hospital course was complicated by abdominal distention approximately 1 week after surgery. Laboratory studies revealed normal WBC and electrolytes. The vital signs were normal. The abdomen was distended, mildly tympanic but not tender. The bowel sounds were diminished. Based on abdominal X-ray, a pseudo-obstruction was suspected and the patient was maintained nil per os, and given intravenous fluids and electrolytes. The symptoms did not improve. Digital examination revealed a firm mass 5cm from the anal verge with abundant mucus, which tested positive for occult blood. A computed tomography of the abdomen showed a dilated proximal colon with colo-colic intussusception in the left pelvis. A flexible sigmoidoscopy was performed. A bulging purplish mass was found in the recto-colon with colo-colic intussusception in the left pelvis. A filling the entire lumen. The mass could easily be displaced distally but would regain its original position despite repeated maneuvers. The sigmoidoscope could not be advanced past the lesion. Laparotomy with sigmoid resection was then performed confirming the presence of intussusception of the sigmoid colon. The lead point of the intussusception was a 6 cm mass. Histology of the mass revealed a plexiform schwannoma, predominantly submucosal and extending into the muscularis propria. The abdominal distention resolved after surgery. This case is unique because of the location and etiology of the intussusception. NF has rarely been reported as the cause of intussusception in adults. In a patient with NF and gastrointestinal obstruction, a high degree of suspicion should be kept for intussusception.

439

ACUTE DIRECT HYPERBILIRUBINEMIA FROM TRAUMATIC COMMON BILE DUCT INJURY
Khiet Ngo, D.O., Karen De La Cruz, M.D., Rosemary Page, D.O., George Yanni, M.D., John McCracken, M.D., Manoj Shah, M.D.*. Loma Linda University School of Medicine, Loma Linda, California.

We report a child who sustained common bile duct injury (CBD) from blunt abdominal trauma. A retrospective chart review was completed. A 7 year-old female was in a rear seat wearing a lap belt when her vehicle struck a wall. She was admitted to the hospital where the physical examination was remarkable for a mildly tender ecchymotic band traversing the upper abdomen. A CT scan demonstrated multiple small contusions and lacerations in the liver, and pancreatic head contusion. A head CT was normal. She recovered with conservative management.

Two weeks after the accident she presented with epigastric pain and non-bilious vomiting. She was found to have elevated liver enzymes and direct bilirubin. Evaluation for infectious and autoimmune causes of hepatitis was unrevealing. A follow up CT demonstrated resolution of the previous abdominal injuries. Her symptoms resolved with conservative management.

Six weeks after the accident she was readmitted for a one-day history of worsening jaundice. She denied nausea, vomiting, abdominal pain, or fever. A Magnetic Resonant Cholangi Pancreatography (MRCP) revealed a mildly dilated CBD with narrowing in the region of the ampulla of Vater. An upper endoscopy done to evaluate for hemobilia showed an edematous ampulla and bile flow without blood. An Endoscopic Retrograde Cholangi Pancreatography (ERCP) revealed a 1cm long smoothly tapering stricture of the distal CBD with mild proximal dilatation. A stent was placed in the CBD. Intrahepatic ducts were normal. The pancreatic duct was partially filled and appeared small but unobstructed. Her liver enzymes and bilirubin normalized following stent placement.

Patients suffering blunt abdominal trauma are at risk for pancreatic and hepatobiliary injury. MRCP and/or ERCP should be considered as part of the evaluation for direct hyperbilirubinemia with or without elevated liver enzymes in patients with a history of abdominal trauma to look for CBD injury.

LABORATORY RESULTS

<table>
<thead>
<tr>
<th>Week(s) Post Trauma</th>
<th>Normal High Values</th>
<th>1</th>
<th>3</th>
<th>7 (stent placed)</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>琛 (U/L)</td>
<td>30/33</td>
<td>105/171</td>
<td>286/366</td>
<td>125/146</td>
<td>145/171</td>
</tr>
<tr>
<td>Total/Bilirubin (mg/dL)</td>
<td>12.0/4</td>
<td>0.10/1</td>
<td>4.42/6</td>
<td>3.41/9</td>
<td>7.56/4</td>
</tr>
<tr>
<td>Amilase/Lipase (U/L)</td>
<td>115/45</td>
<td>146/166</td>
<td>NA/20</td>
<td>NA</td>
<td>78/48</td>
</tr>
</tbody>
</table>

440

GASTRIC OUTLET OBSTRUCTION (GOO) DUE TO DISPLACED PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) TUBE
Herve C. Boucard, M.D., Nirav N. Patel, M.D., Situ Chokhavatia, M.D., F.A.C.G.*. UMDNJ New Jersey Medical School, Newark, New Jersey.

PEG tube placement is widely used for enteral feeding. Major procedural complications are uncommon.

An 84 year-old female nursing home resident with multiple medical problems had been receiving nutritional support for 8 months via a PEG tube following a cerebrovascular accident. When the PEG tube was accidentally pulled out, the nursing home staff promptly replaced it with a 20 Fr Foley catheter. No immediate complications were noted and tube feedings were continued successfully.

Six weeks later, the patient developed abdominal cramping, mild bloating and frequent vomiting. No fever or chills were noted. Physical exam revealed normal bowel sounds; no abdominal distention, tenderness or guarding. The gastrostomy site had no ulcers or discharge. The external end of the Foley catheter was noted to have migrated and was close to the abdominal wall. The tube could be pulled back with minimal tension but upon release it recoiled back towards the abdominal wall. Abdominal X-ray revealed normal bowel gas pattern without distention or air fluid levels. The feedings were suspended. EGD revealed normal mucosa around the gastrostomy site. The Foley tube was seen to be coiled and had migrated beyond the pylorus into the duodenum. Upon intubation of the pylorus, the balloon was noted to be beyond the duodenal bulb and was still inflated. The balloon was deflated and the catheter was removed and replaced with a 22 Fr gastrostomy replacement tube. Tube feedings were then resumed without complication.

Migration of feeding tubes has been reported and can cause GOO and intestinal obstruction. Ballooned tip tubes i.e. Foley catheter are often used as replacement PEG tubes and are prone to migration. Health care providers and family members of incapacitated patients with feeding tubes need to
maintain a high degree of suspicion for this complication when difficulties in tube feeding are encountered.

**441**

**CHOLESTATIC HERPES SIMPLEX HEPATITIS IN PREGNANCY, A CHALLENGE FOR DIAGNOSIS AND TREATMENT!**


Acute hepatitis is a rare complication of acute herpetic infection. It is encountered infrequently making it a challenging diagnosis. A 25 year old pre-school teacher, 21 weeks pregnant in her second pregnancy, presented with one week history of low grade fever, pharyngitis, and maculopapular rash on her face, neck and trunk. She was taking prenatal vitamins only. The fever resolved in a week but her rash persisted, became more extensive and pruritic. She developed jaundice a week later with a swollen chapped lips. Her previous pregnancy was uneventful. Initial lab work up revealed cholestatic jaundice and elevated liver enzymes. Blood, throat cultures and monospot test were negative. Serologies for Viral hepatitis including hepatitis E, anti-streptolysin O, rubella, HIV, cytomegalovirus, parvovirus, toxoplasma, histoplasma, coccidioides, blastomyces were all negative. Autoimmune hepatitis, Lupus work up, Anti mitochondrial antibody, Hemoschromatosis, and Wilson's disease screening tests were also negative. However Herpes Simplex Virus IGM was positive. Skin biopsy findings were compatible with Erythema multiforme. Liver biopsy was deferred considering the patient's risk of bleeding and her pregnant status. Treatment was initiated with intravenous acyclovir and vitamin K. The liver enzymes significantly improved and her coagulopathy resolved. Both the jaundice and the rash improved by using bile acid binders and ursodiol. After one week of intravenous acyclovir, patient switched to oral valacyclovir and discharged home.

Acute Hepatitis is an unusual manifestation of herpes virus infection. Mortality rates associated with herpes simplex virus hepatitis are high, so early diagnosis and treatment with acyclovir may produce a favorable outcome.

**442**

**INTERFERON THERAPY IN A PATIENT WITH MULTIPLE AUTOIMMUNE DISORDERS- A CASE ILLUSTRATING THE SALIENT FEATURES OF MANAGEMENT OF CHRONIC HCV IN THIS SETTING**


**Introduction:** Autoimmune diseases are considered to be a relative contraindication to treatment of HCV with Interferon. We report the case of a 24 year old female with HCV who was suffering from Rheumatoid Arthritis and Autoimmune Idiopathic Thrombocytopenia. She was treated with Interferon Alpha 2-B. The salient features of such intervention are discussed along with the patient's course.

**Case Report:** A 24 year old female, a known case of seronegative rheumatoid arthritis with relapsing and remitting course for the last 6 years presented with bruises. She was found to have Autoimmune Idiopathic Thrombocytopenia and was managed with steroids and occasional platelet transfusions. At this time 4 years ago she was negative for HCV and HBV. She remained stable on steroids till about one year ago when she relapsed with severe thrombocytopenia (platelet count of 8-30000). She was managed with platelet concentrates and anti D immunoglobulins. She underwent splenectomy and remained stable afterwards with improvement of platelet count. Few months later she was found to have abnormal liver enzymes and work-up revealed that she had Chronic Hepatitis C with a positive PCR and an untypable genotype. Liver biopsy was done that revealed a necroinflammatory score of 9/18 and fibrosis of 0/16. She was started on Interferon and Ribavarin. During follow-up, her platelet count remained stable. Her arthritis flared up but responded to oral steroids without any effect on ALT/AST. PCR after six months revealed undetectable HCV RNA.

**Conclusion:** 1) Patients with chronic HCV and autoimmune disorders may be managed with antiviral therapy comprising Interferon. 2) Careful patient selection and monitoring during treatment are essential to prevent Interferon related problems. 3) Flare-up of autoimmune disorders during treatment may be managed with judicious steroid use or immunosuppression.

**443**

**METASTATIC SIGNET RING CARCINOMA OF THE COLON IN A PATIENT WITH CROHN’S DISEASE (CD) DIAGNOSED BY EUS-GUIDED FNA**

Brad E. Maltz, M.D., David A. Schwartz, M.D.*. Vanderbilt University Medical Center, Nashville, Tennessee.

**Background:** Patients with ulcerative colitis and Crohn’s Colitis have an increased risk for developing colorectal carcinoma. Histologically this is usually adenocarcinoma. Herein we report a patient with a seven year history of pan-intestinal Crohn’s disease who presented with widely metastatic signet ring carcinoma of the colon diagnosed primarily by EUS guided FNA of a lymph node.

**Case Report:** A 35 year old man transferred from community hospital with chief complaint of persistent anorexia, early satiety and weight loss. He had been diagnostosed with Crohn’s disease seven years earlier and had multiple exacerbations requiring hospitalization and corticosteroids. Over the last three months, he had lost 30 pounds, secondary to early satiety. An abdominal xray revealed a markedly dilated stomach. A Computed Axial Tomography scan of the colon demonstrated bulky intra-abdominal adenopathy and ascites. An EGD was performed first and revealed thickened mucosa and a polypoid mass in the body of the stomach. However, no obstructing lesion was appreciated. Biopsies of the mass were consistent with chronic inflammation. No dysplasia was identified. Endoscopic ultrasound (EUS) was then performed to evaluate the adenopathy seen on CT. EUS demonstrated a large amount of ascites and bulky celiac adenopathy. An EUS guided FNA of the celiac node was performed and ascitic fluid was collected through the stomach wall. Both specimens revealed signet ring type adenocarcinoma.

Colonoscopy was then performed and a stricture was identified at 60 cm, biopsy of this lesion confirmed signet ring cell carcinoma of the colon.

**Conclusion:** Signet ring cell type carcinoma of the colon is a rare malignancy. This is the 7th report in the literature associated with Inflammatory Bowel Disease and the 1st to be diagnosed by EUS guided FNA.

**444**

**SARCOIDOSIS MASQUERADING AS PANCREATIC CANCER**

Kamil Obideen, M.D.*, Qiang Cai, M.D., Daniel Sims, M.D. Emory University School of Medicine, Atlanta, Georgia.

Sarcoidosis of the pancreas is a rare disease. Its clinical presentation is often similar to pancreatic cancer. 49-year-old African American female referred to Surgery clinic for possible surgical resection of pancreatic head mass that was incidentally discovered on Computed Tomography scan of the abdomen, which was done in the emergency room after a motor vehicle accident.Before presentation she was complaining of mild intermittent itching and abdominal discomfort, she was otherwise healthy. Physical examination was completely normal. Her laboratory studies were remarkable for alkaline phosph of: 1040, Total Bilirubin 1.5, ALT 237, AST 206, and CARB 19–9.130, the reminder of her studies was normal. Abdominal CT scan showed (figure 1) pancreatic head mass encasing the celiac artery. ERCP was performed and revealed dilated intrahepatic ducts with stricture in the Hilum, Stent was placed and brushings were negative. As the patient was not surgical candidate repeated CT with biopsy was performed and the biopsy was negative. PET scan was consistent with metastatic pancreatic cancer; the patient had Laparoscopic exploration which showed very hard head of the pancreas, the procedure was complicated with bleeding from the pancreas after...
laparoscopic biopsy and converted to laparotomy with abdominal exploration and open biopsy of the hepatic hilum lymph nodes, wedge biopsy of the liver with hemostatic suture of the pancreas. All pathology returned as chronic granulomatous inflammation with non-caseating granuloma[figure 1]; these findings were consistent with Sarcoïdosis versus granulomatous infection. All tissue cultures (Fungal and Bacterial) with AFB stain were negative. The patient had normal chest CT scan, negative PPD, normal Bronchoscopy. The patient was started on steroids, repeated cholangiogram was normal and stent was removed, clinically she is asymptomatic and still doing well eight months after the diagnosis. This case illustrates that sarcoïdosis may present as metastasized pancreatic cancer. with increasing availability of radiologic tests, this can be detected as incidental finding; in this case tissue diagnosis is mandatory[figure 1]

445

CLINICAL AND HISTOLOGIC IMPROVEMENT OF ENTEROPATHY ASSOCIATED WITH COMMON VARIABLE IMMUNODEFICIENCY WITH BUDENOSIDE THERAPY


Common variable immunodeficiency (CVID) is an immunologic disorder characterized by defective antibody production. CVID has been associated with an enteropathy that has similarities to gluten-sensitive enteropathy with villous atrophy in the small bowel resulting in malabsorption. It does not respond to gluten avoidance and there are no proven therapies, though use of oral prednisone has been described. However, long-term immunosuppressive therapy in CVID might increase a patient's risk of infectious and systemic complications. This report describes an alternative approach to improve symptoms and histology in CVID enteropathy.

Case: A 41 year-old male with CVID presented with progressive diarrhea and weight loss, describing up to 20 steatorrheic bowel movements a day over the past year. He denied fevers, chills, hematochezia, or other systemic complaints, excepting a 30 pound weight loss. His only significant medical problem was CVID, treated with regular IV immunoglobulin (IVIG) infusions for the previous three years. The patient took no medications and denied recent travel or sick contacts. Examination showed wasting, but was otherwise normal. Labs showed evidence of malabsorption and malnutrition. All stool studies were negative. Transglutaminase Ab. was negative, but small bowel biopsy revealed villous blunting. Colonoscopy and abdominal CT scan were normal. Though empirically started on a gluten-free diet, symptoms and villous blunting persisted. The patient was diagnosed with CVID enteropathy while on IVIG, so prednisone was added to treat the enteropathy—improving both his diarrhea and villous blunting. When the prednisone was tapered below 10 mg per day, the diarrhea and villous blunting recurred. So, prednisone with oral budesonide was started. The patient was weaned off prednisone over 3 months, remaining solely on oral budesonide for the past year without recurrence of diarrhea. Prealbumin and body weight have normalized. Villous blunting has improved.

Discussion: There are limited therapeutic options for CVID enteropathy. Given the risks associated with long-term systemic steroids, this case report defines a viable treatment option. Treatment of CVID enteropathy with oral budesonide has not been previously published.

446

CLOSTRIDIUM PERFRINGENS BACTEREMIA IN A PATIENT WITH SMALL BOWEL LYMPHOMA AND MECKEL’S DIVERTICULUM

Abhinandana Anantharaju, M.D., Gulbeyaz Omeroglu, M.D., Miland Velankar, M.D., Khondker Islam, M.D.*. Loyola University Medical Center, Maywood, Illinois.

A 87 year old male with HTN, CVA, BPH, DJD, & appendectomy was admitted to the hospital with one day history of diarrhea, bilious vomiting & transient periumbilical discomfort. He denied fever, chills, NSAID use, unusual food intake or recent travel. He was on celecoxib, aspirin, & Hyzaar. The physical exam was unremarkable except for mild right lower quadrant abdominal discomfort without guarding or rebound. The lab evaluation showed mild leukocytosis, iron deficiency anemia, normal LDH & ESR. The blood culture was positive for C perfringens. The x-ray abdomen showed mildly distended small bowel loops. The CT scan of the abdomen showed small bowel wall thickening. The EGD & colonoscopy were negative. A CT scan 1 month later showed segmental thickening of the small bowel with enlarged mesenteric lymph nodes & omental infiltration suspicious for a neoplastic process. Laparotomy showed a mid ileal mass and a Meckel’s diverticulum adherent to the umbilical stalk. A partial small bowel resection with primary anastomosis & Meckel’s diverticulectomy were performed. The histopathology showed diffuse large B-cell lymphoma. A bone marrow biopsy was negative for lymphoma. The patient was referred to an Oncologist.

Discussion: Small bowel lymphomas occur in about 9% of patients with GI tract non-Hodgkin’s lymphomas (NHL). They account for up to 75% of primary GI tract lymphomas in Middle East & Mediterranean countries. The median age of patients with non-immunoproliferative small intestinal disease (non-IPSID) lymphomas is 37 yrs with male preponderance. Common presenting symptoms are abdominal pain (75%), anorexia (41%), & weight loss (34%). GI bleeding is uncommon. The non-IPSID lymphomas are usually unifocal, appearing as ulcerated, protruding, or infiltrating mass in the distal small intestine. The B-cell intestinal lymphomas are uncommon and usually low-grade. The primary treatment is usually surgical resection followed by whole-abdominal irradiation and/or chemotherapy. The 1-year survival is up to 75%. There are few reported cases of lymphoma associated with Meckel’s diverticulum especially within the Meckel’s diverticulum. C perfringens bacteremia has not been reported as an initial presenting symptom of intestinal lymphoma. There are only two case reports of C perfringens bacteremia in patients with NHL undergoing chemotherapy. Both reported cases had colonic perforation.

447

HEPATIC VENO-OCCCLUSIVE DISEASE AFTER MYLOTARG (CD 33 ANTIBODY) TREATMENT

Aman Ali, M.D., Thadeo Catacutan, M.D., Anjali Advani, M.D.*. Cleveland Clinic Foundation, Cleveland, Ohio.

Gentuzumab ozogamicin (Mylotarg<sub>TM</sub>) is a novel monoclonal antibody directed against the CD33 antigen present on myeloid leukemic blasts. It is approved for the treatment of relapsed acute myelogenous leukemia (AML) in patients greater than 60 years of age. We report a case of rapidly progressive hepatic veno-occlusive disease and fulminant hepatic failure associated with Mylotarg treatment.

A 69 year old male with relapsed AML, chronic renal failure and no previous hepatic disorder was given standard dose mylotarg treatment (9mg/m² IV on day 1). Five days later, he developed abdominal pain, vomiting, diarrhea, and low-grade fever. He also developed progressive abdominal distention and jaundice. He did not have hematemesis, melena, constipation or confusion. Physical examination revealed ascites, jaundice, absent hepatopjugular reflex, absent hepatic bruit, and no stigmata of chronic liver disease. Laboratory data were consistent with acute liver injury(Table). Ascitic fluid was transudative.
with serum ascites albumin gradient of 1.2. Hepatic vascular ultrasound demonstrated portal vein thrombosis (Figure). His clinical status continued to deteriorate and he expired due to hepatic encephalopathy despite maximal supportive therapy.

**Progressive hepatorenal dysfunction and neutropenia after Mylotarg treatment**

<table>
<thead>
<tr>
<th></th>
<th>D*1</th>
<th>D6</th>
<th>D9</th>
<th>D10</th>
<th>D11</th>
<th>D13</th>
<th>D14</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALT U/L</td>
<td>18</td>
<td>37</td>
<td>569</td>
<td>678</td>
<td>1129</td>
<td>469</td>
<td>552</td>
</tr>
<tr>
<td>ALT U/L</td>
<td>18</td>
<td>49</td>
<td>593</td>
<td>670</td>
<td>666</td>
<td>525</td>
<td>417</td>
</tr>
<tr>
<td>Alkaline Phosphatase U/L</td>
<td>64</td>
<td>81</td>
<td>111</td>
<td>99</td>
<td>96</td>
<td>70</td>
<td>64</td>
</tr>
<tr>
<td>Bile salts mg/dl</td>
<td>0.4</td>
<td>0.6</td>
<td>2.2</td>
<td>2.6</td>
<td>3.6</td>
<td>4.8</td>
<td>4.5</td>
</tr>
<tr>
<td>INR</td>
<td>1.0</td>
<td>1.1</td>
<td>1.3</td>
<td>1.4</td>
<td>1.4</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Alkaline g/dl</td>
<td>3.8</td>
<td>3.2</td>
<td>2.8</td>
<td>2.6</td>
<td>2.6</td>
<td>2.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Creatinine mg/dl</td>
<td>2.3</td>
<td>2.1</td>
<td>2.9</td>
<td>3.4</td>
<td>4.1</td>
<td>5.8</td>
<td>6.1</td>
</tr>
<tr>
<td>WBC K/uL</td>
<td>2.7</td>
<td>0.37</td>
<td>0.28</td>
<td>0.25</td>
<td>0.35</td>
<td>0.14</td>
<td>0.11</td>
</tr>
</tbody>
</table>

* D - Days after Mylotarg treatment

**SPRUE IN A PERUVIAN MALE**

Tanner J. Tridico, M.D., Nirav N. Patel, M.D., Debbie Salas-Lopez, M.D., Sita Chokavatia, M.D.*. UMDNJ- New Jersey Medical School, Newark, New Jersey.

A 54 year old man from Peru was evaluated for generalized weakness. He also reported diarrhea, nausea and vomiting, early satiety, and nonradiating epigastric abdominal pain for the past three months. This was associated with a twenty pound weight loss. He denied dysphagia, odynophagia, hematochezia, sick contacts or travel over the past year. Similar symptoms were reported one year ago and had improved with pantoprazole until three months prior to admission. The patient was cachectic, but no other physical abnormalities were noted. Lab findings revealed megaloblastic anemia (low B12, normal folate, and elevated homocysteine). Imaging studies were negative for any intraabdominal process. Stool studies were negative for infection. The differential included malignancy, infection, PUD, or an etiology affecting B12 absorption such as pernicious anemia, Crohn’s disease, or sprue. Endoscopy revealed atrophic appearing gastric mucosa, with a normal appearing duodenal mucosa. The gastric biopsies were consistent with chronic H. pylori gastritis. The duodenal biopsies revealed moderate chronic duodenitis, crypt hyperplasia, and total villous blunting which was considered diagnostic for Celiac Sprue.

While tropical sprue has been reported in persons from Peru, reports of Celiac Sprue in this population is rare. In this case the patient was not a vegan (he consumed red meat and dairy products), and was not of an ethnicity or endemic area known for high prevalence of Celiac Sprue. The infectious workup was negative. On endoscopy the duodenal mucosa appeared grossly normal. However, on biopsy the pathology showed total villous blunting. This case illustrates the lack of concordance between endoscopic and histologic findings.

**SUCCESSFUL MANAGEMENT OF ADULT HYPERTROPIC PYLORIC STENOSIS**

Felice Schnoll-Sussman, M.D.*, Dania J. Lindenberg, M.D. Weill Cornell Medical Center, New York, New York.

Whereas congenital hypertrophic pyloric stenosis (HPS) is a common condition, adult HPS is much rarer and its etiology remains unclear. The radiological features of this condition are inconsistent, and diagnoses have generally been made surgically. Treatment is largely surgical as well, with mixed results. A case is presented in which HPS in an adult is diagnosed with endoscopic ultrasound (EUS) and successfully treated with submucosal botulinum toxin (Botox) injections into the pylorus.

**History:** RD, a 23-year-old male without any significant past medical or surgical history, presented with a long history of epigastric fullness and early satiety. Twice a year he experienced a “butterfly-like” sensation in his upper abdomen followed an hour later by up to 24 hours of severe projectile vomiting. He denied a history of gastric ulcers or other abnormalities.

At upper endoscopy, there was no evidence of gastric or duodenal ulcer disease. The pylorus appeared narrowed and there was slight resistance to scope passage through the channel. A gastric emptying study confirmed significantly prolonged gastric emptying for solids, with half of the gastric contents (T1/2) clearing in 226 minutes (upper limit of normal 90 minutes). Subsequent EUS showed expansion of the 4th gastric layer of the pylorus (muscular layer), consistent with pyloric hypertrophy. Forty units of Botox were injected into the pylorus in each of 5 quadrants (200 units total). A repeat gastric emptying study performed two months later revealed normal gastric emptying (T1/2 = 64 minutes).
Conclusion: This case presents novel approaches to both diagnosis and treatment of adult HPS. We suggest that EUS may provide a highly effective approach toward diagnosing this rare yet potentially debilitating condition. Botox has been used successfully in the treatment of achalasia and anal fissures, and isolated reports describe its use in treating postoperative pyloric spasm, idiopathic gastroparesis and diabetic gastroparesis. However, its successful use in HPS has not been described. We propose that EUS and Botox injection may provide a successful nonsurgical approach toward managing this condition.

451

70 YEAR OLD WOMAN WITH WEIGHT LOSS, DERMAITIS, DIABETES MELLITUS, AND ANEMIA: A CASE OF GLUCAGONOMA


70 year old woman with a 6 month complaint of 40 lbs weight loss, increased fatigue and nonbloody, watery diarrhea. Positive review of symptoms included bloating, anorexia, depression, and mouth soreness. Past medical history was significant for new onset of diabetes and the onset of an erythematous rash on the extremities, refractory to antibiotics and steroids. Medications included glypizide and benazepril. She denied tobacco, alcohol, or IV drug abuse and denied any recent travel. Family history was negative for cancer. On physical exam, the patient’s vital signs were as follows: bp 116/54, pulse 76, weight 120 lbs, and height of 5 foot. She appeared to be comfortable, but thin. Her HEENT exam demonstrated angular chelosis, a smooth tongue, and temporal wasting. Her heart and lung exam were unremarkable. Her abdomen exam revealed positive bowel sounds and a soft nontender abdomen. Her skin revealed a desquamating rash with crusting and scaling at the peripheral borders. The rash was painful and confluent in areas on her legs. Her laboratory values revealed the following: normal chemistries except an elevated glucose at 155, WBC 6.2, platelet 289, hemoglobin 9.5, TB 0.3, INR 1.1, ALB 3.0, ESR 111. Her amylase, lipase, live enzymes, and calcium were within normal limits and her hepatitis serologies were negative. Her chest xray, abdominal xray, and a liver ultrasound were normal.

Her skin biopsies revealed superficial necrolysis with separation of the outer layers of the epidermis; perivascular infiltration with lymphocytes and histiocytes. This was consistent with necrolytic migratory erythema. Further laboratory workup revealed an elevated glucagon level at 740 as well as an elevated chromogranin A. Her C-peptide, insulin, proinsulin, gastrin, VIP, and zinc levels were all within normal range. A CT scan with contrast revealed a 1.7 x 2.8 x 3.4 cm mass in the head of the pancreas as well as a smaller body mass.

The patient underwent an endoscopic ultrasound where fine needle aspiration revealed questionable adenocarcinoma. An octreotide scan revealed increased uptake in the head of the pancreas consistent with a glucagonoma. The patient underwent a total pancreatectomy. The final pathology revealed a glucagonoma without lymph node invasion and no evidence of local metastatic disease. The patient had an uneventful postoperative course with rapid resolution of her glycermia and rash.

452

TREATMENT OF SEVERE ESOPHAGEAL CROHN’S DISEASE WITH INFLIXIMAB


Involvement of the esophagus in Crohn’s disease (CD) is relatively rare and typically associated with disease of the small and/or large intestine. Standard treatment for CD of the esophagus includes corticosteroids and proton pump inhibitors with immune modifier therapy for refractory cases. Additionally, a few case reports describing the successful use of infliximab in refractory CD of the esophagus have been published. I document the case of a patient diagnosed with severe esophageal CD treated with infliximab.

A 26-year-old male with an 18-month history of Crohn’s colitis presented with a 1-week history of chest pain on swallowing, bloody diarrhea, pain in the right elbow and fever. On physical examination, temperature was 100.6 F. with swelling and tenderness of the right elbow, which was unable to be fully extended. Endoscopy revealed multiple aphthous ulcers throughout the esophagus (Fig 1). Biopsies of the ulcers revealed severe esophagitis, ulceration and noncaseating granulomas. Colonoscopy revealed multiple aphthous ulcerations scattered throughout the colon with a normal terminal ileum. Biopsies revealed chronic inflammation and noncaseating granulomas. The patient refused treatment with corticosteroids, due to previous severe adverse effects, and infliximab, 5 mg/kg, was administered. Within 24 hours, the patient was able to both swallow and extend the elbow, without pain. Follow-up endoscopy, 2 weeks after the initial infliximab infusion, showed complete healing of the esophageal ulcers (Fig 2). The patient received an additional infliximab infusion, 6-mercaptopurine (1.5 mg/kg) and has been asymptomatic for 4 months.
UNUSUAL ABDOMINAL MASS MASQUERADING AS HEPATIC NEOPLASM

Priyanka Duggal, M.D., Katie P. Miller, M.D.*, Lance Weaver, M.D., Girija Nathan, M.D., Abhijit Kulkarni, M.D. Allegheny General Hospital, Pittsburgh, Pennsylvania.

59 year old male presented to the outpatient office with complaints of episodic periumbilical and right upper quadrant sharp pain requiring multiple ER evaluations for the last 8 years. He denied hematochezia, melena, hematemeses, weight loss, anorexia, early satiety, nausea, or vomiting. He had no dysphagia, odynophagia, reflux, change in bowel habits, jaundice, or pruritis. Work-up had included colonoscopy, revealing diverticulosis and internal hemorrhoids. CT scan at outlying hospital revealed a 3 cm hypoechoic, pedunculated non-cystic lesion in the left lobe of the liver. Ultrasound revealed a 4.3 cm hyperechoic lesion in the same region. MRI was then performed which showed the same lesion with decreased signal intensity ranging from 1% to 20%, most of which are found incidentally at autopsy. Patients may be asymptomatic, or present with non-specific abdominal pain, generalized fatigue, weight loss, and even melena. The differential diagnosis of sclerosing hemangioma includes metastatic carcinoma, hepatoma, inflammatory pseudotumor, bile duct adenoma, or even healed granulomatous lesions producing a focal scar. Sclerosing hemangiomas are characterized by extensive fibrosis with hyalinization and marked obliteration of the vascular spaces. The most important feature of sclerosing hemangioma is the presence of vascular channels which are lined by a single layer of flat endothelial cells. Fibrosis usually begins centrally and is often associated with thrombosis, hemorrhage, and infarction. On occasion, it may appear as a firm gray-white nodule when the entire lesion is sclerotic. It is important to consider sclerosing hemangioma in the differential diagnosis of a solitary liver mass as it may masquerade as a malignant neoplasm.

ISOLATED HYPERLIPASEMIA ASSOCIATED WITH HYPEREMESIS GRAVIDARUM AND PARENTERAL NUTRITION: REPORT OF TWO CASES


Isolated elevation of serum lipase with normal amylase is a rare biochemical finding that has been described in patients with malignant tumors, renal insufficiency, hypertriglyceridermia and macrolipasemia. We present two cases of hyperlipasemia associated with hyperemesis gravidarum (HG).

The patients were two African American women on their first pregnancies, without significant medical history, hospitalized for severe HG. Physical exam was unremarkable and laboratory values showed increased serum lipase levels more than three times the upper normal limit with normal serum amylase, and acute pancreatitis was suspected. The elevation persisted for more than a week after the resolution of the symptoms. Parenteral nutrition (PN) appears to be associated with further increase in serum lipase values. The first patient, a 32-year-old woman 16 weeks pregnant G1P0 was started on PN at home because of persistent nausea, vomiting, and low caloric intake. The serum lipase of 1082 U/L on admission, increased to a peak level of 3506 U/L during hospitalization with the patient on PN. After discontinuing PN and starting a liquid diet, lipase had a descending trend. The lipase values have normalized after discharge.

The second patient, a 19-year-old woman 9 weeks pregnant G1P0 presented with a serum lipase of 698 U/L, which increased to a peak level of 1491 U/L. Short term PN led to an increase in serum lipase. Subsequently the lipase level decreased with the patient on liquid diet and was reported normal on the follow-up visit.

The possibility of isolated hyperlipasemia in patients with HG should be considered to avoid unnecessary diagnostic and therapeutic procedures. It is not clear if the origin of lipase is pancreatic, perhaps due to micro lithiasis or nonpancreatic from intestinal, gastric or lingual sources. The transient nature of hyperlipasemia and the normal serum amylase level make the diagnosis of macrolipasemia less likely. Also avoidance or early discontinuation of PN can lead to a normalization of serum lipase level.
Case Report: A 50 year old female with past medical history significant for HCV, on the ninth week of pegylated IFN-α therapy, presented to the emergency room with high fever, fatigue and throat pain. On physical examination, she appeared uncomfortable with temperature 103.5° F, blood pressure 155/80 and pulse 112/min and regular. The thyroid gland was enlarged, tender and firm. The remainder of the examination was non-contributory. Laboratory tests were remarkable for ESR 60 mm/h, TSH 0 uIU/ml, Total T4 18.3 μg/dl (normal range 4.7–11.5), Total T3 291 ng/dl (normal range 62–181), Free T3 507 pg/dl (normal range 210–440), anti-thyroglobulin antibodies within normal range. These results were consistent with clinically significant thyrotoxicosis. Prednisone therapy was started with a slow taper; IFN-α therapy was discontinued. Her symptoms slowly improved. One month post cessation of IFN-α therapy, repeat lab work revealed TSH 2.4 uIU/ml, Free T4 1.1ng/dl and ESR 17mm/h. Two months later, repeat lab work revealed TSH 18.7uIU/ml and FreeT4 7.9 ng/dl, confirming the diagnosis of subacute thyroiditis precipitated by IFN-α. The patient continued to improve symptomatically over the next few months, with normalization of biochemical indices of thyroid function. A follow up liver biopsy showed no progression of disease. The patient declined further IFN-α therapy. Conclusion: Subacute thyroiditis is a painful inflammatory disorder of the thyroid, resulting in low uptake thyrotoxicosis associated with elevation of inflammatory markers, followed by slow resolution to euthyroidism. This case presents an interesting but very unusual occurrence of subacute thyroiditis induced by interferon-alpha therapy. This complication is an indication for withdrawal of therapy. Further treatment with interferon can be considered only if the thyroid gland is ablated prior to resuming therapy. Our patient declined this option as there was no progression of her liver disease.

456

DISSEMINATED NOCARDIA INFECTION ASSOCIATED WITH INFLIXIMAB
Sidney G. Smith, M.D., Richard S. Bloomfeld, M.D.*. Wake Forest University, Winston Salem, North Carolina.

Infliximab, a monoclonal antibody to tumor necrosis factor alpha (TNF), has become an important part of the armamentarium available to clinicians treating Crohn’s Disease (CD). Since its approval in 1998 for use in CD, there have been reports showing an increased risk of tuberculosis (TB) in patients receiving this therapy. In addition to TB, patients receiving anti-TNF therapy seem to be at increased risk for other infections as well. We present a case of disseminated Nocardia in a patient receiving infliximab for CD. Cutaneous Nocardia infection has been previously reported in one patient receiving infliximab in a clinical trial and there have been a few reports to the FDA of Nocardia infections in patients receiving anti-TNF therapy. However, there are no published reports of disseminated Nocardiosis associated with the use of this agent.

Case: A 73 year old female with known colonic CD, complicated by pyoderma gangrenosum and perianal fistulae, was admitted to our hospital with a 2 day history of dyspnea and cough. She had been treated with mesalamine, prednisone, methotrexate, and received five infusions of infliximab, the most recent one being two weeks prior to admission. Her medical history was also significant for diabetes and hypertension. An admission chest x-ray showed a large right-sided pleural effusion with compressive atelectasis. She subsequently underwent a thoracostentesis, which was consistent with an exudative pleural effusion and ultimately required surgical decortication. Cultures of the pleural fluid grew Nocardia asteroides. In light of the frequency of central nervous system involvement in patients with Nocardia, the patient underwent a high-resolution imaging (MRI) exam of her brain, which showed a single ( < 1cm) ring-enhancing lesion in the right cerebral peduncle. Although no tissue was obtained, this was felt on clinical grounds to represent Nocardia infection. She was treated with oral trimethoprim-sulfamethoxazole and subsequently was discharged to a rehabilitation facility.

Discussion: Biological agents such as infliximab are important and useful medications in the management of CD, however, there is an associated risk of infectious complications with their use. Although not completely understood, TNF seems to play an important role in granuloma formation and in cell mediated immunity, which is required for containment of Nocardia infection. Care should be taken to follow patients receiving these agents closely with regard to the risk of serious, and unusual, infectious complications.

457

RARE CASE OF ACUTE RECURRENT LGIB DUE TO OLD ANASTOMOTIC STITCH GRANULOMA
Bhagya L. Alloju, M.D., Manohar Yeddulapuram, M.D., Murali M. Alloju, M.D.*. Marshall Univ Joan C. Edwards School of Medicine, Huntington, West Virginia.

It has long been known that common causes of acute severe recurrent LGIB are due to diverticulosis and angiodysplasia. We present an unusual rare case of significant recurrent LGIB from an old anastomotic stitch. A 48 year old white male diagnosed with colon cancer in Feb 2002 Duke’s stage C (T3, N2, M0) needing right hemicolectomy and adjuvent chemotherapy with 5 FU and Leucovorin for 6 cycles. Post chemotherapy was complicated by DVT and PE needing coumadin. Sept 2003, admitted with significant LGIB needing 5 units of PRBC for resuscitation and urgent colonoscopy revealed diverticulosis with spontaneous bleeding cessation. EGD was negative. Jan 2004 re-admitted with recurrent significant LGIB needing 2 units of PRBC and Technetiu Tc 99m-pertechnetate-labeled red blood-cell scan revealed no bleeding. Spontaneous cessation of bleeding occurred. Capsule endoscopy was unremarkable. Feb 2004 readmitted third time with severe hematochezia needing urgent colonoscopy after bowel prep and the source of bleeding identified. The colonoscopy revealed active bleeding from the anastomastic stitch needing local epinephrine injection and Argon Plasma Coagulation of the protruding stitch with bleeding control and no subsequent recurrent bleeding. A definitive diagnosis of rare unusual cause of LGIB was made. As historically two major causes of acute LGI bleeding was thought to be diverticulosis or angiodysplasia, but in our case it was a stich bleeding. Hence acute LGIB is a clear indication for urgent colonoscopy for diagnostic and therapeutic intervention. With history of colon surgery in the past anastomotic site needs through inspection during colonoscopic evaluation of recurrent LGI bleeding.[figure1]
A 49-year-old gentleman presented with one year of intermittent solid food dysphagia and regurgitation without nausea, vomiting or weight loss. Upper GI series and CT scan showed an esophageal submucosal lesion [Figures available]. The patient could regurgitate a smooth appearing soft tissue mass that was without erythema or ulceration [Attached Figure]. Endoscopy revealed a ten centimeter mobile, extrinsic, smooth, polypoid mass arising from the area of the upper esophageal sphincter [Figure available]. Surgical excision was performed through a cervical incision. Pathology was consistent with a benign giant fibrovascular polyp (fibrolipoma) [Figure available].

Pedunculated polyps of the esophagus are rare and described under different terms including fibrovascular polyp, fibrolipoma, lipoma and myxomas. They can grow until they develop symptoms and may present with asphyxial death.[1] Most of these lesions are pedunculated and have a narrow stalk. They are typically benign and usually found in males age 40–60 in the proximal esophagus.[2] Diagnosis is often difficult due to the prolonged presentation and difficulty interpreting radiographic studies. Endoscopy is imperative for the diagnosis. These lesions are typically removed surgically secondary to the risk of asphyxia or theoretical risk of malignant degeneration.


**Background:** Studies of patients with hereditary hemochromatosis (HFE) have reported a highly increased risk of hepatocellular carcinoma (HCC). Although most primary liver tumors in patients with HFE are HCC, cholangiocarcinoma has been reported. Cirrhosis has been observed in the vast majority of primary liver cancers with HFE, leading to the assumption that it may be a prerequisite for the onset of neoplasia. Some authors have demonstrated a correlation between iron overload and cancer risk. We report a rare case of a cholangiocarcinoma occurring in a patient with non-cirrhotic hereditary hemochromatosis.

**Case Presentation:** A 76-year-old Caucasian man was admitted for evaluation of 1 week of fevers, chills and 3 weeks of nausea. His past medical history was significant for diabetes mellitus and coronary artery disease. He reported a 7–10 pound weight loss over the past 2 months. The patient did not smoke and reported drinking no more than one alcoholic beverage per month throughout his lifetime. He has no family history of liver disease. Physical exam was remarkable for a minimally tender, irregular, firm epigastric mass. Computed tomography (CT) of the abdomen and pelvis showed a heterogeneous, low attenuation solid mass in the left lobe of the liver. A CT guided biopsy of the mass demonstrated abundant necrotic tissue with a few malignant cells. The patient underwent surgical resection of the mass without complication. The histologic and immunophenotypic characteristics indicated a moderately differentiated adenocarcinoma, most consistent with cholangiocarcinoma. Special stains on the surrounding liver highlighted marked iron deposition with the absence of significant fibrosis. Subsequent genetic testing was positive for the homozygous presence of the C282Y mutation in the HFE gene.

**Conclusions:** In addition to hepatocellular carcinoma, patients with HFE appear to be at increased risk for cholangiocarcinoma. The absence of cirrhosis and risk factors for cholangiocarcinoma, raises the possibility that the cholangiocarcinoma in this patient was related to the carcinogenicity of iron.

459

**CHOLANGIOCARCINOMA IN A 76-YEAR-OLD MAN WITH NON-CIRRHOTIC HEREDITARY HEMOCHROMATOSIS**

Michael B. Wolfson, M.D., Susan J. Gordon, M.D., Billie Fyfe, M.D., Beth Carlisle, D.O., Gillian A. Zeldin, M.D.*. Graduate Hospital/Drexel University College of Medicine, Philadelphia, Pennsylvania and Hahnemann University Hospital/Drexel University College of Medicine, Philadelphia, Pennsylvania.

**460**

**SMALL BOWEL ADENOCARCINOMA MASQUERADING AS CHRONIC IRON DEFICIENCY ANEMIA: IF AT FIRST YOU DON’T SUCCEED, TRY TRY AGAIN**

Shamina Dhillon, M.D., Amindra Arora, M.D.*. Mayo Clinic, Rochester, Minnesota.

**Introduction:** Small bowel adenocarcinoma is a well known but infrequent cause of iron deficiency anemia. Diagnosis of this malignancy is often a clinical challenge due to the poor accessibility of the small bowel to conventional diagnostic techniques and vague presenting symptoms. We present a case of small bowel adenocarcinoma causing iron deficiency anemia which, in spite of extensive evaluations, defied diagnosis for six years.

**Case:** A 43 year old male presented with a six year history of iron deficiency anemia. He denied any abdominal pain, nausea, or weight loss over this time. Two years prior to presentation, he had melena while on anticoagulation for deep venous thrombosis. EGD, colonoscopy, and capsule endoscopy performed during this episode were negative. Laboratory studies only showed iron deficiency anemia with the lowest hemoglobin of 5.5 g/dL. Melena resolved after discontinuation of anticoagulation. At the time of referral to our institution, extended EGD, colonoscopy, and capsule endoscopy were again unrevealing. A small bowel follow was then performed and revealed a 6 cm circumferential, ulcerating, constricting lesion in the proximal jejunum. Subsequent laparotomy with surgical resection confirmed this to be adenocarcinoma. There was no evidence of metastatic disease.

**Discussion:** Adenocarcinoma of the small bowel has an incidence of 0.39 cases/100,000 population with a peak incidence in the seventh decade. The most frequent presenting symptoms include occult bleeding, non-specific abdominal pain, bowel obstruction, and weight loss. Because symptoms are often vague, the diagnosis may be delayed for several months. Small bowel x-ray has a reported diagnostic accuracy of 30%–44%. We report the case of a young man with small bowel adenocarcinoma that presented with iron deficiency and was undiagnosed for six years in spite of a thorough evaluation including capsule endoscopy on two separate occasions. It is important to
consider this entity in the differential diagnosis of obscure GI bleed. This case highlights the need for using different modalities to image the small bowel in face of persistent symptoms.

461

METASTATIC CROHN’S DISEASE PRESENTING AS A BREAST MASS


Metastatic Crohn’s disease (CD), characterized by non-caseating granulomas in extraintestinal sites, is very unusual. Breast involvement is exceptional. To alert physicians to this rare association, we report a patient with CD and a granulomatous breast mass mimicking malignancy clinically.

Case Report: A 60-year-old woman with a 20-year history of CD developed a tender lump in her left breast. Over a 3 week period, the tenderness subsided. She was on long-term treatment with oral cyclosporine for pyoderma gangrenosum (PG) and had a prior history of silicone breast implants. Examination revealed scarring on the lower extremities indicative of healed PG. In the peri-areolar area of the left breast, the skin was erythematous with an open punctum. A firm 2 by 1 centimeter breast mass was palpable. Surgical excision revealed acute inflammation with a sterile abscess, giant cell reaction, and non-caseating granuloma formation. This histology was consistent with CD, but not with silicone-induced granuloma. Bacterial cultures and stains for fungi and mycobacterium were negative. The mass resolved after resection. No additional specific therapy was given and the patient continued her usual dose of oral cyclosporine for PG.

Discussion: Granulomatous mastitis, which may mimic inflammatory breast cancer clinically or radiologically, may be idiopathic, due to systemic disease (eg., sarcoidosis), or be secondary to infections such as tuberculosis or histoplasmosis. A sterile abscess may form from periductal mastitis or duct ectasia. Cutaneous metastatic CD, presenting as ulcerated skin plaques, papules or erythematous nodules, has been reported rarely to be peri-areolar or sub-mammary. In patients with known CD, metastatic granulomatous involvement should be considered in the differential diagnosis of a peri-mammary skin lesions, breast mass, or non-caseating breast granuloma.

462

INTRASPHERICETER BOTULINUM TOXIN IMPROVES DYSPHAGIA IN SUSPECTED PSEUDOACHALASIA


Injection of botulinum A toxin into the LES is an accepted therapeutic option for patients with primary achalasia and significant dysphagia who are poor candidates for pneumatic balloon dilation or surgery. However, there are few reports using botox in the treatment of pseudoachalasia-associated dysphagia. We herein describe a case of suspected pseudoachalasia in a patient with squamous cell lung cancer.

A 73 yo male presented with dysphagia to solids and liquids ×4 weeks with regurgitation, 10 pound weight loss, and orthopnea. Dysphagia was described as food sticking behind his neck or mid-chest. He denied heartburn or odynophagia. Nine months earlier, pulmonary function testing was performed for mild nocturnal dyspnea that showed evidence of COPD. He was a smoker of cigarettes but quit 30 years ago. Past history was notable for vocal cord cancer treated by radiotherapy thirty years earlier. On physical exam, pt was a well nourished white male with telangiectasias over his anterior neck, but no lymphadenopathy. Lung fields were clear bilaterally. Cardiac and abdominal exams were unremarkable.

A video barium swallow study showed pooling in the vallecula, laryngeal penetration, aspiration, and a markedly dilated esophagus with distal esophageal stricture at the level of the EG junction. An esophageal manometry confirmed total esophageal aperistalsis. CT of chest/abdomen demonstrated a spiculated 1.3 cm right upper lobe nodule and mediastinal lymphadenopathy; PET imaging revealed intense uptake in these areas. A CT-guided biopsy of the right upper lobe lesion was positive for squamous cell carcinoma.

Endoscopy was performed to 1. treat dysphagia and 2. staging. EGD with intrasphincteric injection of botulinum toxin type A, 20 units × 4 resulted in significant relief of dysphagia and regurgitation, and no procedure related complications. Pt was free of symptoms more than 60 days post-procedure and had mild weight gain after this single treatment session. Although no evidence of malignancy on FNA of mediastinal nodes was found during EUS, tumor was staged as T1N2M0. Injection of botulinum toxin into LES is an effective treatment for patients with suspected pseudoachalasia. To our knowledge, this represents the first report of successful treatment in a patient with squamous cell lung cancer.

463

HEREDITARY HEMOCHROMATOSIS IN AN INDIAN MAN TREATED WITH ERYTHROPOIETIN

Mary Anne Cooper, M.D.∗. Sunnybrook and Women’s College Health Sciences Centre, University of Toronto, Toronto, Ontario, Canada.

Mr. R.S., a 62 year old man of Indian descent, was evaluated in 1997 for abnormal liver enzymes (transaminases 1–2 times ULN). He had developed non-insulin dependent diabetes mellitus several years prior. He had coronary artery disease, hypercholesterolemia, hypertension and gout, for which he was on multiple medications, including simvastatin. His father had died of liver disease attributed to alcohol abuse. Mr. R.S. admitted to excessive alcohol consumption until four months prior when he had quit on the advice of his physician. Chronic viral hepatitis was excluded and his transaminitis was thought to be due to medications and fatty liver.

In 2001 he was referred for evaluation of anemia and abdominal pain. He had developed chronic renal insufficiency. During colonoscopy, two small adenomatous polyps were excised. Upper endoscopy was normal. His liver profile was still abnormal, however, and he was investigated for chronic hepatitis. Ferritin was 3153 mg/ml (ULN 400 mg/ml). Fatty liver was reported on ultrasound. He was homozygous for His63Asp mutation for hereditary hemochromatosis. Liver biopsy showed inflammation and fibrosis, iron overload and moderate steatosis.

The patient had two phlebotomies. His hemoglobin fell from 99 g/l to 64 g/l while his ferritin decreased to 1239 mg/l. Phlebotomies were held and he started erythropoietin. The hemoglobin recovered to 90 g/l and he had a third phlebotomy. He remained on erythropoietin and four months later had another phlebotomy after which his hemoglobin was 102 g/l and ferritin 276 mg/l. Over the subsequent 18 months he continued erythropoietin but had no further phlebotomies. He stopped erythropoietin 9 months ago. His hemoglobin is stable at 123 g/l and ferritin 48 mg/l. Over the subsequent 18 months he continued erythropoietin but had no further phlebotomies. He stopped erythropoietin 9 months ago. His hemoglobin is stable at 123 g/l and ferritin 48 mg/l.

This case highlights important issues in the diagnosis and management of hemochromatosis. Features of hemochromatosis were evident at this patient’s first presentation in 1997, underscoring the importance of complete investigations into causes of chronic hepatitis. This case also demonstrates that one should not limit the search for hemochromatosis to Caucasians. Lastly, this patient’s renal insufficiency caused erythropoietin deficiency and anemia that made replacement of this hormone a key element of therapy. Increased erythropoiesis induced by erythropoietin allowed utilization of the excess iron.

464

OBSCURE GASTROINTESTINAL BLEED IN ELDERLY WOMAN WITH SMALL BOWEL LEIOMYOMA DIAGNOSED BY CAPSULE ENDOSCOPY


Mr. R.S., a 62 year old man of Indian descent, was evaluated in 1997 for abnormal liver enzymes (transaminases 1–2 times ULN). He had developed non-insulin dependent diabetes mellitus several years prior. He had coronary artery disease, hypercholesterolemia, hypertension and gout, for which he was on multiple medications, including simvastatin. His father had died of liver disease attributed to alcohol abuse. Mr. R.S. admitted to excessive alcohol consumption until four months prior when he had quit on the advice of his physician. Chronic viral hepatitis was excluded and his transaminitis was thought to be due to medications and fatty liver.

In 2001 he was referred for evaluation of anemia and abdominal pain. He had developed chronic renal insufficiency. During colonoscopy, two small adenomatous polyps were excised. Upper endoscopy was normal. His liver profile was still abnormal, however, and he was investigated for chronic hepatitis. Ferritin was 3153 mg/ml (ULN 400 mg/ml). Fatty liver was reported on ultrasound. He was homozygous for His63Asp mutation for hereditary hemochromatosis. Liver biopsy showed inflammation and fibrosis, iron overload and moderate steatosis.

The patient had two phlebotomies. His hemoglobin fell from 99 g/l to 64 g/l while his ferritin decreased to 1239 mg/l. Phlebotomies were held and he started erythropoietin. The hemoglobin recovered to 90 g/l and he had a third phlebotomy. He remained on erythropoietin and four months later had another phlebotomy after which his hemoglobin was 102 g/l and ferritin 276 mg/l. Over the subsequent 18 months he continued erythropoietin but had no further phlebotomies. He stopped erythropoietin 9 months ago. His hemoglobin is stable at 123 g/l and ferritin 48 mg/l.

This case highlights important issues in the diagnosis and management of hemochromatosis. Features of hemochromatosis were evident at this patient’s first presentation in 1997, underscoring the importance of complete investigations into causes of chronic hepatitis. This case also demonstrates that one should not limit the search for hemochromatosis to Caucasians. Lastly, this patient’s renal insufficiency caused erythropoietin deficiency and anemia that made replacement of this hormone a key element of therapy. Increased erythropoiesis induced by erythropoietin allowed utilization of the excess iron.
Obscure gastrointestinal (GI) bleeding remains a diagnostic challenge. We report a case of a 79-year-old female, chronically anticoagulated for St. Jude’s mitral valve, with a long history of iron deficiency anemia and intermittent melena requiring numerous blood transfusions. Extensive evaluation with EGD, colonoscopy, push enteroscopy, and small bowel follow-through failed to identify a bleeding source. Capsule video endoscopy using M2A capsule was performed and revealed fresh blood and an ulcerated polyp in the distal small bowel. Subsequent enteroscopy, however, failed to identify the polyp. Due to the need for ongoing blood transfusions, intraoperative enteroscopy was performed and confirmed the presence of a 6 mm polyp in the proximal ileum with the remainder of small intestine appearing normal. The bowel segment containing the polyp was resected without complications. Gross description revealed an ulcerated polyp with histologic findings consistent with leiomyoma and surrounding submucosal hemorrhage. At three months post-op, our patient has not required any further blood transfusions. Leiomyomas account for approximately 25% of all benign small bowel tumors while only 44–50% of these tumors become clinically evident (1–3). Approximately 50% of leiomyomas have central ulceration which commonly manifest as GI bleeding (4,5). We report a case of leiomyoma as a cause for obscure GI bleeding that was diagnosed by capsule enteroscopy after failure of other modalities, including small bowel follow-through and enteroscopy, to identify the lesion. This case further demonstrates the role of capsule video endoscopy in the algorithm for evaluating obscure GI bleeding and its superiority to conventional small bowel radiographic techniques in identifying small bowel pathology.

References:

---

465

PROBLEMATIC ESOPHAGEAL STRICTURES: EMERGING INDICATIONS FOR SELF-EXPANDABLE SILICONE STENTS

Sarakit Pungpapong, M.D.; Massimo Raimondo, M.D., Michael B. Wallace, M.D., Timothy A. Woodward, M.D.*. Mayo Clinic College of Medicine, Jacksonville, Florida.

Purpose: Self-expandable metal stents (SEMS) are routinely used to palliate dysphagia in the patients with unresectable esophageal carcinoma. However, proximally located malignant strictures and benign strictures refractory to endoscopic dilations remain problematic due to the potential for tracheal compression, foreign body sensation and tissue responses leading to inflammation, necrosis, and ulceration, with eventual fibrosis. The hyperplastic tissue reaction may progress to worsening dysphagia and restenosis. The recently developed self-expandable silicone stents (SESS) have demonstrated some advantages over SEMS because of their better biocompatibility and may circumvent these problems.

Case reports: We present two cases with refractory benign stricture and proximally located malignant stricture which were treated with SESS. The first case is an 81-year-old man who underwent an Ivor-Lewis esophagectomy for distal esophageal adenocarcinoma. Four months after, he developed benign circumferential anastomotic stricture requiring frequent endoscopic dilatations every 3–4 weeks. Given its benign nature and long life expectancy, SESS was considered over SEMS to avoid potential complications from long-term implantation. He was followed more than 1 year with complete resolution of dysphagia and no complication. The second case is a 53-year-old man who underwent an Ivor-Lewis esophagectomy for proximally located squamous cell carcinoma (SCC). One year later, dysphagia recurred and progressed to an inability to handle oral secretions. Recurrence of SCC was found at 22 cm from the incisors with liver metastasis. Given the location, SESS was chosen to avoid tracheal compression and foreign body sensation from SEMS. The proximal end was located at 20 cm from the incisors, just below upper esophageal sphincter (UES). He was followed for 3 months without recurrence of symptoms.

Discussions: We demonstrate our initial experience in using SESS in the treatment of refractory benign stricture and proximally located malignant stricture near UES. These cases represent some of the more difficult-to-treat esophageal strictures. With the inert property resulting in less tissue reaction, SESS seem to be more appropriate device to use in these situations compared to SEMS. No tissue reaction or recurrent symptoms in our patients with more than 1 year follow-up period confirm the feasibility and safety of long-term SESS implantation.

---

466

CARDIOMYOPATHY IN A PATIENT WITH CELIAC DISEASE AND DIABETES MELLITUS TYPE 1

Carl R. Routtree, M.D., Michelle Pietzak, M.D., Hillel Naon*. Childrens Hospital, Los Angeles, California.

Celiac Disease (CD) is associated with autoimmune disorders such as diabetes mellitus type 1 (DM) and thyroiditis. In adults and children, the relationship between CD and lymphoma has been described. Also in adults, a few studies described a relationship between CD and idiopathic dilated cardiomyopathy (IDCM). Our case report represents the youngest described patient with CD and IDCM and DM. The patient is a 19-year-old male who was diagnosed with DM at 2 years. One month prior to admission, after many months of chest tightness and shortness of breath, he was found to have IDCM. He was also having difficulty controlling his blood glucose. He had no abdominal symptoms. He was found to have a positive CD antibody panel on the day that he was transferred to our medical center for heart transplant evaluation. He is currently awaiting a heart transplant. Family history is remarkable for autoimmune disorders including DM type 1, Hashimoto’s thyroiditis, and systemic lupus. His sister was diagnosed with non-Hodgkin’s lymphoma (NHL) at the age of seven. On physical exam, height 176 cm (30%) and weight 64 Kg (50%), BMI of 20.3 (20%). The patient appeared alert and thin. His dentition was fair with scattered carries. His oral mucosa was pink and free of ulcers. His thyroid exam was unremarkable. His chest was clear. His heart exam revealed mild tachycardia and gallop rhythm. His abdomen was soft, non-tender, with no organomegaly. His extremities were warm and free of edema. He had no rashes on skin exam. His neuro exam was unremarkable.

Studies include an echo with a dilated left ventricle and shortening fraction of 27%. Endomyosal IgA was > 1:160 (negative is < 1:10) and tissue transglutaminase IgA was > 100 U/ml (negative is < 4.0 U/ml). Thyroid tests were within normal limits. WBC 5.5 K/UL, Hb 13.3 g/dl, Platelets 344 K/UL, and MCV 84 FL. He had normal iron studies. Tests for infectious cause of IDCM were negative. His ANA was negative. His HbA1C was 7.1 on admission. Selenium and zinc levels were normal. Duodenal biopsy showed villous atrophy and significant lymphocytic infiltrate, Marsh Grade 2–3a. Our patient represents the youngest known patient with CD who was diagnosed with IDCM, and the only reported case of CD with IDCM and DM. One month prior to admission, after many months of chest tightness and difficulty controlling his blood glucose. He had no abdominal symptoms. He was found to have a positive CD antibody panel on the day that he was transferred to our medical center for heart transplant evaluation. He is currently awaiting a heart transplant. Family history is remarkable for autoimmune disorders including DM type 1, Hashimoto’s thyroiditis, and systemic lupus. His sister was diagnosed with non-Hodgkin’s lymphoma (NHL) at the age of seven. On physical exam, height 176 cm (30%) and weight 64 Kg (50%), BMI of 20.3 (20%). The patient appeared alert and thin. His dentition was fair with scattered carries. His oral mucosa was pink and free of ulcers. His thyroid exam was unremarkable. His chest was clear. His heart exam revealed mild tachycardia and gallop rhythm. His abdomen was soft, non-tender, with no organomegaly. His extremities were warm and free of edema. He had no rashes on skin exam. His neuro exam was unremarkable.

Studies include an echo with a dilated left ventricle and shortening fraction of 27%. Endomyosal IgA was > 1:160 (negative is < 1:10) and tissue transglutaminase IgA was > 100 U/ml (negative is < 4.0 U/ml). Thyroid tests were within normal limits. WBC 5.5 K/UL, Hb 13.3 g/dl, Platelets 344 K/UL, and MCV 84 FL. He had normal iron studies. Tests for infectious cause of IDCM were negative. His ANA was negative. His HbA1C was 7.1 on admission. Selenium and zinc levels were normal. Duodenal biopsy showed villous atrophy and significant lymphocytic infiltrate, Marsh Grade 2–3a. Our patient represents the youngest known patient with CD who was diagnosed with IDCM, and the only reported case of CD with IDCM, who has another autoimmune disease, DM. Our patient has a strong family history of autoimmune disease, as well as a sister with NHL. Patients with DM type one, presenting with IDCM, should be evaluated for CD, especially if the diabetes is poorly controlled.

AN UNSUSUAL CASE OF EOSINOPHILIC GASTROENTERITIS AND HEPATITIS


Eosinophilic gastroenteritis is a relatively rare illness which can affect the entire gastrointestinal tract. There have been few previously described cases with hepatic involvement.
We report a 51-year-old female who presented with 2 weeks of diarrhea and abdominal pain. Her past history was significant for mild asthma, cholecystectomy and hyperlipidemia requiring simvastatin for >2 years. She was having 7–8 watery non-bloody stools/day. She denied any recent travel, antibiotics, alcohol or poorly cooked foods. There was associated severe RUQ abdominal pain with radiation to the back as well as nausea, occasional emesis and chills. Exam was notable for mild right-sided abdominal tenderness without rebound and stable vital signs. Initial labs included a WBC of 14500/μl with a peripheral eosinophilia of 2500/μl. Her LFTs revealed a normal bilirubin, AST 315 IU/L, ALT 205 IU/L, Alkaline Phosphatase 196 IU/L, and amylase/lipase of 314/3167 IU/L. CT of the abdomen was unremarkable. Evaluation included negative stool studies for leukocytes, bacterial culture, ova and parasites, and clostridia difficile toxin. Colonoscopy was grossly unremarkable with normal colonic biopsies. Ileal biopsies, however, revealed increased eosinophils (>80/HFP). EGD showed mild duodenitis. Biopsies of the stomach and duodenum revealed increased eosinophils with occasional eosinophilic cryptitis and focally prominent eosinophilic degranulation. Confirmatory studies included a normal MRCP and negative viral hepatitis serologies. A liver biopsy revealed increased periportal and sinusoidal eosinophils.

A diagnosis of eosinophilic gastroenteritis and hepatitis was made and she was started on prednisone 40mg orally daily. Upon initiating prednisone her serum eosinophilia decreased from 7300/μl to 100/μl within 12 hours of her first dose. Her symptoms rapidly improved and she was discharged on prednisone 40mg daily. This is being tapered and she remains asymptomatic. Eosinophils are currently undetectable. LFTs normalized within 2 weeks of initiating prednisone and have remained normal. Oral cromolyn sodium has been started for maintenance.

This is an unusual presentation of eosinophilic gastroenteritis and hepatitis. Previous case reports of eosinophilic hepatitis have been related to newly initiated medications, which was not present in our case. Eosinophilic gastroenteritis presenting with biliary symptoms or hepatic involvement has rarely been reported. Heightened awareness of atypical presentations is necessary to improve patient outcomes.

468 HEMOSUCCUS PANCREATICUS PRESENTING IN A MALE WITH CHRONIC PANCREATITIS AND SUSPECTED PANCREATIC MALIGNANCY

Hemosuccus pancreaticus is a rare cause of GI bleeding. It is associated with chronic pancreatitis, pancreatic pseudocyst and tumors. The usual mechanism is erosion of a blood vessel or pseudoaneurysm in to a pancreatic pseudocyst that communicates with the pancreatic duct. 59 year old male with a history of chronic pancreatitis from alcoholism presented with a 6 month history of worsening periumbilical abdominal pain, nausea, weight loss and anorexia. Physical examination revealed cachexia and peri-umbilical tenderness with no organomegaly, mass or peritonitis. The CBC, chemistry panel, liver functional panel, coagulation profile, tumor markers (CA 19–9 & CEA) were normal. A CT and MRI of abdomen showed a heterogeneous mass in the head of pancreas. During an attempt to perform EUS and FNA, he became hypotensive. Blood was seen emanating from the ampullary orifice (Figure 1) with a subsequent drop in hemoglobin (from 11.3 to 6.2 g/dl). After instituting aggressive resuscitation and obtaining an urgent surgical consultation, a selective mesenteric angiogram was performed that revealed a ruptured pseudoaneurysm off the superior pancreaticoduodenal artery (Figure 2). After embolization of aneurysm, bleeding stopped and patient remained hemodynamically stable. A repeat EUS directed FNA of the mass revealed no malignant cells. The presence of a large pseudocyst communicating with the pancreatic duct was later confirmed with EUS-ERP.

Hemosuccus pancreaticus should be suspected in patients with chronic pancreatitis who present with unexplained massive GI bleeding, hemodynamic instability and/or increased abdominal pain from a sudden expansion of a pseudoa cyst. Prompt recognition is crucial for adequate therapeutic interventions.

469 EUS-ASSISTED ENDOSCOPIC MUCOSAL RESECTION OF A LARGE DUODENAL CARCINOID
Surakit Pungpapong, M.D., Timothy A. Woodward, M.D., Michael B. Wallace, M.D., Massimo Raimondo, M.D.*. Mayo Clinic College of Medicine, Jacksonville, Florida.

Carcinoid tumors of the duodenum represent approximately 2% of carcinoid tumors in gastrointestinal tract. Conventional therapy has always been surgical resection. Recently, endoscopic mucosal resection (EMR) technique has been developed. However, it is usually preserved only for the small mucosal or submucosal tumor less than 1 cm in size. In addition, because of its technical difficulty and high risk of perforation in the thin-walled duodenum, EMR has not been commonly used in duodenal tumors.

Case Report: We present a case of 71-year-old man who underwent EGD to evaluate for anemia. Incidentally, a 1.5 cm submucosal mass was discovered in the duodenal bulb. Pathology confirmed the diagnosis of carcinoid tumor. EUS demonstrated a 10 × 17 mm mass, originating from the third echo layer (submucosa) without evidence of muscularis propria involvement, invasion, or adjacent lymphadenopathy. Due to his several co-morbidities, the patient was at elevated risk for surgery. EMR was performed by the injection of 10 ml NaCl-diluted epinephrine 1:10,000 around the tumor base, followed by rubber band ligation and snare cauterezation without complication. The resection site demonstrated complete removal, confirmed by final pathology. The patient was followed with EGD at 4-month and 1-year period without recurrence.

Discussion: To date, there have been only 27 case reports of successful EUS-assisted EMR of small duodenal carcinoid tumors in English scientific literature. All but one case (96.3%) were less than 1 cm in size. Thus far, only 1 patient (3.7%) was reported to develop local recurrence at 3 months after EMR, probably due to incomplete initial resection. In addition, perforation was reported in 1 patient (3.7%) healed by conservative treatment. Criteria for considering EMR in duodenal carcinoid tumor was proposed. These include a tumor confined to the submucosal layer, no evidence of metastasis and less than 1 cm in size. We present our experience in successful EUS-assisted EMR of duodenal carcinoid tumor of size greater than 1 cm without...
complications and with no evidence of recurrence or metastasis at 1-year follow-up. We believe that size of the tumor more than 1 cm should not be an absolute contraindication for EMR particularly when the risk of surgery is elevated and EUS demonstrates no evidence of invasion and metastasis. Back up surgical consultation should be pursued in advance in case of perforation or failed resection following EMR.

471

CHOLEDOCHAL CYST TO CHOLANGIOCARCINOMA: A UNIQUE PRESENTATION
Mehul M. Patel, M.D., Abhijit Kulkarni, M.D., Manish Dhawan, M.D., Radheshyam Agrawal, M.D., Paul Lebovitz, M.D.*. Allegheny General Hospital, Pittsburgh, Pennsylvania.

Case Presentation: A 35 year old Caucasian female presented with abdominal pain for one month. The pain was intermittent, dull, and nonradiating, and associated with nausea and vomiting. The patient also reported dark amber urine but denied fevers or chills. Physical exam revealed mild right upper quadrant abdominal pain and hepatomegaly. Laboratory data revealed: Hemoglobin 12.1, INR 0.9, Total bilirubin 2.7, Direct bilirubin 1.2, AST 317, ALT 700, Alkaline phosphatase 563, and lipase 592.

An abdominal CT showed dilated left and right intrahepatic ducts but no extrahepatic dilation. No focal masses were seen in the liver. ERCP showed a three centimeter duodenal stricture and a single, long, irregular common bile duct stricture from the distal common bile duct to the bifurcation. Brush cytology from the common bile duct was negative but duodenal biopsies were positive for poorly differentiated adenocarcinoma. Between the ages of five and six, the patient experienced intermittent jaundice. Extensive workup revealed a choledochal cyst. She underwent an exploratory laparotomy and choledochoduodenostomy. A generous portion of the wall of the cyst was excised at the time of surgery. Surgical exploration revealed an umbilical mass which histologically was consistent with metastatic adenocarcinoma. Palliative surgery was completed, and treatment with 5-fluorouracil, leucovorin, and localized radiation therapy was initiated. Due to the inability to tolerate therapy, the patient opted to defer any further treatment. Comfort measures were instituted, and the patient was discharged to hospice.

Discussion: Choledochal cysts are biliary cystic dilatations, which may occur singly or in multiples throughout the bile ducts. The incidence of biliary cysts is estimated to be 1:100,000 to 150,000 with higher incidence rates in some Asian nations. The female to male ratio is approximately 3:1. Cysts may be congenital or acquired; however, the exact pathogenesis is unknown. Types I, II, and III biliary cysts include choledochal cysts. Types IV and V may include intrahepatic and/or extrahepatic cystic dilatations. Common presentations include chronic and intermittent abdominal pain, intermittent jaundice, and recurrent cholangitis. Direct cholangiography is the best test for diagnosis and evaluation. Because of the risk of malignant degeneration of the cyst, surgical excision is the current standard, with the goal of removing all of the cyst tissue when possible.

472

KAYEXALATE INDUCED COLONIC NECROSIS - IS IMMUNOTHERAPY A CONTRIBUTOR?
Rahida Katakam, Meijuan Zhang, Rabi Kandu, Xiaoli Ma, Carl Levitsky, Marian Haber, Susan Gordon*. Graduate Hospital, Philadelphia, Pennsylvania.

Case: 51 year old African American female presented with generalized weakness and nausea/vomiting for 2 weeks. Her past medical history included hepatitis C for which she was treated with Pegferon and Ribavirin for 10 weeks. Examination revealed orthostasis and mild tenderness in right upper quadrant. Lab revealed pancytopenia (WBC count 1.9, Hb 5.9, Platelets 163), K 5.6 mEq/L, BUN 37 and Creat 3.3 mg/dl. Her K increased to 5.8 mEq/L. Grams of kayexalate was administered orally 8 hours later, she complained of generalized abdominal pain and was tachycardic and hypotensive. The abdomen was diffusely tender with rebound tenderness. CT abdomen showed thickened ascending colon and portal venous gas. Laparotomy revealed necrotic colon. Ileoectomy and ileostomy were performed. Gross pathology showed mucosal ischemia with necrosis with kayexalate crystals (see histology). Post operatively patient recovered well, but needed dialysis. [figure1]
Abstracts

473

SMALL BOWEL OBSTRUCTION AS AN UNUSUAL PRESENTATION OF RICHTER’S SYNDROME
Nehal Parekh, M.D., Rabi Kundu, M.D., Eric Deppert, M.D., Manjula Balasubramanian, M.D., Nikolay Popnikolov, M.D., Arthur Feldman, M.D., Joel Betesh, M.D.∗. Graduate Hospital, Drexel University, Philadelphia, Pennsylvania.

Case: A 72 yr old white male presented with progressively worsening h/o intermittent mid-abdominal pain after ingestion of food for 2 weeks. Pain was relieved by vomiting of bilious and dark brown fluid. He admitted to weight loss of around 15 lbs and loss of appetite. Past medical history included prostate cancer treated with radiation 4500cGy in 2000, HTN and CLL stage 0 since 1998. Physical examination revealed orthostasis, dry oral mucosa and abdominal examination showed distention with hyperactive bowel sounds. Labs: Hb 9.9gm/dl, wbc 90.6K/mm³, gran 11.1%, lymph 87.6%, platelet 318K/mm³, LFTs, lipase and amylase were normal. CT scan of the abdomen confirmed high grade distal small bowel obstruction by a 3x4 cm mass with mesenteric adenopathy and mild splenomegaly (see CT scan). Patient underwent ileal resection with primary anastomosis. Histology showed small cell lymphoma with focal large cell transformation (Richter’s transformation). Currently he is receiving chemotherapy with Rituxumab, Cyclophosphamide, doxorubicin and vincristine. [figure1]

Discussion: Richter’s Syndrome (RS) is a known but a rare complication of Chronic Lymphocytic Leukemia. This was originally reported by Richter in 1928. The largest series reports an incidence of 2.9% in CLL. Other series report incidences between 1 to 10%. Clinically, RS is characterized by weight loss, increasing adenopathy, and infiltration of kidneys, lungs and gastrointestinal tract. The diagnosis of Richter’s transformation requires histopathological evidence of malignant cells, usually of a large B cell lymphoma. Patients in all stages of CLL and in remission are at risk. The involvement of gastrointestinal tract as an extranodal site was reported in only 2/39 patients in the largest series of RS. There is no reported case of mechanical small bowel obstruction in this setting, which makes our case unique. The median survival is around 8–10 months; despite intensive multiagent therapy, complete remission rates are around 27–38%.

474

MID ESOPHAGEAL DIVERTICULUM – A RARE CAUSE OF MASSIVE UPPER GASTROINTESTINAL HEMORRHAGE
Gaurav Mehta, M.D., Rabi Kundu, M.D., Mike Wolfson, M.D., Ramesh Koka, M.D., Xiaoli Ma, M.D., George Ahtarianis, M.D.∗. Graduate Hospital, Philadelphia, Pennsylvania.

Case: A 71 y/o AAF with PMHx of HTN and RA, was admitted to our hospital with confusion secondary to UTI. There was no prior H/O dysphagia, odynophagia, abdominal pain, change in bowel habit, hematemesis, melena, BRBP. She had chronic cough and occasional regurgitation. Her weight and appetite was unchanged.

2nd day in the hospital was complicated by 100 cc of hematemesis/hemoptysis and cough. Hb dropped by 1.5 gm. ENT was consulted and laryngoscopy revealed blood in the esophagus and 300–400 cc of bright red blood was aspirated. Passage of an NG tube was attempted but did not advance beyond 20 cm. EGD was performed which revealed blood clots in the esophagus, a large mid esophageal diverticulum containing a clot which was flushed. Linear ulcers were found in the diverticulum. Stomach showed evidence of ingested blood clots and no site of bleeding was noted in the duodenum. Barium swallow revealed a large mid esophageal diverticulum. The patient was treated with empiric PPI and she did not rebleed. She was offered surgery for the diverticulum, which she refused. [figure1]

Discussion: Mid-esophageal diverticula are rare. In a consecutive series of 20,000 barium swallows, 6 mid-esophageal diverticula were
found. Often they are asymptomatic, found incidentally on barium swallow/EGD. Presentation as upper GI bleed has been reported in only one other case in the literature. Conventional treatment is surgery-mytomony and diverticulectomy which provides symptomatic relief in 80–90% of patients. Complication rates of surgery are between 10% to 30%, Mortality rates as high as 3%. Diverticulectomy can be an option for high risk patients. Endoscopic staple diverticulostomy is a possible endoscopic treatment modality.

Case: A 61yo male with a history of alcohol abuse, presented with recurrent hematochezia in association with binge drinking. His past medical history was significant for a left-sided colectomy 20 years earlier for diverticular disease, and a recent surveillance EGD which revealed grade II esophageal varices. Following admission an EGD confirmed grade II esophageal varices but with no stigmata of recent bleeding. On colonoscopy, he was found to have blood throughout the colon but no blood within the terminal ileum. Varices with red signs were noted on the colo-colonic anastomosis 20 cm from the anal verge. He received no treatment at this time but developed further bleeding resistant to octreotide infusion and morrhuate sclerotherapy. Variceal band ligation with the placement of 5 bands was then successfully used to control the hemorrhage without complications. The patient had no further bleeding episodes and repeat colonoscopy 9 days later showed ablation of the varix with healing ulcers at the banding site. No recurrent bleeding developed 30 days after VBL.

Discussion: EGV occur infrequently from various etiologies including post-operative vascular abnormalities and portal hypertension, but their management remains unclear. This case demonstrates that VBL can be an effective short-term treatment of bleeding colonic varices.

Interferon therapy for the treatment of hepatitis C may be associated with retinopathy and, rarely, vision loss. The pathogenesis of interferon-associated retinopathy is thought to be related to the deposition of immune complexes in the retinal vasculature, producing leukocyte infiltration and retinal ischemia. We present a patient with chronic hepatitis C who developed decreased visual acuity and retinal nerve fiber layer infarct while undergoing treatment with pegylated interferon and ribavirin.

Case Report: A 46-year-old obese woman was referred to our office after testing positive for hepatitis C during a voluntary blood donation. Laboratory workup indicated a mild elevation of alanine aminotransferase (ALT), serum HCV-RNA by PCR of 2,096,000 copies/ml, and Genotype 1b. Liver biopsy revealed a Knodell Score of 6 with fibrosis. Treatment was initiated with pegylated interferon alpha 2-b, 150 mcg weekly, and ribavirin, 1000 mg orally, daily. By week twelve, HCV-RNA by PCR was undetectable and ALT was normal. The patient initially had only minor systemic complaints but during week thirteen she described a halo formation in the superior lateral aspect of her visual field in only the left eye (OS). Dilated fundoscopic exam detected a retinal nerve fiber layer infarct at the posterior pole OS. Treatment was immediately stopped. Over the next six months the patients retinal findings resolved completely and although her visual field defect improved she continued to describe a small defect in the left superior lateral visual field. Repeat HCV-RNA by PCR was 1,864,000 copies/ml. The patient expressed a great interest in resuming combination therapy. Treatment was started with pegylated interferon alpha 2-a, 180 mcg weekly, plus ribavirin, 1200 mg orally, daily for forty-eight additional weeks. After twelve weeks of treatment, HCV-RNA by PCR was again undetectable. The patient completed the entire course without further complications and laboratory exam at six-month follow up confirmed a sustained virologic response. No worsening of her visual acuity developed over the entire retreatment period and repeated dilated fundoscopic exam proved complete resolution of the initial findings. Conclusion: Although no formal guidelines exist on how to manage patients with hepatitis C who develop interferon-associated retinopathy, we found with close ophthalmologic monitoring it is often possible to safely continue therapy.
A 62 yo woman with moderate alcohol intake presented with acute pancreatitis. She had normal LFTs, Ca, and triglycerides. She subsequently returned with progressive abdominal pain despite abstinence from alcohol. Lab data now suggested a cholestatic profile. CT scan and MRCP revealed persistently inflamed pancreas with newly noted dilated CBD of 12 mm and gallbladder sludge. ERC revealed irregularity at lower third of CBD with post-obstructive dilatation. Benign cytology obtained and a stent was placed. A laparoscopic cholecystectomy was done. She returned with ongoing abdominal pain and cholestatic liver profile. An EUS revealed diffusely hypoechoic pancreas with FNA revealing only chronic inflammatory changes. Hepatitis A, B, C serology, ASMA, CA19–9 were normal. An AMA titer 1:20 and ANA titer of 1:80. Repeat ERCP with biliary sphincterotomy and pancreatogram revealed diffuse beading consistent with autoimmune pancreatitis. Brush cytology was benign. Pancreatic enzymes remained normal, LFT’s remained abnormal and abdominal pain continued. Repeat MRI demonstrated no mass and persistently inflamed pancreas with visible secondary branching. Patient was treated with a 4 week steroid taper for suspected autoimmune pancreatitis with prompt resolution. Repeat CT scan 1 month after treatment demonstrated parenchymal pancreatic atrophy without biliary dilatation. Autoimmune Pancreatitis is a unique form of chronic pancreatitis usually described as single case report or a small series. The characteristic findings are: 1) elevated levels of serum IgG, specifically IgG 2) presence of autoantibodies, ANA, anti-lactoferin, anti-Ca II, ASMA, RF 3) diffuse enlargement of the pancreas 4) diffusely irregular narrowing of the main pancreatic duct on ERCP (images 5) fibrotic changes with lymphocyte infiltration 6) mild or no symptoms, usually without acute attacks of pancreatitis 7) rare pancreatic calcifications or cyst 8) occasional association with other autoimmune diseases 9) preponderance in males 10) effective steroid therapy. Other features include diffuse swelling of the pancreas with segmental stricturing of the lower portion of the CBD, causing obstructive jaundice, often mistaken for pancreatic cancer. Her first bout of pancreatitis was believed to be secondary to alcohol and later suspicious for pancreatic malignancy. Not until ERP obtained was autoimmune pancreatitis entertained. The patient completed steroid therapy 8 months ago and has remained symptom-free, supporting the diagnosis of autoimmune pancreatitis.

479

COLONIC CANCER AND YERSINIA ENTEROCOLITICA BACTEREMIA: AN UNUSUAL ASSOCIATION
Hanmanth R. Bejjanki, M.D., Washburn Ronald, M.D., M. Raza Anees, M.D.*. Overton Brooks VAMC/LSUHSC-Shreveport, Shreveport, Louisiana.

Many studies in the literature have warned of the need for investigation of colonic lesions among patients, especially elderly ones, who have bacteremia and/or endocarditis from Streptococcus bovis. There are occasional case reports of association of colon cancer with Eubacterium or Clostridium bacteremia. We report a fascinating and never before described association of Yersinia enterocolitica septicemia and colon cancer.

Case Report: A black male, aged 80, presented with a short history of fever, shortness of breath and cough, as well as a history of poor appetite and weight loss for a few months prior to admission. No history of abdominal pain, nausea, vomiting, melena or blood per rectum. Past medical history was significant for chronic renal insufficiency and COPD.

His examination was significant for low grade fever and tachycardia, as well as orthostatic hypotension and poor skin turgor. Rectal exam was negative for occult blood.

Laboratory data was significant for WBC of 16500 with left shift. Urine analysis was negative for infection and no evidence of pneumonia on chest x-ray. Dehydration and renal failure improved to base line with hydration. Blood cultures grew Yersinia enterocolitica in two bottles and he was treated with ceftriaxone and cipro. The patient subsequently had an episode of bleeding per rectum while on anticoagulation therapy for deep venous thrombosis. Colonoscopy was performed, which showed a circumferential mass at 12 cm from the anal verge. Biopsies were suggestive of invasive, moderately differentiated adenocarcinoma. The patient was referred to general surgery and hematology/oncology for further treatment.

Discussion: Yersinia septicemia is very rare in normal hosts, but can occur in infants and those with impaired immunity or iron overload states. Our patient did not have any history of iron overload, blood transfusion, or gastrointestinal symptoms. The condition that could have put him at increased risk of Yersinia infection was an underlying malignancy. Our search of English literature did not show any single case of Yersinia enterocolitica bacteremia and colon cancer. Thus this will be the first reported case of Yersinia infection and colon cancer. Our case suggests that in older patients one should keep high vigilance for colon cancer. Any infection from unusual organisms should prompt further work up to rule out malignancy.

480

INFARCTION OF THE XIPHOID PROCESS PRESENTING AS BURNING EPIGASTRIC CHEST PAIN

A 15 y.o. female was referred for evaluation of constant burning epigastric pain for the past two years. It was exacerbated while lying down and eating bananas or pizza. It was relieved by calcium carbonate, cimetidine and pantoprazole; however, medication provided only mild to moderate relief and lost its effectiveness over time. She denied using aspirin or NSAIDs. ROS was negative for regurgitation, dysphagia, recurrent hoarseness, cough, change in appetite, weight loss or B symptoms. Fxs was negative for GI problems. SHx was notable for participation in cheerleading, but she could recall no injury that might have triggered her symptoms. Physical exam showed a healthy appearing teenager in no acute distress, pleasant and interactive. Her vital signs were normal and her exam was notable only for reproduction of symptoms with pressure over the xiphoid process. Labs: H. pylori negative. The working diagnosis was atypical GERD or dyspepsia with a differential diagnosis of xylophydina. Her burning chest pain was refractory to ten days of esomeprazole 40 mg per day; an EGD was remarkable for esophageal motility and 24-hour pH monitor study. Both studies were within normal limits. A clinical diagnosis of xiphophydina was made, the condition explained to the patient and her mother and they were returned to the referring physician along with a recommendation to inject the xerolophidoxid area with xylo-". Six months later, the mother called to tell me that the therapeutic trial resulted in total relief of her daughter’s burning chest pain; however, the pain would return each time the anesthetic wore off. She had independently consulted a cardiothoracic surgeon and after a chest x-ray and a CT scan of the chest and abdomen were normal, the surgeon advised a xiphoidectomy. The surgery went smoothly and her postoperative course was uncomplicated. The purpose of the mother’s call was to convey her thanks because her daughter was completely pain free since surgery one month ago. I was a bit skeptical of the ultimate outcome until I learned that the pathology report showed “xyphoid process - infarcted - etiology undetermined.” The patient has now been pain free for six months.

481

GASTRIC SARCOIDOSIS PRESENTING AS UPPER GI BLEEDING
Erin McGeeey, M.D., Alyn L. Adrain, M.D.*. The Miriam Hospital/Brown University School of Medicine, Providence, Rhode Island.

A 61-year-old woman with a history of sarcoidosis, currently in remission, presented with new-onset hematemesis, melena, and lightheadedness. She
denied abdominal pain. She had been taking daily aspirin and naproxen for a recent injury. The patient was hemodynamically stable, and abdominal examination was benign. Hemoglobin was 7.6 g/dL. Upper endoscopy revealed multiple gastric ulcers with stigmata of recent bleeding; esophagus and duodenum were normal. Biopsies were taken, and a serology was sent for Helicobacter pylori. Her symptoms resolved after blood transfusion. She was discharged several days later with a hemoglobin of 10.6 g/dL. Discharge medications included pantoprazole 40 mg twice daily and her pre-admission dose of prednisone. The patient returned three days later with recurrent symptoms and three gram decrease in hemoglobin. Repeat upper endoscopy revealed two proximal antral non-bleeding ulcers. Serology from her prior admission was positive for Helicobacter pylori, and oral clarithromycin and amoxicillin were initiated. Biopsy results from her initial endoscopy became available that day and revealed noncaseating granulomas. She was placed on full-dose steroids for presumed gastric sarcoidosis. Her remaining symptoms was treated with prednisone, and the patient continued to have a persistent cough. The study showed normal esophageal acid exposure on therapy and again a positive symptom index for cough with non-acid reflux. In view of these findings she was referred for laparoscopic Nissen fundoplication, which was performed 3 months after her initial presentation to our clinic. After a 7 month follow-up post surgery the patient reports no cough and is currently taking no anti-reflux therapy. **Conclusion:** MII-pH offers the ability to separate patients with symptoms associated with persistent acid or non-acid reflux from those with symptoms not associated with gastroesophageal reflux (GER), assisting the selection of the appropriate patient for anti-reflux surgery.
obscure GI bleeding severe enough to require repeated blood transfusions whom were cured by surgical hemorrhoidectomy.

**Case 1:** 72 year old woman with a two year history of GI bleeding requiring a total of 20 units of blood. She had multiple non-diagnostic endoscopic procedures performed, including capsule endoscopy (VCE). Unprepared sigmoidoscopy was performed while she was bleeding, revealing bleeding internal hemorrhoids and no evidence for proximal bleeding. EUA revealed large bleeding internal hemorrhoids. After hemorrhoidectomy, no further bleeding has been seen for 6 months.

**Case 2:** 54 year old woman with a diagnosis of chronic anemia due to obscure GI bleeding. She required 14 units of blood over the last three years and had an extensive workup performed, including VCE. During a subsequent episode of rectal bleeding, an unprepared flexible sigmoidoscopy demonstrated bleeding internal hemorrhoids with no proximal bleeding. She had an EUA followed by hemorrhoidectomy. She has not needed further transfusions during 4 months of follow-up.

**Case 3:** 30 year old woman with a 16 month history of hematochezia attributed to internal hemorrhoids seen on sigmoidoscopy. She began bleeding daily and colonoscopy demonstrated internal hemorrhoids. Bleeding continued and her hematocrit fell to 20% and she was transfused 2 units of blood. Repeat colonoscopy was performed, showing hemorrhoids. She continued to bleed, and was treated by hemorrhoidectomy. After surgery she has not had any further bleeding for two years.

These 3 patients show that hemorrhoidal bleeding can require transfusions. This demonstrates the truism that any GI bleeding that causes anemia or requires transfusion cannot be a hemorrhoidal bleed is not correct. Diagnosis requires a careful history and urgent unprepared sigmoidoscopy during bleeding. This will confirm that the bleeding is ano-rectal in origin and that there is no proximal source. Treatment is surgical.

Relevant literature review demonstrated few studies on this topic. Kluber and Woff estimated the incidence of hemorrhoidal bleeding causing anemia to be 0.5 patients per 100,000 of the population. We agree that the incidence of clinically significant hemorrhoidal bleeding may be low, but it is more prevalent than commonly thought.

**486**

**CLOSTRIDIUM DIFFICILE COLITIS MIMICKING ACUTE APPENDICITIS!**

Sarba Kandu, M.D., Manjushree Gautam, M.D.*, Gargei Komareddy, M.D. Mercy Catholic Medical Center, Darby, Pennsylvania.

Pseudomembranous colitis associated with Clostridium difficile rarely manifests as an acute abdomen and even more rarely as an acute abdomen without abnormal radiological studies.

We are presenting a case of 71-year-old female nursing home resident who was sent to the emergency department for evaluation of fever and dysuria. Review of systems was unremarkable. Patient was started on gentamicin for a possible urinary tract infection. However, she soon developed abdominal pain. On physical examination, she was febrile with temperature of 103°F and tachycardiac. Abdominal examination revealed a significant right lower quadrant tenderness with signs of peritoneal irritation. Her white count was surprisingly normal (8700 cells/mcL). A presumptive diagnosis of acute appendicitis was made. CT scan of her abdomen at this time was normal. In view of her clinical signs and symptoms and suspicion of a possible appendicitis, urgent exploratory laparotomy was performed. The laparotomy was essentially benign with no evidence of appendicitis or intestinal perforation. A plasma Clostridium difficile toxin assay sent during hospitalization was found to be positive. She was started on metronidazole postoperatively and showed dramatic improvement over next 48 hours. Patient had a follow up colonoscopy, which showed diffuse pseudomembranes with typical histologic lesions. Cultures of the colonic tissue sample grew clostridium difficile.

Pseudomembranous colitis may present as acute abdomen mimicking bowel perforation or peritonitis and in our case as acute appendicitis. Emergency colonoscopy may be useful for diagnosis and treatment especially when there are no radiological signs. Treatment with metronidazole is effective. Colitis due to C. difficile should be considered in the differential diagnosis of acute abdomen in patients treated with prior antibiotics or living in nursing homes.

A high index of suspicion is the key.

**487**

**PERSISTANTLY NORMAL SERUM ALKALINE PHOSPHATASE IN ENDOSCOPICALLY PROVEN PRIMARY SCLEROSING CHOLANGITIS**


Primary Sclerosing Cholangitis (PSC) is a progressive cholestatic disease affecting the liver and bile ducts. Complications include cholestasis, biliary stricturing, cholangitis, cholangiocarcinoma, and colon cancer. It is strongly associated with Ulcerative Colitis (UC) with up to 90% of patients with PSC having UC (1). The diagnosis is usually made through ERCP with or without liver biopsy, but now MRCP is a developing alternative to ERCP. An elevated alkaline phosphatase is typically found in laboratory testing of PSC patients. The alkaline phosphatase and bilirubin often can fluctuate to high levels due to transient blockage of the ducts. Aminotransferases are

the terminal ileum with deep serpiginous ulcerations in the transverse colon. Biopsies demonstrated cryptitis with architectural distortion and a single granuloma consistent with CD. The patient was treated with ciprofloxacin and metronidazole followed by 6-mercaptopurine. Her diarrhea resolved and she is well 3 months after her presentation.

None of these three patients had GI symptoms prior to their RGB nor was there evidence for CD at the time of their laparotomy. There was no family history of IBD. The diagnosis of CD developing after bariatric surgery has not been described in the literature. These cases demonstrate a potential association that should not be overlooked in patients with diarrhea after bariatric surgery. A case control study is planned to determine if the incidence of CD is increased after RGB.
MUCINOUS BILIARY OBSTRUCTION SECONDARY TO METASTATIC COLONIC MUCINOUS ADENOCARCINOMA
Matthew M. Eves, M.D., Patrick G. Brady, M.D.*, James S. Barhtel, M.D. University of South Florida, Tampa, Florida.

Case: A 52 y/o man was diagnosed with stage II, T2 N0 MX mucinous adenocarcinoma of the rectosigmoid junction four years prior to presentation. Transabdominal resection was performed and no chemotherapy or radiation therapy was given. Two years after resection he developed pain in rectal area and received radiation therapy to left buttocks. CT follow up showed a hypodense lesion along sacrum and enlarged para-aortic lymph node that remained unchanged for eighteen months, but then began to enlarge. Biopsy of lesion by EUS/FNA was negative for malignancy, but full body PET scan showed hypermetabolic areas in retroperitoneum, mesenteric lymph nodes, left lobe of the liver, along the common bile duct and left upper lobe of lung. One month after scan pt developed jaundice, with a total bilirubin of 9.3. US showed calcified lesion in left liver and dilated common bile duct. Cholangiogram obtained during ERCP showed a long amorphous opacity running through much of the common bile duct. Sphincterotomy was completed and several sweeps with balloon yielded bile stained mucous filling CBD. Obstructed CBD attributed to mucin production from mucinous colon adenocarcinoma metastatic to CBD epithelium.

Discussion: Mucin producing cholangiocarcinoma is rare. Cases of biliary obstruction due to mucin producing tumors have been described but obstruction from mucin producing metastatic colon adenocarcinoma has not. Adenocarcinoma of the colon therefore tends to metastasize to other epithelial membranes including those found in the lungs, bladder and biliary tree. Mucinous adenocarcinoma of the colon is not uncommon. The PET scan pattern makes this highly likely to be a colonic metastasis rather a second biliary primary tumor. The possibility that a mucin producing tumor found in the biliary epithelium represents a metastasis of a more common colonic adenocarcinoma raises important staging considerations.

References
1–3 available upon request

MUCINOUS BILIARY OBSTRUCTION SECONDARY TO METASTATIC COLONIC MUCINOUS ADENOCARCINOMA

KLEBSIELLA PNEUMONIAE PRIMARY LIVER ABSCESSES IN A NEWLY DIAGNOSED DIABETIC
Roshan J. Lewis, M.D., Mingliarti Tjahjana, M.D., Saba Shanmuganathan, M.D., Sune Balmir, M.D., Richard A. Heiden, M.D., Gerald Posner, M.D., F.A.C.G.*. Interfaith Medical Center (IMC), Brooklyn, New York.

A 48 year old male presented with cough, fever, and chills for 1 week and right sided pleuritic chest pain of 3 days duration. He had a 20 pack year history of smoking and was underweight. He denied any past medical history including recent travel. He had tachycardia and tachypnea with a fever of 103.5 F. Physical exam was unremarkable. WBC count was 13,100/mm3 with 94% neutrophils. Blood glucose was 181 mg %, Bilirubin 1.9 mg/dL, ALT 140 U/L, AST 175 U/L, alkaline phosphatase 185 U/L and LDH 386 U/L. Chest X ray was suspicious for a right lower lobe infiltrate. The patient was started on Ceftriaxone and Azithromycin for pneumonia. Over the next few days, fever and chills subsided and the pain diminished becoming localized to the right upper quadrant of the abdomen. The liver enzymes improved. Blood cultures sent on admission grew Klebsiella pneumoniae sensitive to all antibiotics except ampicillin. An abdominal CT revealed a 9 x 11cm abscess in the right lobe of the liver with multiple small nodules ( < 1cm) in the lower lobe of the lungs. CT guided catheter drainage of the abscess grew K. pneumoniae with the same antibiotic resistance pattern as in blood. After three weeks of parenteral broad spectrum cephaplorins the patient was discharged on oral antibiotics. Six weeks after admission a repeat abdominal CT revealed a much smaller abscess in the right lobe. The lung nodules resolved. The patient remained asymptomatic and continued to take antibiotics.

K. pneumoniae was reported as the most common cause of liver abscess in Taiwan, Singapore and Korea between 1990 and 1999. They still remain a rare cause of liver abscess in North America. Diabetes mellitus is an established risk factor. CT guided drainage and third generation cephaplorins are the suggested treatment. Endophthalmitis, meningitis, septic pulmonary emboli and necrotizing fasciitis are associated complications. With increasing globalization, we may begin to see an increase in K. pneumoniae primary liver abscess outside Asia.
A 42 year old female presented to the ER with complaints of body ache, chills, chronic left sided abdominal pain of 4 months duration and 5/10 in intensity, radiating to the left side of chest. The patient had history of Systemic Lupus Erythematosus and was on prednisone since 1985. She also had a history of Asthma and Peptic ulcer disease, not on any medication. Patient had a 40 pack year history of smoking but denied alcohol or drug use.

On physical exam there was only mild icterus and tenderness of the left upper quadrant. Temperature was 101.2 F. WBC count was 12,600/mm³ with 75% neutrophils. Hematocrit was 21.3% and MCV was 64.2 fl and Glucose was 130 mg %. Chest X ray and abdominal X ray revealed no acute pathology. Abdominal ultrasound revealed splenomegaly and a thickened gall bladder. CT scan of the abdomen revealed a splenic abscess with air bubbles on the anterior aspect of the spleen, extending into the pancreatic tail. There was also a small right pleural effusion.

The patient was started on Ciprofloxacin and Metronidazole parenterally along with prednisone and plaquenil for her SLE. She was given 2 units of packed red cells. Blood cultures subsequently grew E.coli sensitive to all antibiotics. Splenectomy was done and revealed a large infarct with central liquefaction and abscess formation. There was also arterial and arteriolar thickening and concentric fibrosis consistent with SLE but no evidence of active vasculitis.

The incidence of splenic abscess ranges from 0.14 to 0.7% in various autopsy series. The association of splenic abscess with SLE is very rare. Early diagnosis is key to successful treatment of splenic abscess and requires a high degree of clinical suspicion. CT scan is the most sensitive diagnostic tool. Ultrasound can also detect splenic abscess but has a lower sensitivity. Splenic abscess is associated with a very high mortality and the treatment of choice is splenectomy with adjunctive antibiotics. Percutaneous drainage may be helpful in some cases.

On day 2 he underwent CT scan of the abdomen without contrast shown below which revealed soft tissue attenuation below the level of duodenum abutting the aortic aneurysm by 1.5 cm. The patient was taken to surgery revealing a contained rupture of the aortic aneurysm (4 cm) known for 1 yr. Smoker 30 pack yr, ETOH-quit 18 months ago.no IVDA. Medications - aspirin, Lopressor, Viokase, Lipitor, Pepcid.

Physical examination- lethargic, afebrile, H.R 98/min, regular, B.P 114/58, no tilt R.R 14/min, SaO2 97% R.A. CVS-normal, Chest clear, Abdomen soft, not distended, mild tenderness umbilical region, no guarding or rebound. BS normal, palpable aorta, Rectal - heme negative. Labs- HB 12.1 gm, WBC 10,600, ESR 136, K 4.4, C102, Co 16, BUN 34 Creatinine 3.2 increased from 1.7 6 months ago. Amylase 46, Lipase 27 WNL. Abdominal Xray nonspecific gas pattern.

Initially was managed conservatively as acute on chronic pancreatitis with intravenous fluids, NPO and pain management. His renal function improved by day 2 with no improvement in his pain.
The patient received axillo-bifemoral bypass graft and 4 weeks of IV antibiotics and is currently doing well 6 months post procedure.

Final diagnosis: contained rupture of mycotic abdominal aortic aneurysm.

**Discussion:** Mycotic aortic aneurysm is uncommon and without surgical treatment can be fatal. Fever, pain, and palpable mass in the region of the aorta should raise a high index of suspicion even when co-morbid conditions like chronic pancreatitis are present. Early imaging is essential to diagnosis and treatment.

**AN UNUSUAL CASE OF SQUAMOUS CELL ESOPHAGEAL CARCINOMA IN A 34 YEAR OLD MALE: ROLE OF SCREENING?**

*Srinivas R. Pulagam, M.D., Vinay K. Gudena, M.D., Ronald Crock, M.D., Raza Khan, M.D.*

Canton Medical Education Foundation and Aultman Cancer Center, Canton, Ohio.

The majority of esophageal cancers are squamous cell or adenocarcinomas. Although the incidence of squamous cell carcinoma (SCC) is decreasing in the United States, the incidence of adenocarcinoma is rising dramatically. The prognosis for both types of cancer is poor. We present an unusual case of a 34-year-old male who presented with squamous cell carcinoma of the esophagus. He presented with history of jaundice, intermittent diffuse abdominal pain and a 25 lb weight loss. He also had nausea, vomiting and two episodes of hematemesis. The patient was diagnosed with SCC of esophagus two years prior to this visit (stage T3NOMO). He was treated with subtotal esophagectomy after chemotherapy and radiation. Physical exam was within normal limits. Lab abnormalities include a total bilirubin of 10.3 mg/dl (direct bilirubin 6.6 mg/dl and indirect bilirubin 3.7 G/dl), alkaline phosphatase 603 U/L, AST 218 U/L, ALT 333 U/L. CEA was elevated at 128.4 ng/ml and CA 19–9 was elevated at 97 U/ml. CT scan of abdomen showed extensive retroperitoneal and mesenteric adenopathy. Biopsy of retroperitoneal mass was positive for squamous cell carcinoma.

The most common risk factors for SCC are alcohol intake, cigarette smoking and ethnicity (African American). In patients with local esophageal cancer diagnosed at early stage, surgery along with adjuvant chemotherapy and radiation therapy may have curative potential. Esophageal cancer is more amenable to therapy in early stage. Screening for esophageal carcinoma has not been well studied. Screening studies have shown promise in high prevalence areas like China and Japan. In one mass screening program conducted in 11,564 asymptomatic patients over the age of 30, stage I carcinoma was found in 96% of cancers detected. Early detection of esophageal carcinoma by balloon cytology and endoscopic mucosal staining has shown some positive results.

The question of whether our patient would have benefited from such screening procedures is uncertain. Being African-American, a smoker and an alcoholic puts a patient at higher risk category. Though a population-wide screening program is not feasible and not recommended due to low incidence of the disease, physicians should be alert for warning signs in high risk populations. Cost effective screening procedures should be further explored.

**CAPSULE ENDOSCOPIC DIAGNOSIS OF A LOCALIZED SMALL BOWEL CANCER MISSED BY ENTEROCLYSIS IN A PATIENT WITH HNPCC**

*Alex Hewllet, D.O., W.A. Hoogerwerf, M.D., William Nealon, M.D., Gottumukkla S. Raju, M.D., FR.C.P., E.A.C.P., Darrell Finlay, M.D., Samir K. Nath, M.D., Ph.D.*

University of Texas Medical Branch, Galveston, Texas.

Although the incidence of small bowel cancer in general population is low, patients with HNPCC are at high risk of developing small bowel cancer. Before the introduction of capsule endoscopy (CE), enteroclysis (gold standard for evaluation of small bowel) was the only imaging method employed for screening these patients. We report the limitation of such an approach by describing a patient in whom enteroclysis missed the diagnosis of a small bowel cancer that was clearly visualized by CE.

**Case Report:** A 67-year-old white male with prior colon resections for two metachronous colon cancers and a family history suggestive of HNPCC (three siblings and a parent with colon cancer) developed severe iron deficiency anemia.
frames (figure 1). Push enteroscopy showed a friable ulcerated mass near the D-J Flexure (figure 2); biopsies revealed adenocarcinoma.

**Therapy:** Whipple resection demonstrated localized disease with sparing of lymph nodes. He recovered fully with resolution of his anemia.

**Conclusions:** This case clearly illustrates the fact that CE should be done to evaluate small bowel disease in the high risk group for adenocarcinoma (such as HNPCC) even if the enteroclysis is normal. Whether CE should be used alone or in conjunction with enteroclysis needs further investigation.[figure1][figure2]

---

**496**

**CAPSULE ENDOSCOPY FINDINGS AVERTED “BLIND” SURGICAL INTERVENTION**

*Alex Hewlett, D.O., Gurinder Luthra, M.D., Gottumukkala S. Raju, M.D., EB.C.P., F.A.C.G., Harsha Vital, M.D., Samir Nath, M.D., Ph.D*, University of Texas Medical Branch, Galveston, Texas.

The role of capsule endoscopy (CE) in the diagnosis of overlooked source of bleeding from stomach in patients with obscure GI bleeding is unclear. We report a patient in whom CE averted empirical subtotal hemicolecotomy for severe, recurrent GI bleeding.

**Case Report:** This 64-year-old male was admitted with one week of recurrent episodes of melena and hemoglobin of 6.8 g/dl. Despite 2 EGDs, 3 colonoscopies, 2 tagged RBC scans, enteroscopy, and enteroclysis, no source of bleeding was identified during hospitalization for 10 days with ongoing bleeding that required 14 units of blood transfusions.

**Capsule Endoscopy:** “Heme” in the duodenum → Source of bleeding (stomach)

Initial review of CE endoscopy did not reveal any active bleeding. The patient was scheduled for subtotal colectomy for diverticular disease with the assumption of diverticular bleeding. On repeat review of CE, the stomach was normal and there was “heme” noted in the duodenum.

**Therapy:** Surgery was deferred. EGD: a single large Dieulafoy’s lesion with active arterial spurting was seen in the stomach. Seven endoclips were placed with excellent hemostasis with no recurrence of bleeding (FU: 1 year).

**Conclusions:** This case illustrates the role of CE in the management of obscure GI bleeding from stomach. Identification of “heme” in an area should be considered an important red flag to the potential site of bleeding proximal to it, in our case “heme” in the duodenum pointed out to a gastric bleeding.

---

**497**

**SINGLE STEP TECHNIQUE OF LAPAROSCOPIC TRANSGASTRIC ERCP FOR BILE LEAK AFTER ROUX-EN-Y GASTRIC BYPASS**


**Introduction:** ERCP in patients who have undergone Roux-en-Y gastrojejunostomy can be challenging. The procedure is often unsuccessful when the Roux-en-Y limb is 150 cm or greater. ERCP via an existing gastrostomy after gastric bypass has been reported for the treatment of biliary stricture and pancreatitis. We report a novel method of a single step technique of laparoscopic transgastric ERCP for treatment of a post cholecystectomy bile leak after Roux-en-Y gastric bypass. In order to complete the ERCP, a laparoscopic gastrostomy was placed to provide access to the ampulla.

**History:** A 49 year old woman presented with bile leak one week post laparoscopic cholecystectomy. She had a history of gastric bypass for morbid obesity 13 months prior. The length of the Roux-en-Y limb was 150 cm. ERCP was attempted using a pediatric colonoscope advanced through the mouth, however the papilla could not be reached. The patient was brought to the operating room where she underwent a single step technique of laparoscopic gastrostomy placement into the stapled off gastric remnant. The anatomic placement of the gastrostomy necessitated the use of a standard forward viewing endoscope to identify the path to the duodenum. A guide wire was placed through the gastrostomy to the duodenum. A side viewing endoscope was then advanced over the wire. The major papilla was cannulated and cholangiogram identified a bile leak at the cystic duct stump. A 10 French 10 cm stent was placed into the common bile duct for decompression. The gastrostomy was left intact for removal of the stent six weeks later.

**Results:** The patient recovered rapidly, and six weeks later underwent a repeat ERCP through the gastrostomy. The previously placed stent was removed and repeat cholangiogram revealed no evidence of recurrent bile leak. The gastrostomy tube was removed two weeks later.

**Conclusions:** Laparoscopic transgastric ERCP for bile leak can be successfully performed in a single step technique. This method is a reasonable
A rare case of gastric outlet obstruction caused by a primary signet ring cell carcinoma of the duodenum

Luís J. Lopez-Garcia, M.D., Algia Ojeda, M.D., Daniel Conde, M.D., Doris H. Toro, M.D.*. San Juan VA Medical Center, San Juan, Puerto Rico.

Case: A 68-year-old man with a history of hypertension and hyperlipidemia was admitted to the hospital after a 2-months history of early satiety, nausea, non-bilious emesis and 20 pound weight loss. Physical exam was unremarkable except for a mildly distended abdomen and the presence of a succussion splash on auscultation. On admission, there was no evidence of anemia or liver function test abnormalities. Abdominal films performed demonstrated an abnormally distended stomach with retained secretions suggestive of a gastric outlet obstruction. Upper endoscopy disclosed a large ulcerated lesion at the duodenal apex causing partial obstruction of the lumen. The scope was advanced with difficulty into the second portion of the duodenum. The ampullary region showed no gross abnormalities. The gastric mucosa was normal. Multiple biopsies of the lesions were obtained. CLOtest™ was positive. Upper gastrointestinal series confirmed the extension of the lesion into the second portion of the duodenum. Chest, abdomen and pelvis CT-scan did not show evidence of metastatic disease or biliary duct dilatation. Histological examination of the biopsy specimen was compatible with a signet ring cell carcinoma with positive mucin stain. During exploratory laparotomy the lesion was found to be unresectable due to the presence of two left lobar hepatic lesions and several celiac, periportal and retroperitoneal nodes consistent with metastatic disease. A palliative surgery was performed.

Discussion: Malignant tumors of the small bowel are unusual and accounts for only 1% to 5% of all gastrointestinal tract malignancies. It has been estimated that 35% to 50% of these tumors are adenocarcinoma of which approximately 50% are located in the duodenum, which is the shortest segment of the small bowel. Primary signet ring cell carcinoma affecting the stomach or the colon is relatively common, while a primary tumor of this type arising in the small bowel is extremely rare. Only a few cases of ampullary signet ring cell carcinoma have been reported, all presenting with obstructive jaundice. In the English medical literature there are no reports of non-ampullary duodenal signet ring cell carcinoma presenting as a gastric outlet obstruction, making this case unique. This case also illustrates the poor prognosis associated with signet ring cell tumors as seen in other parts of the gastrointestinal tract.
We report the case of a 39-year-old woman with dysphagia and Machado-Joseph Disease, a rare, debilitating neurological disorder characterized by spinocerebellar degeneration due to an autosomal dominant mutation on chromosome 14q32. In addition to marked gait ataxia she complained of progressive dysphagia for liquids and solids. A barium esophagram showed a dilated esophagus and abnormal bolus transport. An esophageal manometry study showed incomplete lower esophageal sphincter (LES) relaxation and a lack of esophageal body peristalsis, suggestive of achalasia. Botulinum toxin was injected into her LES, and her dysphagia markedly improved. A repeat barium esophagram demonstrated 60% improvement in liquid bolus transport. A repeat esophageal manometry study showed that the LES pressure decreased by 37% with continued aperistalsis of the esophageal body.

Dysphagia is a common symptom in Machado-Joseph Disease (60% of patients) yet there is little information regarding its etiology. To our knowledge there are only two other case reports of dysphagia and esophageal dilation associated with hereditary spinocerebellar degeneration in the literature. We briefly review Machado-Joseph Disease and suggest that esophageal manometry may be a useful tool in guiding therapy for the associated dysphagia.

NIACIN HEPATOTOXICITY MIMICKING HEPATOBLIARY NEOPLASIA
Kevin A. Moreman, M.D., Cynthia L. Harris, M.D., Iliana S. Bouneva, M.D.*. University of Kentucky, Lexington, Kentucky.

We present a case of a 38 year old white female with a history of Type IV hyperlipoproteinemia (familial hypertriglyceridemia) who was referred to our medical center with jaundice, elevated liver enzymes, and a hepatic mass measuring 4 × 5 cm in the right lobe of the liver that was initially seen on abdominal ultrasound 7 months prior and confirmed by CT 5 months prior. The patient had no history of oral contraceptive use. An extensive work-up at an outside community hospital, including hepatitis B and C serologies, iron studies, markers for autoimmune hepatitis, alpha-1 antitrypsin and ceruloplasmin levels were performed and all were either negative or within normal limits. Alpha-fetoprotein was negative as well. Of significance was that the patient had been treated with sustained-release niacin (Niaspan) for approximately 11 months prior to presentation. This had been maximized to a dosage of 1 gm po bid for at least 4 months and it was not discontinued until her hospitalization despite previous evidence of abnormal aminotransferases, alkaline phosphatase, and bilirubin. In our hospital, the patient underwent a CT-guided percutaneous biopsy of the hepatic mass and the histology showed normal lobular architecture, marked macrovesicular steatosis, mild periportal inflammation with presence of eosinophils, and periportal fibrosis. Therefore, the mass was felt to be consistent with focal fatty infiltration of the liver caused by niacin.

Hepatotoxicity due to niacin therapy can be seen at low dosages but most commonly occurs at dosages of ≥ 3 grams per day. Niacin hepatotoxicity represents a spectrum that can range from mild elevation of liver enzymes and bilirubin with some degree of hepatic dysfunction to fulminant hepatic failure. Fatty infiltration of the liver, either focal or diffuse, has been previously described as one of the forms of niacin hepatotoxicity but its significance was that the patient had been treated with sustained-release niacin (Niaspan) for approximately 11 months prior to presentation. This had been maximized to a dosage of 1 gm po bid for at least 4 months and it was not discontinued until her hospitalization despite previous evidence of abnormal aminotransferases, alkaline phosphatase, and bilirubin. In our hospital, the patient underwent a CT-guided percutaneous biopsy of the hepatic mass and the histology showed normal lobular architecture, marked macrovesicular steatosis, mild periportal inflammation with presence of eosinophils, and periportal fibrosis. Therefore, the mass was felt to be consistent with focal fatty infiltration of the liver caused by niacin.

PANCREATIC HETEROTOPIA AND CYSTIC DYSTROPHY OF DUODENUM, AN UNCOMMON PATHOLOGY AND THE ROLE OF ENDOSCOPIC ULTRASOUND IN THE DIAGNOSIS
John Gosserand, M.D., Cathy Stuckey, ADN, B.S., M. Raza Anees, M.D.*. Overton Brooks VAMC and LSUHSC, Shreveport, Louisiana.

Pancreatic heterotopy, a rare entity, is defined as pancreatic tissue lying outside its normal location without anatomical or vascular connections with the pancreas proper. Cystic dystrophy is an uncommon and serious complication of heterotopic pancreas, usually in younger men. The mechanism by which cystic dystrophy develops is poorly understood. It is difficult to diagnose, as lesions deeper in the submucosa or the muscularis propria, are difficult to biopsy. We present an interesting and rare case of pancreatic heterotopia with cystic dystrophy of the duodenal wall, where endoscopic ultrasound clearly shows cystic changes in deeper layers of duodenum, later confirmed by surgery.

Case: A 54-yr-old white male presented to the hospital after several bouts of abdominal pain. Prior to presentation, he experienced several episodes of nausea and vomiting. He also had lost approximately 15 lb over the past two months. Past history was significant for non-hodgkins lymphoma, which had been in remission for 6 years. During endoscopy, a sessile mucosal lesion with mass effect was visualized in the second part of the duodenum and biopsies were obtained. Pathology was negative for cancer, but did show edema and lymphangiectasia. Endoscopic ultrasound showed a 1 cm cystic lesion in the wall of duodenum at the second portion. A pancreas-preserving duodenectomy was performed. Duodenal specimens showed a cystic lesion in the wall of duodenum. The mucosa overlying the cyst showed a mix of acute and chronic inflammation of the lamina propria. The cyst was located within the muscularis propria, which was hypertrophied. Focal areas showed an epithelial lining composed of columnar/cuboidal cells with basal nuclei and prominent brush border, suggestive of pancreatic ductal epithelium. Based on these findings, a diagnosis of heterotopic pancreas with cystic dystrophy of the duodenal wall was made.

Discussion: Duodenal cystic dystrophy due to heterotopic pancreatic deposit is an uncommon pathology. In the past, it was extremely difficult to diagnose without surgery because there are no specific clinical signs. Our case demonstrates effective use of endoscopic ultrasound in precisely locating cysts in the duodenal wall when other imaging modalities, such as CT scan can not. We will present EUS images, histology slides and a detail discussion about heterotopic pancreatic cyst and the role of different diagnostic modalities.

INEFFICIVENESS OF GLUTEN FREE DIET IN THE TREATMENT OF AUTOIMMUNE HEPATITIS ASSOCIATED WITH CELIAC SPRUE
Hammanth R. Bejiani, M.D., M. Raza Anees, M.D.*. Overton Brooks VAMC and Louisiana State University health Science Center, Shreveport, Louisiana.

Long-standing, untreated celiac disease is known to trigger autoimmune disorders and to have an association with some autoimmune diseases, but rarely reported with autoimmune hepatitis. Mild liver abnormalities are common in celiac disease and usually resolve with a gluten-free diet. There are reports which suggest improvement even in patients with severe liver failure. We intend to show an association of celiac sprue with autoimmune hepatitis and that a gluten free diet in such a situation is ineffective.

Case: A 64 y/o old asymptomatic white male presented with a 4 month history of worsening liver function tests. All medications were discontinued after initial detection during a routine workup. There was no recent history of...
fever, jaundice, travel, blood transfusion, weight loss, illicit drug or alcohol use. He did have a 9 year history of celiac disease and maintained a strict gluten free diet. His physical exam was benign. Liver function tests were consistent with the hepatocellular type picture, having a 3–4 times increase in transaminases during the last 4 months.

On admission, liver function tests showed total bilirubin of 1.5, AST of 492, ALT of 731, and normal alk phos, albumin and protein levels. A detailed lab work up ruled out viral infection or other causes of abnormal liver function tests. Imaging studies, such as CT scan and ultrasound, were unremarkable. A liver biopsy showed chronic hepatitis with grade 2 inflammation and stage 1 fibrosis. A few plasma cells were also present in the portal area, suggestive of autoimmune hepatitis. ANA nucleolar pattern was >1:1280; serum protein electrophoresis suggested polyclonal gammopathy. Smooth muscle antibody (SMA), liver kidney microsomal antibody, cryoglobulins, and anti-endomysial antibody were negative. A diagnosis of autoimmune hepatitis was made and patient was started on oral prednisone. The patient had a dramatic improvement in liver function tests, which normalized completely over a course of 4 weeks. He continued to remain symptom free.

**Discussion:** Our search of the literature has shown very few cases of autoimmune hepatitis with celiac sprue. It is not clear if a gluten free diet plays any role in these subsets of patients. None of the reported cases showed a gluten free diet. His physical exam was benign. Liver function tests were consistent with autoimmune hepatitis associated with celiac sprue.

**506**

**JEJUNAL DIEULAFOY’S LESION: IS IT RARE OR JUST UNRECOGNIZED?**

Priyanka Duggal, M.D., Katie P. Miller, M.D.*, Manish Dhandan, M.D., Sandra Jones, M.D., Michael Babich, M.D. - Allegheny General Hospital, Pittsburgh, Pennsylvania.

57-year-old male presented with a 2 day history of lightheadedness and multiple maroon stools. He denied abdominal pain, hematemesis, or weight loss. He had 3 episodes of lower GI bleed in the past 20 years for which work-up was unrevealing. On admission, Hgb was 9.7. EGD, colonoscopy, and Meckel’s scan were negative. His bleeding eventually resolved. He was discharged home, and scheduled for small bowel follow through. He presented 10 days later with recurrent massive hematochezia. He was admitted to the ICU due to hemodynamic instability, and received 10 units of blood. Repeat colonoscopy failed to identify a bleeding source although the colon was full of blood. He continued to have maroon stools. Two RBC scans and two angiograms were negative. Hematochezia continued and a third RBC scan identified the source in the distal jejunum. Exploratory laparotomy with intra-operative enteroscopy revealed a jejunal Dieulafoy’s lesion, and an incidental small nodule in the proximal ileum. Resection of both small bowel lesions were performed. Pathology of the jejunal lesion revealed a 5 mm submucosal artery protruding through the mucosa. There were multiple foci of hemorrhage with moderate congestion and edema in the surrounding submucosa. In addition, there was no inflammation at the edge of the mucosal defect. The small bowel nodule was found to be a 0.7 x 0.6 cm carcoid tumor involving mucosa, submucosa, and muscularis propria. He was discharged 6 days after surgery. For the past 18 months, he has had no recurrent episodes of hematochezia.

Dieulafoy’s lesions account for 2% of acute upper GI bleeding, and are usually located along the lesser curvature of the stomach within 6 cm of the GEJ. This congenital abnormality is a submucosal vessel which erodes through the mucosa and subsequently bleeds into the lumen. Only 7 cases of jejunal Dieulafoy’s lesions have been reported. While bleeding is usually brisk, profuse, and intermittent, it is often self-limited. Patients typically present with hematochezia and shock. After initial resuscitation and endoscopy, radiologic imaging is often performed. Intra-operative enteroscopy can be undertaken to localize small lesions, minimize extent of small bowel resection, and decrease overall morbidity. This lesion is difficult to diagnose due to its location, and is therefore potentially underdiagnosed.
Discussion: A possible explanation for this condition is that the transverse colon was overlying the stomach and during endoscopic insertion, the feeding tube had passed through colon before entering the stomach. During the first replacement in the nursing home, the GT which was introduced through the same stoma was not able to pass through the posterior wall of the colon to enter the stomach and its tip stayed inside distal colonic lumen. Consequently, patient developed constant diarrhea and hypokalemia. This condition was discovered later in our institution when a mandatory Gastrografin study was done after the second GT replacement.

Conclusion: Penetration of a feeding tube into the colon is an uncommon complication of PEG, which can lead to peritonitis, fistula formation or diarrhea. Adequate transillumination and finger impression must be obtained prior to introducing the needle into the stomach during PEG. Early diagnosis of displaced feeding tube can be achieved by routine gastrografin study after GT replacement.}

508
SMALL BOWEL INFARCTION DUE TO INVASIVE ASPERGILLOSIS
IIon D. Bucaloiu, M.D., Sara H. Mitchell, M.D., Martha S. Ghosh, M.D., Mary J. Reed, M.D., Robert E. Smith, M.D.*, Adel Z. Makary, M.D.
Geisinger Medical Center, Danville, Pennsylvania.

Invasive Aspergillosis is a potentially fatal cause of febrile neutropenia. Post mortem series have shown the gastrointestinal tract to be the second most common site of infection after the lung. Ante mortem diagnosis of small bowel involvement has been rarely reported in the literature and most of these patients succumb to their illness. We report the case of an immune-compromised patient who survived aspergillosis of the small bowel.

A 52-year-old female diagnosed with AML M1, received ceftriaxone and daunorubicin. Eight days after induction chemotherapy she presented with febrile neutropenia, abdominal pain and nonbloody diarrhea. Despite being started on fluconazole and cefepime, she continued to have abdominal distension and high fevers. Stool cultures, C difficile toxin, and blood cultures remained negative. A CT scan of her abdomen revealed duodenal distension to the ligament of Treitz with contrast enhancing walls. She developed an acute abdomen and required vasopressors for hemodynamic instability. Voriconazole and metronidazole were started empirically. Exploratory laparotomy revealed necrosis of part of the duodenum and jejunum. The necrotic bowel was resected without reanastomosis. Methenamine silver stains revealed multiple areas of necrosis with accumulations of dichotomous septate fungal hyphae invading the thrombosed vessels, consistent with Aspergillus spp. Caspofungin was added. The patient improved clinically, and at the time of reanastomosis no further areas of necrosis were identified. The patient recovered and after one year is in remission.

In febrile neutropenia, atypical causes of fever and diarrhea need to be considered. The diagnosis of invasive aspergillosis relies mainly on a high index of suspicion in a patient with significant risk factors and on tissue examination. Blood cultures and serological tests are usually not helpful. There are 6 case reports in the literature of small bowel infarction due to invasive aspergillosis diagnosed ante mortem and of these, only one survived. Our patient is unique in that she survived a serious infection with aspergillus that caused thrombosis of her small bowel vasculature and ultimately small bowel infarction.

509
COLON CARCINOMA PRESENTING AS CLOSTRIDIUM SEPTICUM SEPSIS

Sepsis is a very uncommon clinical feature of colon cancer. Similarly, blood stream infection is rarely found to be caused by this common malignancy. To alert clinicians to the spectrum of this unusual association, we report 4 cases of Clostridium septicum sepsis and large bowel carcinoma.

Case report: Four patients with C. septicum sepsis and colon carcinoma were identified over a seven-year period in one hospital. These 4 cases represented 27% (4 of 15) of all patients with C. septicum bacteremia during this interval. The age range was 73–81, including 3 men and 1 woman. Each presented with spiking fever of 1–7 days’ duration; 2 of these had associated right lower quadrant pain. None had cellulitis or a necrotizing skin or muscle infection. CT scan revealed a colonic mass or bowel wall thickening in all. In 2 cases, liver lesions consistent with metastases were present. In one case, CT scan documented gas within the aortic wall indicative of aortitis due to a gas-forming organism and unexpected cecal wall thickening. In 3 of 4 cases, sepsis with blood culture-documented C. septicum was the presenting feature of previously unsuspected colon cancer. One patient with known metastatic colon cancer developed fever with subsequent blood cultures positive for C. septicum.

Discussion: Previous literature suggests that colon carcinoma co-exists in as many as 30–35% of cases of C. septicum bacteremia, an uncommon infection. Unlike Streptococcus bovis, another organism associated with large bowel malignancy, C. septicum is not part of the normal human GI tract flora. The latter organism may enter the human GI tract through ingestion of animal products. Colonic neoplasia may provide a permissive milieu for C. septicum colonization and subsequent dissemination. Malignancy may also disrupt the epithelial barrier and decrease host immune defenses, facilitating the entry of this organism into the bloodstream.

Conclusions: Clinicians should be aware of the association between C. septicum sepsis, gas-forming infection including aortitis, and colon carcinoma. A thorough investigation, including colonoscopy, should be considered in any patient with unexplained C. septicum bacteremia. Fever or sepsis may be the first clue to underlying large bowel malignancy.

510
TUBERCULOUS PERITONITIS IN A PATIENT TREATED WITH INFlixIMAB
Darrell G. Finlay, M.D., Gottumukkala S. Raja, M.D. F.A.C.G., F.R.C.P., Karen Sauter, M.D.*, Ned Snyder, M.D. University of Texas Medical Branch, Galveston, Texas.

It is known that treatment with Infliximab increases the risk of reactivation of latent Mycobacterium tuberculosis (M.tb). Hence, it is imperative to screen for tuberculosis in every patient before considering therapy with Infliximab (NEJM 2004; 350:2060–2067). We describe a case of tuberculous peritonitis...
developing in a patient on Infliximab who did not show any evidence of latent infection (PPD negative) before the initiation of therapy.

**Case Report:** A 44-year-old Caucasian man presented with a two week history of increased abdominal girth, an 18 lbs. weight gain, fever and night sweats. Medical history was notable for long-term therapy with methotrexate for rheumatoid arthritis and ankylosing spondylitis, with limited clinical response. Five months prior to presentation, after a known negative PPD, he had been started of Infliximab infusion therapy. **Physical exam** was remarkable for tenuous ascites. PPD was again negative. **Laboratory findings** revealed: Ascitic fluid with high protein (5g/dL), low Serum-ascites albumin gradient (0.45) and lymphocytosis (WBC: 2175; lymphocytes: 78%). Cultures grew Mycobacterium tuberculosis. **Chest X-ray** revealed left upper lobe opacity and broncho-alveolar lavage was positive for tuberculosis. **Therapy:** The patient was treated with a 4 drug anti-tuberculous regimen which resulted in complete resolution of ascites and constitutional symptoms. There was no recurrence during a follow-up of two months.

**Comments:** There are four documented cases of tuberculous peritonitis occurring in patients treated with Infliximab. However, it is unclear about the status of PPD reactivity prior to the initiation of Infliximab in these four cases (NEJM 2001; 345: 1098–1103). Personal communication with manufacturer of Infliximab (Centocor): No recorded cases of tuberculous peritonitis developing in patients who were originally negative for latent M. tb after initiation of Infliximab.

**Conclusions:** This is one of the first detailed cases of tuberculous peritonitis developing in a patient with no evidence of underlying latent infection after initiation of Infliximab therapy. It is critical to educate patients receiving Infliximab about the risk of tuberculosis, even in the absence of signs of latent tuberculosis on screening, prior to initiation of Infliximab therapy.

**SHAPELOCK™ AS A RAPID FEEDER PORT FOR COLONOSCOPY**


The ShapeLock™ Endoscopic Guide is a novel overtube device with a unique “lockable feature” designed to resist loop formation during colonoscopy (Raju et al. Gastrointest Endosc 2004; 59: 416–19). If need be, the ShapeLock can serve as a conduit for quick reinsertion of the colonoscope into the proximal colon. We describe a case where the ShapeLock was used as a **Rapid Access Port for colonoscopy** to remove multiple, large polyps in the proximal colon.

**Case Report:** A 73-year-old man with a family history of colon cancer underwent colonoscopy for colon cancer screening. **ShapeLock as a Rapid Access Port for Colonoscopy:** As part of our ongoing evaluation of ShapeLock Endoscopy, we performed colonoscopy with the assistance of the ShapeLock Guide. After endoscopic mucosal resection of each of the four large polyps in the proximal colon, the colonoscope and the polyp were withdrawn, and following the delivery of polyp, the scope was rapidly reinserted through the ShapeLock (see figure). **Comments:** I. Reduction of tortuous sigmoid colon: The ShapeLock assisted in reducing the loops; it took 8 min to reach the splenic flexure and 10 min to reach the cecum. II. Potential concern of maceration of the polyps during the insertion of the ShapeLock proximal to the polyps: No damage was noted to any of the three large polyps in the distal transverse colon as the device moved proximal to them. III. **ShapeLock as a rapid access port to the proximal colon:** It took one minute for the total withdrawal of the colonoscope along with a large polyp held in a net, followed by rapid reinsertion of the colonoscope into the mid-transverse colon on each of the four attempts. IV. **Effective decompression of the proximal colon:** ShapeLock provided an outlet for decompression during colonoscopy with-drawl and reinsertion, thereby increasing patient comfort.

V. **Easy retrieval of large polyps through the ShapeLock:** Avoided the risk of large polyps getting stuck at the anus.

**Conclusions:** This case demonstrates the potential benefits of ShapeLock Endoscopy to provide a Rapid Access Port for colonoscopic removal of multiple, large polyps in the proximal colon. Further studies are needed.

**RAPID IMPROVEMENT OF PANCREATIC ASCITES FOLLOWING PANCREATIC DUCT STENTING**


The incidence of pancreatic ascites is low. We report a case of pancreatic ascites that developed in a patient following surgical removal of acute pancreatic pseudocyst. The patient responded well to short-term pancreatic stent placement.

A 57 year old white male was admitted with constant dull aching epigastric pain, nausea and vomiting for 2 weeks. He had an attack of acute idiopathic pancreatitis about 3 months ago. He developed a symptomatic pancreatic pseudocyst about one and half months ago, and surgery (open cyst-gastrostomy) was done about a month ago. He had an uncomplicated recovery following surgery. His medical conditions included hypertension, coronary artery diseases, depression, and abdominal aortic aneurysm (size 5 cm). His medications included metoprolol, lisinopril, amiodapine, baby aspirin, setraline and trazodone. On examination, he was afebrile and hemodynamically stable.

Abdomen was distended with a midline surgical scar. It was soft, mildly tender with positive shifting dullness. Rest of the examination was unrewarding. Investigations: CBC revealed WBC 13,300/cmm, Hbg 13.6 g/dl, platelets 410,000/cmm; serum amylase 1719 U/L, lipase 7139 U/L; CT abdomen and pelvis showed ascites, prominent head of the pancreas but no evidence of pancreatic pseudocyst. By ultrasound guidance, 3400 cc of dark ascitic fluid was aspirated. The fluid analysis showed total protein of 4.7 gm/dl, amylase 11820 U/L and lipase 5252 U/L. Considering the diagnosis of pancreatic ascites, the patient was given nothing by mouth, total parenteral nutrition, and octreotide 100 µg subcutaneously every 8 hours. There was no improvement of his ascites with this conservative treatment. ERCP was done and it revealed normal cholangiogram but leakage of dye from the pancreatic duct at the level of pancreatic head. A transpapillary pancreatic stent was placed about a month ago. He had an uncomplicated recovery following surgery. The patient was followed up closely. He had an excellent clinical response. Five months prior to presentation, after a known negative PPD, he had been started of Infliximab infusion therapy. It is critical to educate patients receiving Infliximab about the risk of tuberculosis, even in the absence of signs of latent tuberculosis on screening, prior to initiation of Infliximab therapy.

**Conclusions:** This case demonstrates the potential benefits of ShapeLock Endoscopy to provide a Rapid Access Port for colonoscopic removal of multiple, large polyps in the proximal colon. Further studies are needed.
513 SMALL BOWEL ENDOMETRIOSIS: AN UNUSUAL CAUSE OF CYCLICAL VOMITING
Ryan D. Madanick, M.D., Robert I. Goldberg, M.D., E.A.C.G.∗, University of Miami/Jackson Memorial Medical Center, Miami and University of Miami/Mt. Sinai Medical Center, Miami Beach, Florida.

Introduction: The gastrointestinal tract is the most common site of extrapelvic endometriosis, usually in the rectosigmoid region. Small bowel involvement is very uncommon. Although often asymptomatic, affected women can present with crampy abdominal pain, obstructive symptoms, or anorexia and weight loss. We describe a case of small bowel endometriosis that presented as an apparent cyclical vomiting syndrome.

Case Presentation: A 30-year old woman presented with the acute onset of nausea and hiliarous vomiting along with perumbilical and right upper quadrant abdominal pain and loose nonbloody stool. Over the previous year, she had experienced similar episodes approximately every 3 months, with no notable association with her menstrual cycles. Each episode lasted around 4 or 5 days and resolved spontaneously. She had no history of abdominal surgery. Extensive radiologic and endoscopic evaluation prior to this episode was non-diagnostic. CT scan of the abdomen and pelvis during this episode revealed fluid-filled small bowel loops with mural thickening. A small bowel series revealed a single fixed dilated loop of ileum near the terminal ileum (TI) with irregularity of the TI. At colonoscopy, intubation of the TI revealed narrowing with edema and erythema at 8 cm of insertion, beyond which intubation was impossible. She subsequently underwent laparoscopy, which revealed a dilated distal small bowel with hemorrhagic purplish serosal plaques in a scarred narrow segment. Pelvic and rectosigmoid implants were also noted. The operation was converted to an open laparotomy. A short segment of distal small bowel and ascending colon was removed and an ileocolonic anastomosis was performed. She recovered uneventfully from the surgery. Histopathology confirmed the invasion of endometrial glands and stroma into the muscularis propria of the small bowel, consistent with small bowel endometriosis. As an outpatient she received one dose of intramuscular leuprolide and was subsequently lost to follow up.

Discussion: Small bowel endometriosis is an uncommon cause of intermittent small bowel obstruction, and rarely presents as periodic episodes of vomiting. Affected women may not report any correlation of their symptoms with their menses, therefore the diagnosis should not be ruled out by the absence of this historical point.

514 PURE RED CELL APLASIA AND CROHN’S DISEASE: AN EXTREMELY RARE ASSOCIATION
Alla Grigorian, M.D., Haoussam E. Mardini, M.D., Antonio Bosch, M.D., Alia Grigorian, M.D., Lisbeth Selby, M.D., Willem J.S. de Villiers, M.D.∗. University of Kentucky College of Medicine, Lexington, Kentucky.

A 23 year Caucasian male with history of Crohn’s disease of 5 years duration and primary sclerosing cholangitis presented with complaints of fatigue, dyspnea on exertion, decreased appetite, and loose stools of 1–2 weeks duration. He has been in remission for more than a year and maintained on azathioprine 150 mg/day and Ursodiol 600mg bid. On physical examination he was very pale and dehydrated. His laboratory tests revealed a profound anemia with hemoglobin of 5.8 g/dl and hematocrit of 16.9%. Other findings included: WBC 6.3 × 10^3/μL, platelets of 42 × 10^3/μL, and MCV of 93 fL. His liver function tests showed elevated AST, ALT, and alkaline phosphatase (similar to baseline).

An upper endoscopy was unremarkable and a colonoscopy showed an evidence of active colonic disease. However, clinical and endoscopic findings were insufficient to explain the patient’s severe anemia. Iron, B12, folic acid levels, hemolysis and celiac disease markers were all within normal limits and erythropoietin was significantly high. Abdominal ultrasonography showed no evidence of hepatosplenomegaly. A bone marrow aspirate was performed and showed adequate numbers of megakaryocytes, myelocytes and monocytes with normal morphology. Myeloid-erythroid ratio was 19:1 due to lack of erythroid forms with limited maturation. There was no evidence malignancy, infection or other infiltrative diseases. These findings were consistent with pure red cell aplasia. The patient was further tested for potential vial infections (including parvovirus B19) and tumors (particularly thymoma) associated with PRAA but were negative. Azathioprine was held and the patient was treated with steroids for his active disease and transfused with blood. Follow-up labs few weeks later continued to show significant anemia and the patient continued to be transfusion dependent.

Conclusions: Idiopathic pure red cell aplasia is a rare condition and this is the first case to report its occurrence in a patient with Crohn’s disease. Evaluation to exclude infectious, malignant, and drug induced forms should be undertaken. Other than supportive blood transfusions the condition has been treated with empirically with steroids, immunosuppressants (cyclosporine and azathioprine), IVIG, antilymphocyte globulin, antithymocyte globulin, anti-CD20 monoclonal antibody and bone marrow transplantation in severe refractory cases.

515 PLEUROPERICARDITIS IN A PATIENT WITH CROHN’S DISEASE: A RARE EXTRATESTINAL MANIFESTATION
Houssam E. Mardini, M.D., Antonio Bosch, M.D., Alla Grigorian, M.D., Lisbeth Selby, M.D., Willem J.S. de Villiers, M.D.∗. University of Kentucky College of Medicine, Lexington, Kentucky.

A 20-year Caucasian male patient with colonic Crohn’s disease presented with complaints of progressive chest pain, fever and dyspnea on exertion of 2–3 weeks duration. He was diagnosed with Crohn’s disease a year prior to presentation and was initially treated with sulfasalazine for a few months but then switched to mesalamine because of abnormal liver tests and had been receiving it for 8 months prior to the current presentation. Physical exam was remarkable for mild tachycardia, decreased breath sounds basally and muffled heart sounds. His laboratory tests were remarkable for a total WBC count of 16 × 10^3/μL and platelets of 1,100 × 10^3/μL. There was no evidence of active disease clinically but the patient’s serum C-reactive protein (CRP) level was elevated. A chest X-ray showed a significant increase in the heart silhouette and bilateral pleural effusions. A CT scan of the chest showed significant pericardial and pleural effusions with no evidence of infectious or embolic event. Pleural fluid analysis revealed an exudate but work up for a potential infectious, endocrinologic and rheumatologic pathologies was unrevealing. The patient was diagnosed with pericarditis with pericardial and pleural effusions secondary to his Crohn’s disease and was treated with a non-steroidal antiinflammatory medicine. The patient improved dramatically and a repeat echocardiogram and chest X-ray prior to discharge from the hospital showed near-complete resolution of the pericardial and pleural effusions.

Conclusions: Intrathoracic serositis in the form of pleuropericarditis is a rare extraintestinal manifestation of Crohn’s disease. The serosal fluid is usually exudative and work up to exclude other potential causes (particularly infectious and overlap rheumatologic) is necessary. Nonsteroidal antiinflammatory therapy is effective and should be tried initially, but corticosteroids may be necessary if the patient does not respond.

516 INTESTINAL OBSTRUCTION AS A COMPLICATION OF METASTATIC BREAST CANCER: REPORT OF 6 CASES

Intestinal obstruction is an uncommon complication of breast cancer. Similarly, this malignancy is a rare cause of bowel symptoms. We report 6 cases of intestinal obstruction secondary to breast cancer to alert clinicians to consider nonspecific abdominal complaints as a potential sign of metastatic disease.
CONCLUSIONS: Carcinoma of the breast may cause intestinal obstruction by diverse mechanisms. Diagnosis of intestinal involvement may be elusive due to nonspecific presenting symptoms, low suspicion for metastatic disease, and relative inaccessibility of small bowel sites. CT scan should be the initial diagnostic test for suspected metastatic disease. Even up to 12 years after initial diagnosis, clinicians must consider metastatic bowel involvement when confronted with unexplained abdominal pain, constipation or diarrhea, nausea and vomiting, or intestinal obstruction or perforation in women with a history of breast cancer.

517

MUCOSAL HYPERPLASTIC POLYPS MASQUERADING AS EOSINOPHILIC ESOPHAGOGASTRITIS
Katie P. Miller, M.D., Dennis Borochovitz, M.D., Ramamurti Chandra, M.D.*. Allegheny General Hospital and Mercy Hospital of Pittsburgh, Pittsburgh, Pennsylvania.

A 15-year-old boy presented to the office with a history of intermittent nausea, vomiting, and nocturnal abdominal pain of 8 years duration. The pain had worsened despite acid suppression. PMHx revealed chronic sinusitis and asthma. Birth weight was 6 lbs, 4 oz. At presentation, he was in the 75th and 10th percentile for weight and height, respectively. Physical exam revealed moderate epigastric tenderness. Gastrin and ESR were normal. Serum eosinophils were 7.9% (n=0–5). EGD showed esophagitis with polypoid mucosal prominence, and biopsies showed eosinophilic esophagitis. He was placed on Cromolyn Sodium with relief. One month later, he returned with worsened symptoms. EGD this time revealed mild esophagitis with multiple linear erosions and antritis. Proton pump inhibitor was changed, and the patient improved until eight months later when he again developed nausea and vomiting. EGD revealed ulcerations in the antrum, multiple friable polypoid lesions, and extensive erythema and edema. Biopsies revealed polypoid hyperplastic and erosive eosinophilic gastritis. He was placed on Budesonide with complete relief and has been asymptomatic for the past 4 years.

Eosinophilic gastroenteritis is a rare condition that has been reported in all pediatric age groups. There is a slight male predominance, and symptoms are usually present for years before a diagnosis is made. Patients often have recurrent episodes of abdominal pain and vomiting. This condition rarely manifests as a localized polyp. More often, there is diffuse eosinophilic infiltration and multiple erosions. Most patients also have a history of allergie disorders such as asthma, hay fever, or hypersensitivity to medications. Peripheral eosinophilia is usually present. The cause of eosinophilic gastroenteritis is unknown, although an allergic basis seems most likely. The ideal treatment is to identify and remove allergens from the diet although not always possible. Steroids are very effective and long-term prognosis is good. Our case illustrates the importance of considering eosinophilic esophagogastriats as part of the differential diagnosis of ulcerated polypoid lesions in the upper GI tract as prompt recognition and subsequent appropriate management can significantly decrease patient morbidity.

518

NEUROLOGIC SYMPTOMS AND ACIDOSIS IN 2 PATIENTS WITH SHORT BOWEL SYNDROME
Matthew J. Hrnicek, M.D., John K. DiBaise, M.D.*. University of Nebraska Medical Center, Omaha, Nebraska.

Metabolic acidosis caused by the production of D-lactic acid is a rare complication seen in patients with short bowel syndrome (SBS) who have residual colon. We present two cases of D-lactic acidosis in patients with SBS. Patient 1 is a 26-year-old man with SBS secondary to a mid-gut volvulus at the age of five. His course had been complicated by small intestinal bacterial overgrowth (SIBO). He was weaned off of home parenteral nutrition (HPN) at the age of nineteen. Three weeks prior to presentation he began experiencing episodes of slurred speech and confusion. During the first episode, he fell unconscious and was taken to an outside hospital. He was acimetic and improved with intravenous sodium bicarbonate and fluid resuscitation. He presented repeatedly with similar symptoms and treatment results. He eventually presented to our facility. A D-lactate level was 3.07 mmol/L (normal 0–0.25 mmol/L). Multiple micronutrient deficiencies were identified. Following treatment with intravenous sodium bicarbonate and fluids, TPN was initiated. A low-carbohydrate diet and antibiotics were begun. He has had no further episodes of confusion.

Patient 2 is an 18-year-old man with SBS secondary to a mid-gut volvulus as a newborn. HPN was initiated soon after birth. His course had been complicated by SIBO. One year prior to presentation, an attempt to wean HPN was initiated. He began experiencing episodes of slurred speech and confusion. A D-lactate level was elevated (5.01 mmol/L). He was found to have multiple micronutrient deficiencies. Antibiotics and a carbohydrate-restricted diet were begun. The nutritional composition of the TPN was adjusted and oral rehydration solution was started. Subsequently, only one other mild episode has occurred.

The delivery of undigested carbohydrates to the colon is enhanced when the small bowel is removed, bypassed or diseased. D-lactate is produced by bacterial fermentation within the colon, usually from overgrowth of gram-positive organisms. D-lactate accumulates and remains in the body until it is excreted unchanged in the urine. It is unknown if the clinical presentation of D-lactic acidosis is the direct or indirect effect of the accumulation of D-lactate. Patients typically present with episodic acidosis and characteristic neurologic changes. Therapy includes administration of sodium bicarbonate, antimicrobial agents and a low carbohydrate diet. Correction of nutritional deficiencies and optimization of hydration status may also play vital roles.

519

ENDOSCOPIC DIAGNOSIS OF ACUTE APPENDICITIS
Sally Stigo, M.D., Eugene Healey, M.D., Samir A. Shah, M.D., F.A.C.G.*. Memorial Hospital of Rhode Island/Brown University, Pawtucket, Rhode Island.

The clinical role of colonoscopy in the diagnosis of acute appendicitis in asymptomatic patients has been described in isolated case reports. We report a patient who presented for routine surveillance colonoscopy, in whom acute appendicitis was diagnosed endoscopically.

A 72 year old male had a past medical history significant for hypertension and multiple colonic polyps. The patient presented to the endoscopy unit following completion of a standard phosphosoda bowel prep the evening before. He noted some vague right lower quadrant cramps, without fevers or chills, on the morning of the procedure. The patient attributed his symptoms to the bowel prep. On examination prior to the procedure, the patient was noted to be afebrile with stable vital signs. Abdominal examination revealed minimal right lower quadrant tenderness without rebound or guarding. Colonoscopy revealed erythema and swelling of the appendiceal orifice consistent with acute appendicitis. Care was taken to decompress the colon as the colonoscope was withdrawn. Diverticulosis and a small polyp were also noted. The patient had no pain at the end of the procedure. Nevertheless, given the endoscopic findings and his initial right lower quadrant discomfort, acute appendicitis was suspected. The patient was sent for a CBC, CT scan of the abdomen and pelvis and was referred for surgical evaluation.
Laboratory studies were notable for a white blood cell count of 10k/ul with bandemia. CT scan confirmed the diagnosis of acute appendicitis. Emergent appendectomy was then performed. Intraoperative findings were consistent with acute exudative appendicitis, confirmed on pathology. The patient made an uneventful recovery and went home the next day.

Acute appendicitis may present atypically, but is usually diagnosed by a combination of history, clinical exam and imaging studies. Colonoscopy is not routinely used to evaluate patients with suspected appendicitis. Endoscopic findings in patients with atypical presentation or unsuspected appendicitis may be useful in directing further management. Erythema and swelling around the appendiceal orifice and/or pus draining from the appendiceal orifice on colonoscopy should trigger a careful and immediate evaluation for acute appendicitis.

520

TERBINAFINE INDUCED HEPATOTOXICITY
Ritesh Jha, M.D., Seth Gross, M.D., Habeeb Ahmad, M.D., Mordecai Dicker, M.D.*, Raymond Dicz, M.D., Ellen Kahn, M.D., Qiang Hua Chen, M.D. North Shore University Hospital, Manhasset, New York.

Introduction: Terbinafine is a fungicidal agent used to treat onychomycosis and dermatophyte skin infections. Common side effects include gastrointestinal disturbances, rash, malaise, and lethargy. However, hepatotoxicity related to terbinafine is a rare occurrence. We report the case of a patient who developed severe hepatotoxicity following the use of terbinafine for onychomycosis.

Case: An 80 year old male presented with pruritus, dark urine and white stools, one month following the use of terbinafine. He had a past medical history of hypertension, gout, benign prostatic hypertrophy and glaucoma. His medications included terbinafine, gemfibrozil, allopurinol, colchicine, tilmolol, and lisinopril. Physical exam was remarkable for jaundice of the skin and sclera. Laboratory tests revealed a total bilirubin of 27.8 mg/dL, aspartate aminotransferase of 212 IU/L, alanine aminotransferase of 270 IU/L, and an alkaline phosphatase of 638 IU/L. Serologic tests for Hepatitis A, B and C were nonreactive. Serum antibodies for autoimmune liver disease were not detected. Imaging studies revealed no evidence of extrahepatic obstruction. A liver biopsy revealed mild mononuclear and neutrophilic portal inflammation, along with cancular and hepatocellular cholestasis. The patient was started on ursodiol and terbinafine was stopped. Serum bilirubin levels peaked at 32.0 mg/dL, three weeks after discontinuing terbinafine. Five weeks after having ceased terbinafine use his symptoms began to resolve and his liver chemistries normalized four months later.

Discussion: Hepatotoxicity induced by terbinafine is a rare phenomenon. The pathogenesis of injury is unknown but is thought to be either an immunological or metabolically mediated effect. It might be beneficial to follow liver chemistries of patients on terbinafine and to discontinue terbinafine if abnormal liver chemistries are detected.

521

SPLENIC HEMATOMA FOLLOWING ROUTINE COLONOSCOPY
Manjushree Gautam, M.D.*, Mounir Fertikih, M.D., Sarba Kundra, M.D., Steven Lichtenstein, DO. Mercy Catholic Medical Center, Darby, Pennsylvania.

Colonoscopy is a safe and well-tolerated procedure with few complications. We present an unusual complication of routine colonoscopy diagnosed 3 days after the procedure.

A 48 year old female with no significant past medical history was evaluated for increasing sharp, left upper abdominal pain which began abruptly two days ago. She denied nausea, vomiting, diarrhea, melena or bright red blood in stools. Three days earlier patient had undergone a colonoscopy for work up of her anemia. The colonoscopy was reported to be normal and no biopsy was performed. On physical examination she was pale and short of breath. She was afebrile, tachycardiac, tachypneic, hypoxic and hyponotensive. There was tenderness in the left upper quadrant with hypoactive bowel sounds. Heme occult was negative for any blood in stools. She had a low hemoglobin (7.6gm/dL) and leucocytosis (16300 cells/mcl). Comprehensive blood panel including coagulation and liver functions were normal. Obstruction series was grossly normal without evidence of perforation. A CT scan of her abdomen showed a large collection of fluid in the upper left quadrant surrounding the spleen. In view of the temporal relationship between the development of these signs and symptoms after colonoscopy, diagnosis of splenic rupture was made. She was managed with aggressive fluid resuscitation, blood transfusion, and broad-spectrum antibiotics. She responded very well to supportive measures.

Splenic trauma is a rare complication of colonoscopy. There are very few case reports of this complication in literature. Predisposing factors are splenomegaly, inflammatory bowel disease, intra-abdominal adhesions due to prior surgeries and use of anticoagulation therapy. However, this complication has occurred in the absence of these predisposing factors, during an otherwise seemingly uneventful diagnostic colonoscopy. The presumed mechanisms of splenic rupture during colonoscopy are direct trauma to the spleen, excessive traction on the splenocolic ligament, and decrease in the relative mobility between the spleen and the colon due to preexisting adhesions. The clinical manifestations mimic those of intra-abdominal hemorrhage. Onset of symptoms is variable and has ranged from 4 hours to about 36 hours after procedure. However, asymptomatic rupture of spleen has also been described. As occurrence of splenic rupture and the associated circumstances are often unpredictable. A high index of suspicion is the key to the diagnosis of this rare but potentially lethal complication.

522

EFFECTIVE TREATMENT OF BLEEDING WATERMELON COLON BY ARGON PLASMA COAGULATION

We describe our experience with the effective use of Argon Plasma Coagulation (APC) in producing cessation of severe recurrent bleeding in a patient with watermelon colon.

Our patient was a 31-year-old white female with severe progressive scleroderma, pulmonary fibrosis, 100% skin involvement, dysphagia, and watermelon stomach (treatment, who presented to her primary care physician with a hemoglobin of 6.0 and with mild symptoms of weakness and fatigue. Esophagogastroduodenoscopy (EGD) showed presence of gastric vascular ectasia in both the cardiac and antrum. This was treated with APC in three treatments over ten weeks with endoscopic obliteration of watermelon stomach and return of her hemoglobin to normal over several months. She was subsequently admitted for intermittent large volume hematochezia. Her hemoglobin again was 6.0. Repeat EGD showed no significant watermelon stomach. Colonoscopy showed multiple colonic angioectasias in the rectum and sigmoid arranged in linear stripes. These were treated with APC probe at a power of 45 W and 1.2 L/min. Two repeat sessions were performed via flexible sigmoidoscopy at 4 and 6 weeks, but she had no additional bleeding after the first treatment. She had no recurrent rectal bleeding over the next two years, and her hemoglobin remained stable at 12.0. Her only gastrointestinal symptom has been intermittent constipation. There are only 6 cases of watermelon colon in the literature. This is the first reported case of watermelon colon treated with APC.
Caroli’s disease is a rare congenital disease of intrahepatic ductal dilatation. It is usually associated with polycystic kidney diseases. We present a patient with recently diagnosed idiopathic focal glomerulosclerosis and Caroli’s disease. A 32 year-old Pakistani male presented with epigastric and right upper quadrant abdominal pain. He had similar pain approximately 1 week prior to admission. There was no nausea, vomiting, fevers, chills, or change in bowel movements. The patient was recently diagnosed with focal glomerulosclerosis confirmed by renal biopsy and was started on oral steroid treatment.

The only other past medical history was of hypertension and a small bowel perforation of unknown etiology. The patient’s brother died of liver cirrhosis at age 42. The patient denied drug use, smoking, drinking, or history of HIV. Medications included famotidine, prednisone, and ramipril. On admission, he had a temperature of 38.2°C, heart rate of 77, BP of 125/71. Physical exam revealed right upper quadrant and epigaastic abdominal tenderness without guarding or rebound and a 5 inch midline scar. There was no hepatomegaly or evidence of portal hypertension. Bowel sounds were normal. Rectal examination was normal. Laboratory examination revealed a white blood cell count of 17,900, 80% neutrophils, total bilirubin of 2.5 and direct bilirubin of 1.6. Aminotransferases and alkaline phosphatase were normal. BUN was 44 and creatinine was 1.9. US, CT scan, MRCP, and MRI all showed massive cystic dilatations of the intrahepatic ducts with stones and debris. The common bile duct was mildly dilated with a stone and sludge. The patient was started on broad spectrum antibiotics and IV fluids. ERCP with sphincterotomy was performed. Stones were swept from the common bile duct and a stent was placed for drainage. The patient was discharged home on ursodeoxycholic acid. This is the first case of Caroli’s disease associated with idiopathic focal glomerulosclerosis.

524
TORSION OF THE GALLBLADDER: A CASE REPORT AND REVIEW OF THE LITERATURE

Gallbladder torsion is rare cause of acute abdomen. Although gallbladder torsion is considered a difficult disease to diagnose preoperatively, prompt surgical intervention is necessary to prevent catastrophic consequences. There are some radiological findings consistent with torsion of the gallbladder (GB) that should raise a high index of suspicion for this condition.

A 35-year-old woman presented to our ED with a 24-h history of abdominal pain. The pain began in the periumbilical region and migrated to the right side of the abdomen and was associated with nausea, and one episode of emesis. Physical examination revealed a young female patient in mild distress, with tachycardia (100 beats/min); all other vital signs were normal. The abdomen was not distended. She had generalized tenderness over the entire right side with rebound tenderness and peritoneal signs over the right mid abdomen. Lab values showed a WBC count of 17,900 cells/mm^3 and normal LFTs. RUQ ultrasound showed a well distended GB and no evidence of calculi. The GB wall measured 7mm. There was a small amount of pericholecystic fluid. The common bile duct measured 4mm. Ultrasound Murphy’s sign was positive. HIDA scan was performed which showed that the GB did not fill in 3.5 hours. All diagnostic evidence pointed to GB pathology, however the patient was given analgesics in the ED and was found to be pain free at surgical examination. The abdominal exam worsened during hospital admission, and the WBC count increased to 12,800 cells/mm^3 with 95% of neutrophils. CT scan of the abdomen was performed.

The appendix was not visualized, but there was pericholecystic and pelvic fluid. With a preoperative diagnoses of acute cholecystitis the patient was taken to the OR for exploratory laparoscopy. On visualization the GB wall was thick and diffusely inflamed. There was no mesentery to the GB. The GB was freely mobile and was attached by its cystic duct and cystic artery, and was volvulized. Laparoscopic cholecystectomy was performed with intraoperative cholangiogram. The pathology report revealed an ischemic appearing GB. The GB culture revealed no growth. The patient recovered uneventfully and was discharged the day after surgery.

Our case was not identified preoperatively as GB torsion. Our case was probably due to the positive hepatobiliary scan in the absence of gallstones on ultrasound and the acute severe right upper quadrant symptoms on presentation.

525
POLYPOID BARRETT’S HIGH GRADE DYSPLASIA OCCURRING IN A PATIENT WITH FAMILIAL ADENOMATOUS POLYPSIS: A UNIQUE ASSOCIATION

Familial adenomatous polyposis is a hereditary cancer syndrome that includes gastro-duodenal involvement, polyposis, and a propensity to adenocarcinoma necessitating endoscopic surveillance. There are few data describing upper gastrointestinal familial adenomatous polyposis that have resulted in conflicting screening recommendations. This case description is the first known reported case of polyoid Barrett’s dysplasia occurring in a patient with familial adenomatous polyposis.

A 30-year-old male was referred for evaluation of Barrett’s esophagus with high grade dysplasia, an association not previously reported. Diagnosed during adolescence with familial adenomatous polyposis, he had undergone proctocolectomy in 1996. Subsequently, screening endoscopy for duodenal polyps detected long segment Barrett’s glandular mucosa replacing most of the esophageal mucosa (14 cm segment lengths) with polyoid changes. Similar appearing polyps were noted throughout the stomach and duodenum. This histopathological analysis of the specimens demonstrated overlying normal esophageal squamous mucosa undermined by Barrett’s glandular epithelium with high-grade dysplasia. The patient refused consideration of invasive treatment with poriferous sodium photodynamic therapy, endoscopic mucosal resection or esophageal surgical resection. Medical therapy with a non-selective non-steroidal anti-inflammatory drug combined with high dose proton pump inhibitor was initiated.

This case illustrates the association of familial adenomatous polyposis and Barrett’s dysplasia, an association not previously reported.

526
HAMARTOMATOUS POLYPS OF THE COLON IN KLIPPEL-TRENAUNAY-WEBER SYNDROME
John M. Levey, M.D., Barbara Banner, M.D.*. University of Massachusetts Medical School and Fallon Clinic, Worcester, Massachusetts.

Hamartomatous polyps are found in the GI tract in conjunction with several syndromes. Klippel-Trenaunay-Weber syndrome (KTWS) is a rare congenital angiomatous condition which can affect multiple organ systems including the GI tract. To date, hamartomatous colonic polyps have not been described as a GI manifestation of this disorder. We report a case of a pedunculated colonic hamartoma and similar sessile lesions in a patient with KTWS.

A 32-year-old white male with known KTWS presented for flexible sigmoidoscopy for constipation and rectal bleeding. He denied abdominal pain, weight loss or fatigue. His only medications were laxatives. Physical exam revealed a jaw deformity, hemifacial cutaneous hemangiomata, marked enlargement of the right upper extremity, and prominent varicose veins of the legs. Abdominal exam was normal. CBC, electrolytes, thyroid function tests and coagulation parameters were normal. Sigmoidoscopy revealed hemorrhoids and a 1.2 cm. diameter polyp on a long stalk at 30 cm, from the anal verge. A follow up colonoscopy also revealed multiple yellow and red subcutaneous nodules in the right and descending colon. Snare polypectomy was performed on the sigmoid lesion without complication. Subsequent UGI-SBFT was normal. Histopathological examination of the polyp revealed a hamartoma. The predominant feature was lipomatous. Fibrous tissue, smooth muscle and large thin walled vessels were present. Desmin staining was positive.
It was determined that the sigmoid lesion represented a hamartoma. The other sessile colonic lesions were not analyzed. We retrospectively reviewed staining of colonic lipomas done at our institution in the prior eight years. Lesions ranged between 1.5 and 4 cm. diameter. In addition to different histologic features, none of the lipomas stained positive for desmin. KTWS is a rare congenital angiomatous condition. Gastrointestinal manifestations include small bowel hemangioma, portal vein thrombosis with esophageal varices, protein-losing enteropathy and diffuse cavernous hemangioma of the colon. We describe a colonic hamartoma in KTWS, and suggest this also be considered a manifestation of the syndrome.

CSS is defined as asthma, allergic rhinitis and tissue eosinophilia. Gastrointestinal symptoms are common. The classic definition of CSS includes eosinophilic vasculitis. Since ICAM-1 modulates inflammatory cell trafficking and eosinophil activation, treatment with an antisense inhibitor of ICAM-1 should influence the disease.

Case Study: The subject is a 52 yo woman with a history of asthma since her teens. Over the past several years, her asthma has worsened with asthma symptoms present most of the time despite aggressive medical management. Additionally, she suffers from allergic rhinitis and severe gastrointestinal symptoms including: abdominal pain, cramping, distention, nausea, vomiting, and diarrhea. High tissue eosinophils were present on intestinal biopsy. Despite aggressive medical management, she continues to have intermittently disabling pulmonary symptoms and virtually continuous gastrointestinal distention and pain. Therapeutic trials have included: prednisolone, Gastrocrom, Enterocort, 6-mercaptopurine (discontinued due to severe neutropenia), interferon-gamma, and methotrexate (transaminitis). While the BRAVO™ capsule may provide us with more detailed and longer pH studies and offer better patient tolerability, it may be associated with complications such as the one highlighted in this case. As we begin to implement new technology to aid in the diagnosis and management of our patients, we must always be cognizant of the potential consequences and side effects. This case reaffirms that point and offers one potential management option.

GRANULOMATOUS DISEASE IN AN IMMUNOCOMPROMISED PATIENT
Priscilla Magno, M.D., Ramon De Jesus, M.D., Esther A. Torres, M.D., F.A.C.G.∗, Guillermo J. Vázquez, M.D. University of Puerto Rico School of Medicine, San Juan, Puerto Rico.

A 51 y/o female was referred to our IBD Clinic in late 2003. She had HIV since 1995 treated with HAART with no opportunistic infections. Early in 2003 a colonoscopy for evaluation of abdominal pain revealed an ascending colonic stricture and sigmoid aphthous ulcers. Crohn’s Disease (CD) was severe substernal chest pain. A chest x-ray showed that the probe was still in the esophagus. A repeat upper endoscopy confirmed that the probe remained attached to the esophageal mucosa. A snare was then placed around the probe and closed. Gentle pulling on the snare failed to detach the probe. The snare was then opened and repositioned to point of attachment of the probe to the esophageal mucosa. Electrocautery was applied to the snare and the probe was finally detached from the mucosa. It was retrieved with a Roth™ net and withdrawn from the patient. The patient felt better and her chest pain immediately subsided.

529
GRANULOMATOUS DISEASE IN AN IMMUNOCOMPROMISED PATIENT
abscesses developed, treated with antibiotics and percutaneous drainage. A ascending and transverse colon. An enterocutaneous colonic stricture and an irregular mucosal pattern with aphthous ulcers in the and small bowel X Rays were normal. Colonoscopy showed an ascending

stains did not show microorganisms. A second stool work-up yielded no or-

ment was noted. Histology revealed granulomas with caseous necrosis and

a

immunotherapy. Gastrointestinal histoplasmosis has a clinical, radiological, and endoscopic presentation similar to CD. Transmural granulomatous inflammation with colonic fistulization and perforation is an extremely rare

diagnosed; oral steroids and two doses of infliximab were given. The patient had not admitted her HIV infection. Two weeks after treatment fever, chills, and weight loss developed. When we saw her, she had constant, dull, RLQ pain, but no vomiting, rectal bleeding, tenesmus, constipation, diarrhea, dysuria, arthralgia, or perianal pain. She looked chronically ill and malnourished. Abdomen was soft, depressible, with RLQ tenderness, and no guarding or rebound. Rectal exam was negative. CBC and chemistries were normal, sed rate was 98 mm/hr. Stools were negative for ova, parasites, Salmonella, Shigella, Cryptosporidium, and C. difficile toxins. CD4 counts were > 200, PPD was negative. Chest and small bowel X Rays were normal. Colonoscopy showed an ascending colonic stricture and an irregular mucosal pattern with aphthous ulcers in the ascending and transverse colon. An enterocutaneous fistula and infrabdominal abscesses developed, treated with antibiotics and percutaneous drainage. A right hemicolecotomy and fistulectomy were performed. Peritoneal involvement was noted. Histology revealed granulomas with caseous necrosis and multinigiant cells in the mucosa, submucosa and mesenteric nodes. Special stains did not show microorganisms. A second stool work-up yielded no organisms including C. albicans and M. tuberculosis. Urine antigen and serum complement fixation titers for Histoplasma capsulatum were positive. The patient recovered from surgery and had gained twenty pounds three months after discharge. Itraconazole was started for disseminated histoplasmosis. This case illustrates the importance of infectious etiologies in the differential diagnosis of IBD, especially in those immunocompromised or on immunotherapy. Gastrointestinal histoplasmosis has a clinical, radiological, and endoscopic presentation similar to CD. Transmural granulomatous inflammation with colonic fistulization and perforation is an extremely rare complication in disseminated cases. Immunomodulator therapies for CD such as infliximab can activate and worsen the course of histoplasmosis. A heightened awareness for detection of opportunistic infections must be maintained for all patients undergoing immunotherapeutic regimes.

530

HEPATOCELLULAR DYSFUNCTION IN CHILDREN WITH KAWASAKI’S DISEASE- A POSSIBLE MARKER OF SEVERITY

Sivaramakrishnan V. Karthik, MRCPCH, Brendan Harrington, F.R.C.P.CH*. Wrexham Maelor Hospital, Wrexham, Wales, United Kingdom.

Background: Kawasaki’s disease is a systemic vasculitic illness and an important cause of acquired heart disease in children. It has a well recognised association with hydrops of the gallbladder. Hepatobiliary dysfunction occurs in 10–30% of children with Kawasaki’s disease but the significance of abnormal liver function tests is not well established.

Objectives: To describe liver function test profiles of children with Kawasaki’s disease and their clinical outcome in a district hospital.


Results: Six children (Male – Female = 4:2) with a median age at presentation of 21 months (Range: 18–66 months) were identified. All received Intravenous Immunoglobulin and high dose Aspirin treatment with serial echocardiography at regular intervals during follow-up. Although none had hepatomegaly, two patients had elevated serum ALT and Bilirubin levels (99 and 386 IU/Litre; 22 and 89 micromoles/Litre respectively). A third had low serum albumin (21gm/Litre) and high globulin (62gm/L) but otherwise normal liver function tests. All three developed minimal coronary arterial dilatation. Whereas this resolved completely in 2 patients, one child developed aneurysmal dilatation requiring continued medical management. The remaining 3 patients had completely normal liver function tests with no cardiac concerns at any stage.

Conclusion: Vasculitis is proposed to underlie not only cardiac complications but also hepatobiliary dysfunction in Kawasaki’s disease. Varying degrees of hepatocellular steatosis and congestion are encountered secondary to possible subclinical cardiac failure but liver cell necrosis is unusual. Our audit reveals the possibility of a link between abnormal liver function tests at presentation and development of cardiac complications in these children. We plan to investigate this hypothesis with a larger study.

531

CONGENITAL ABSENCE OF INFERIOR VENA CAVA WITH AZYGOUS CONTINUATION- A CASE REPORT

Jose L. Garcia, M.D., Arthur Sher, M.D., Andrew Ukleja, M.D.*. Cleveland Clinic Florida, Weston, Florida.

Agenesis of the inferior vena cava is a rare congenital vascular malformation discovered occasionally in adults. We report a case of a 53-year old female who presented to our institution with abdominal distention and no other associated symptoms. The patient was found to have abnormal liver function tests as well as abnormal coagulation studies, elevated prothrombin time and INR. Findings suggestive of advanced liver disease: caput medusae, ascites, and splenomegaly were found on physical examination. Chest x-ray showed a right paratracheal mass. Computed tomography of the chest, to follow on abnormal x-ray, revealed markedly dilated thoracic azygous vein. The abdominal computed tomography showed splenomegaly, esophageal, intra-abdominal, and abdominal wall varices with a complete absence of the inferior vena cava. This finding was further confirmed by a magnetic resonance venography, which showed the absence of inferior vena cava with lower extremity drainage via large retroperitoneal and paraspinal collateral veins that ultimately drain into the azygous and hemiazygous systems. Although an uncommon phenomenon, inferior vena cava absence and malformations have been reported in the past. What makes this case extraordinarily rare is its presentation with signs of hepatic decompensation due
to long standing portal hypertension. The focus of this case report is on the pathophysiology, complications, and treatment options can be offered to these patients. Recognition of this entity is very important.

532
METASTASIZING BENIGN PLEOMORPHIC ADENOMA OF THE PAROTID GLAND TO THE LIVER
Vivek Mittal, M.D., Mohamed A. Hassan, M.D., K. Shiva Komar, M.D., Herschel A. Carpenter, M.D., Jayant Talwalkar, M.D.*. Mayo Clinic, Rochester, Minnesota.

Case: We report a case of pleomorphic adenoma with metastasis to the liver. At the time of writing this report, this patient is being considered for liver transplantation. A 56-yr. female presents with abdominal discomfort related to activity and standing. The CT scan of the abdomen revealed a 14cm liver mass as well as several hypodense nodules surrounding the main tumor. Biopsy of the mass revealed the presence of pleomorphic adenoma consistent with salivary gland tumor. The patient denied weight loss, nausea, vomiting, changes in the bowel habits, or blood in the stool. Past medical history is noted for pleomorphic adenoma of the right parotid gland s/p superficial and deep parotidectomy 11 years ago. Follow up has shown no local recurrence of the tumor. On CT scan, the liver mass was straddling the right and left lobes, predominantly involving segments IV and VIII. There is no evidence of extrabiliary disease based on CT scan and PET imaging. After discussion between choices of debulking surgery versus liver transplantation, the latter choice was favored preceded by embolization. As to best of our knowledge, till now only one case has been reported with hepatic metastasis from pleomorphic adenoma in 1972. The treatment consisted of removal of the tumor with clear margin of normal liver with no recurrence. As the excessive tumor burden in this case favors liver transplantation, this will be the first reported case of metastasis of benign pleomorphic adenoma to liver, precluding the patient from debulking surgery and favoring liver transplantation. Discussion: Pleomorphic adenoma is the most common benign salivary gland tumor. Local recurrence after surgical treatment (lateral or total parotidectomy) has been described in 1% to 5% of cases. Malignant degeneration is observed in 2% to 9% of cases with pleomorphic adenoma of salivary gland origin. The development of metastasis from pleomorphic adenoma is exceedingly rare. Only one case of metastasis to the liver has been reported in the literature. Given its rare occurrence and absence of clinical features, it is difficult to say which patients with pleomorphic adenoma should be observed for the development of treatable metastases. Metastases have been reported to occur mainly after repeated resections for local recurrences. In this case, local recurrence has not occurred.

533
ENDOSCOPIC MANAGEMENT OF TRAUMATIC BILIARY INJURY

Background: Bile duct injury is an uncommon but significant complication of blunt abdominal trauma. Published literature support the use of nonoperative management of these complications. We present two cases of endoscopic retrograde cholangiopancreatography (ERCP) used for successful management of traumatic biliary duct injury. Case Report: Two 19-year-old males were unrestrained drivers on separate motor vehicle accidents. One patient had multiple abdominal injuries including a lacerated common bile duct (CBD) confirmed and repaired at exploratory laparotomy. Subsequent ERCP confirmed a persistent bile leak despite attempted surgical repair. Endoscopic stenting was performed with control of the leak and subsequent healing of the rupture. Two additional stents were added in separate procedures to avoid sticture formation. Seven months later, all stents were removed. ERCP showed a normal cholangiogram. The patient had no symptoms and normal liver chemistries. The second patient had biloma drained percutaneously. ERCP confirmed a leak from the intrahepatic system. Endoscopic stenting was successful in treating the bile leak. Repeat cholangiogram three months later showed no leak and normal biliary tree. Discussion: These cases demonstrate the utility of ERCP in the management of traumatic injury to the biliary system. Endoscopic management in these situations can be effective while preserving normal anatomy and avoiding major surgical reconstruction.

534
DYSPHAGIA IN EOSINOPHILIC ESOPHAGITIS RESPONDS TO GERD THERAPY
Amine Hila, M.D., Amit Agrawal, M.D., Inder Mainie, M.D., Janice Freeman, R.N., Donald O. Castell, M.D., M.A.C.G.*. Medical University of South Carolina, Charleston, South Carolina.

Background: Eosinophilic esophagitis (EoE) is a rare disorder defined by the presence of more than 24 eosinophils per high-powered field within the esophageal squamous epithelium or deeper tissue levels, typically presenting with dysphagia in young adult males. There appears to be a possible relationship between EoE and gastroesophageal reflux disease (GERD). However, there is no data concerning EoE and esophageal motility and function. Objective: Identify a possible esophageal motility pattern for EoE. Methods: 2 patients with histologically proven EoE, evaluated with barium swallow (BS), 24-hr esophageal pH monitoring (24-hr pH) and MII-EM. Results: Patient # 1: 31 year old male with solid food dysphagia. EGD showed a mildly narrowed distal esophageal lumen and friable mucosa with slight corrugated appearance. On pathology of esophageal biopsies, there were 34 eosinophils per high powered field. BS was normal. 24-hr pH showed normal recumbent reflux (3.2%). MII-EM found ineffective esophageal motility (IEM) with complete bolus transit. Maximal acid suppression therapy with PPI twice a day plus H2 antagonist at bedtime. Patient # 2: 42 year old male with solid food dysphagia. EGD showed a corrugated esophagus. On pathology of esophageal biopsies, there were 29 eosinophils per high powered field. BS found a diffusely narrowed distal esophagus. 24-hr pH showed abnormal esophageal acid exposure in upright (9.4%) and recumbent positions (2.8%). MII-EM found IEM with incomplete bolus transit. Maximal acid suppression therapy with PPI twice a day plus H2 antagonist at bedtime. Follow-up: Both patients were followed 1 year after starting acid suppression therapy. They both report no dysphagia within 2 months of starting acid suppression therapy. Conclusion: These 2 cases reinforce the probable link between EoE and GERD, since both patients had GERD, and their dysphagia responded to maximal acid suppression therapy. They both had IEM, which may be a factor in their dysphagia.

535
A TUBULAR ADENOMA ARISING IN A COLONIC INTERPOSITION
John Altmare, M.D., Michael Komar, M.D.*. Geisinger Medical Center, Danville, Pennsylvania.

Introduction: Colonic interposition has been used for esophageal replacement since 1911. There has been only one case report of an adenoma in a colonic interposition. We report a second case of a rare, late complication of an adenoma arising in a colonic interposition. Case Report: A 64-yr-old male presented in 1996 with recurrent abdominal pain, chronic reflux symptoms and weight lost. He was found to have adenocarcinoma of the gastric cardia and underwent a sub-total proximal gastrectomy. He decline radiation therapy. He developed a postoperative stricture that required repeated endoscopic dilation. He had an adenomatous
polyp removed during a colonoscopy in 1998. Because of refractory, complicated postoperative gastroesophageal reflux disease he underwent RYGB in 2000 and a colonic interposition in 2001. In 2003, a repeat endoscopy for dysphagia found a 6 mm polyp approximately 3 cm proximal to the colonic-gastric anastomosis. Pathology revealed tubular adenoma. Subsequently colonoscopy revealed no polyps.

**Discussion:** Both early and late complications have been described for colonic interposition. Early complications include anastomotic leakage, ischemia and gangrene of the colonic loop, vocal cord paralysis and cardiopulmonary disease. Stricture and fistula can occur either as a early or late complication. Other common late complications include dysphagia, colonic dysmotility, bowel obstruction, mucosal ulcerations and reflux colitis. One prior case of an adenomatous polyp in a colonic interposition is reported. In that case a synchronous adenomatous polyp was also found on colonoscopy. There have also been seven cases of malignant adenocarcinoma reported. Three of the seven cases reported that the adenocarcinoma arose from a colonic polyp in the interpositioned segment. This suggests that earlier detection may provide the opportunity for removal of the adenomatous polyp before it has the chance to develop into cancer.

In our case, our patient had a history of an adenomatous polyp found prior to his colonic interposition surgery. As a result, this patient was at increased risk. This case illustrates the need for continued screening and surveillance for colorectal cancer wherever colonic tissue may be found. We recommend that the colonic interposition segment be treated as part of the colon and undergo regular screening for colon cancer prevention. If a polyp is found in either the native colon or the interposition segment, surveillance of the both the native colon and interposition segment should occur at the same surveillance interval.

---

**536**

**A RARE PRESENTATION OF COLITIS CYSTICA PROFUNDA**

Basher M. Atituzzaman, M.D., Tahsina Y. Atituzzaman, M.D., Vijaya D. Boyella, M.D., Muhammad Abdullah, M.D.*. Long Island College Hospital and Woodhull Medical Center, Brooklyn, New York.

A 51 yrs old women who underwent a screening colonoscopy. She has no significant gastrointestinal symptoms. Her past medical history was significant for Hypertension and she was treated with atenolol. She has a 1.2 cm pedunculated polyp in descending colon which was snared with standard setting. Histology of that polyp was ‘mucous-containing cysts partially lined with colonic epithelium located in the submucosa is diagnostic of colitis cystica profunda’.

In the colon the presence of histologically benign mucous-containing cysts partially lined with colonic epithelium located in the submucosa is diagnostic of colitis cystica profunda. Most instances of colitis cystica profunda are localized polyoid lesions located in the rectum. Diffuse or segmental colonic involvement may occur occasionally, usually in association with inflammatory bowel disease or diffuse colonic infections. Circumstantial evidence strongly suggests that colitis cystica profunda follows mucosal ulceration of varied etiologies and is probably due to submucosal entrapment of colonic glands following healing of ulceration.

At the present time localized colitis cystica profunda is considered to be closely related to the solitary rectal ulcer syndrome, protruding mucosal folds in diverticular disease, and inflammatory cloacogenic polyp. All of these conditions are linked to mucosal prolapse and represent parts of the spectrum of what has recently been called the “mucosal prolapse syndrome.”

Colitis cystica profunda has also been reported following radiation therapy and self-inflicted rectal trauma.

There is also evidence that submucosal entrapment of colonic glandular tissue may be a complication of surgery due either to mechanical displacement of glandular tissue. In an early report six of nineteen patients with localized rectal colitis cystica profunda had previous rectal surgery.

Colitis cystica profunda is a rare histological finding in a totally asymptomatic patient. Review of literature did not reveal any case yet. Though it is common in some primates.

---

**537**

**AGENESIS OF THE DORSAL PANCREAS AS A CAUSE OF RECURRENT ABDOMINAL PAIN**


Embryologically, the pancreas consists of a ventral portion which develops into the head of the pancreas, including the Duct of Wirsung. A larger, dorsal portion develops by rotating and elongating to become the body and tail of the pancreas, including the Duct of Santorini. Developmental problems often result in symptomatic disease, such as annular pancreas and pancreas divisum. We report a patient who presented with recurrent abdominal pain found to have agenesis of the dorsal portion of the pancreas. A 23 year old gentleman presented with complaints of right upper quadrant and epigastric pain radiating to the back associated with nausea. The pain had been episodic, lasting days. He had been seen in the emergency room several times over the past 3 years with similar pain. There had been no fever, jaundice, weight loss, diarrhea, melena, or hematochezia. Between the attacks, he had been well. There were no prior hospitalizations or surgeries. No medications. No family history of genetic disease or pancreatic disorders. Physical examination demonstrated a thin male in moderate distress. The abdomen was soft and non-tender. Laboratory testing revealed mild elevations of the transaminases; the bilirubin was normal. Amylase and lipase were normal. Ultrasound of the abdomen showed a dilated common bile duct. There were no stones. Computed tomographic scan with fine cuts through the pancreas demonstrated a normal head of the pancreas. However, the entire body and tail were absent. An ERCP revealed a dilated common bile duct above the pancreas. A small stricture adjacent to the dorsal (superior) portion of the pancreas was seen. The intra-pancreatic bile duct was normal. Pancreatogram was performed. The Duct of Santorini was not appreciated. The Wirsung duct was otherwise normal. The minor papilla was absent. Brushings of the stucture were normal. This case is the first case of agenesis of the pancreas leading to recurrent abdominal pain. A small fibrous band above the ventral pancreas likely represents a remnant of the dorsal pancreas. This remnant is the likely cause of the minor stricture leading to proximal bile duct dilatation and recurrent attacks of pain. Treatment with biliary dilatation may be necessary in patients with obstructive symptoms.

---

**538**

**ETANERCEPT AND INFLAMMATORY BOWEL DISEASE: FRIEND OR FOE**

Craig M. Womeldorph, D.O., Lawrence Goldkind, M.D.*. National Naval Medical Center, Bethesda, Maryland.

Tumor necrosis factor-a (TNF-a) is a potent proinflammatory cytokine that has been successfully targeted for the treatment of several immunologically mediated conditions including Rheumatoid Arthritis (RA), Psoriatic Arthritis (PA), Crohn’s Disease (CD) and Ankylosing Spondylitis (AS). Infliximab and Etanercept block TNF activity differently. Infliximab is dosed at longer intervals than Etanercept reflecting differing immunologic pharmacodynamic effects. Interestingly in clinical trials of CD Etanercept was numerically inferior to placebo with more patients deteriorating in the Etanercept group. In an AS trial 2:138 versus 0:139 withdrew due to IB-related illness. We present a case of new onset CD associated with administration of Etanercept for AS. A 43 y/o WM with AS received Etanercept 6 weeks prior to the acute onset of anorexia, early satiety, low-grade fevers, 20 lb weight loss, and diarrhea. Laboratory studies revealed a normal WBC, negative stool studies including culture, C. Diff toxin, and O&P.
The patient underwent an EGD and colonoscopy, which revealed discrete ulcerations of the esophagus and severe colitis in the descending colon extending to cecum, most consistent with CD. Colon biopsies revealed severe acute and chronic inflammation with ulcerations. Viral and AFB stains were negative on two occasions. The patient responded to oral prednisone, flagyl, and ciprofloxacin followed by maintenance mesalamine but continues to have colonicoscopic evidence of disease one year after onset of illness. After discontinuation of mesalamine, he had recurrence of his symptoms of anorexia, weight loss, and abdominal pain. The striking temporal relationship between exposure to Etanercept in addition to findings in two clinical trials databases suggest that Etanercept may have a negative clinical impact in susceptible CD patients.

539

METASTATIC CLEAR CELL CARCINOMA PRESENTING AS FATTY LIVER

Purpose: An 81 year old female presented with a 2 week history of right upper quadrant abdominal pain and nausea. Past medical history was significant for bilateral mastectomy over 20 years ago for breast cancer, hypertension, type 2 diabetes mellitus, spinal stenosis, single transient ischemic attack and diverticulitis. Physical exam revealed palpable hepatomegaly 5 cm below the costal margin. Her liver enzymes showed a mixed hepatocellular and cholestatic pattern with an AST of 165 U/L, ALT of 117 U/L, Alk Phos of 247 U/L and Bilirubin of 3.9 mg/dl. Liver function was preserved with a normal INR and an albumin level of 3.4 gr/dl. Hepatitis B and C serologies, iron studies, AMA and ASMA were negative. ANA was 1:160, cholesterol 289 mg/dl and triglycerides 428 mg/dl. An abdominal ultrasound showed hepatomegaly with a liver span of 15.3 cm and heterogeneous echogenicity suggestive of fatty infiltration. A CT of the chest, abdomen and pelvis was performed confirming likely fatty infiltration with diffuse decreased echogenicity and a lobulated contour suggestive of cirrhosis. The CT scan also revealed diffuse sclerotic bone lesions either secondary to metastatic disease or multiple myeloma. This work up was suggestive of Non-alcoholic steatohepatitis (NASH) versus autoimmune hepatitis. Given the significant hepatomegaly, cholestasis out of proportion to what is usually seen in NASH and the suggestion of cirrhosis by CT scan a liver biopsy was performed. A blind liver biopsy revealed liver tissue infiltrated by clear cell adenocarcinoma with over 50% of the tissue obtained being cancerous. Description: Radiologically, fatty liver is known to mimic metastatic disease with areas of focal sparing or focal fatty infiltration being frequently confused for tumors. The diagnosis of metastatic disease in the setting of fatty liver also poses a significant challenge. Metastatic liver infiltration mimicking fatty liver in the absence of steatosis has not been reported in the literature. Here we described a patient with multiple risk factors for NASH who had findings consistent with fatty infiltration in both abdominal ultrasound and CT scan. However, a blind liver biopsy revealed no evidence of fatty infiltration but rather diffuse infiltration by metastatic clear cell adenocarcinoma. In a time when the recognition of NASH as a major cause of liver disease is increasing, knowledge of possible mimickers of this condition is increasingly important.

540

PAIN IN THE BUTTOCK: PIRIFORMIS MUSCLE ABSCESS IN CROHN’S DISEASE

Introduction: Purulent musculoskeletal complications can occur in crohn’s disease. We describe a rare case of purulent musculoskeletal complication of crohn’s disease.

Case: A 33-year-old woman with history of crohn’s ileitis presents with severe right buttock pain. She had pain with weight bearing on her right leg, walked with a wide based gait and was unable to cross her right leg over her left leg. She had no prior history of fistulization or abscessing complications.

On physical exam she was febrile and had exquisite tenderness over her right piriformis muscle. Abdominal exam was unremarkable. WBC count was 17. CT scan revealed thickened iliac loops with a fistulous tract to the right piriformis muscle, resulting in a right piriformis muscle abscess. CT guided aspiration grew E.coli and Clostridium perfringens. She responded with complete resolution of her musculoskeletal symptoms after 6 weeks of IV antibiotics, bowel rest and TPN, followed by ileal resection.

Discussion: There are only a few reported cases of gluteus muscle abscess complicating crohn’s disease. We describe to our knowledge the first reported case in which the piriformis was the only muscle involved.

Conclusions: Purulent musculoskeletal complications of crohn’s disease must be considered in patients presenting with pain in the buttock. We describe to our knowledge the first reported case of piriformis muscle abscess complicating crohn’s disease.

541

BLEEDING DUODENAL LIPOMA

Duodenal lipomas are a rare source of acute and chronic upper gastrointestinal bleeding. We describe a case of an elderly woman with abdominal pain, mild anemia, and occult bleeding caused by a large submucosal duodenal lipoma with secondary mucosal ulceration.

Case Report: A 70-year-old Caucasian female was referred for evaluation of abdominal pain, occult blood positive stool and mild anemia. Laboratory investigation was significant for H/H of 11.7/37.7 and platelets of 527,000 per cubic mm. Colonoscopy revealed mild diverticulosis. EGD showed a large lobulated mass in the second portion of the duodenum, biopsy of which was reported as active chronic erosive duodenitis with gastric metaplasia. A CT scan of the abdomen with contrast reported a 2.5 cm lesion in the region of the head of the pancreas/second portion of the duodenum. An ERCP examination was done next and showed a large friable lobulated mass, 4x5 cm in size, glassy and firm to hard in consistency with surface erosions in the second portion of the duodenum. The mass was not related to the ampulla. Biopsy of the mass was again reported as acute and chronic inflammation with granulation. Afterward, a second EGD was done with intention to remove the lesion. Lesion could not be removed because of the large size, broad base and potential complications of bleeding and perforation. The patient underwent surgical resection of the duodenal mass via lateral duodenotomy. Pathology report described a 5 × 2.5 × 1.5 cm benign submucosal lipoma with secondary mucosal ulceration. Postoperative course was uneventful.

Discussion: Lipomas are the most common benign tumor of the gastrointestinal tract secondary only to leiomyomas. They have been found in all parts of the GI tract with the majority in the colon (70%). Duodenal lipomas are rare and are usually located in the second part of the duodenum. The most common presentation is chronic iron deficiency anemia due to superficial ulceration and recurrent bleeding, epigastric pain and intussusception. Acute UGI bleeding with severe anemia is extremely rare. Snare polypectomy can be done on pedunculated lipomas but surgical resection is indicated in sessile duodenal lipomas because of the high risk of perforation.

542

CROHN’S DISEASE PRESENTING AS PRESACRAL ABSCESS AND OSTEOMYELITIS
Robert Wiesen, M.D., Nirav Patel, M.D., Diego Kapershmit, M.D., Imgard Behlau, M.D., Mark Sterling, M.D., F.A.C.G., Sita Chokhavatia, M.D., F.A.C.G.*. UMDNJ-NJMS, Newark, New Jersey.

A 28 yr old Caucasian male with a family history of Crohn’s disease presented with fever and back pain. He denied ever having any abdominal pain or diarrhea. One year prior he had been hospitalized with similar complaints and was treated for osteomyelitis with IV antibiotics. Six months prior he was hospitalized with a recurrence of the same symptoms. Imaging revealed osteomyelitis and a pathological fracture in the sacrum, as well as
a presacral abscess extending into the bony pelvis, ending behind the rectum. CT guided drainage of the abscess was performed. Cultures revealed a polymicrobial infection, including enteric pathogens, and IV antibiotics were started. Colonscopy was incomplete due to a poor prep, with random biopsies showing normal colonic mucosa. The patient was discharged home on oral antibiotics, with a follow up CT scan showing complete resolution of the fluid collection. Two weeks after completion of the antibiotic regimen the patient had a recurrence of his back pain and fever, prompting him to return to the hospital this time. Imaging revealed a recurrent presacral/precoccygeal abscess measuring approximately 7 x 4cm, closely approximating the rectosigmoid colon. Cultures from the abscess again were positive for polymicrobial infection, however with different organisms than during the previous hospitalization. An external drain was placed surgically and IV antibiotics were once again initiated. Barium injected through the external drain under fluoroscopy revealed a fistulous tract between the abscess and the terminal ileum. Next, a laparoscopic ileocecectomy was performed. Surgical pathology was consistent with Crohn’s disease, with fissuring ulcers and fistulous tracts. The patient remained asymptomatic and was discharged home on oral antibiotics.

Osteomyelitis is a rare presentation of Crohn’s disease. A medline search of the literature yielded only 15 case reports of osteomyelitis as a complication of Crohn’s disease, and is most frequently seen in the left and right ilium.

543

GALLBLADDER CARCINOMA PRESENTING AS OBSTRUCTIVE JAUNDICE DUE TO HEMOBILIA
Caitlin C. Doan, M.D., Trinetta V. Vaidya, M.D., Raymond H. Tu, M.D., Joseph W. Leung, M.D., F.A.C.G.*. UC Davis Medical Center, Sacramento, California.

A 79-year-old female with cholelithiasis presented with 5 days history of jaundice and intermittent epigastric pain with associated nausea and vomiting. Review of systems was positive for several episodes of intermittent epigastric pain. On physical examination, the patient was afebrile, mildly jaundiced with mid-epigastric tenderness. CBC was significant for a normocytic anemia with a hemoglobin of 10.9 gm/dL. Liver profile showed alkaline phosphatase 230 IU/L, total bilirubin 6.0mg/dL, ALT 479 IU/L, and normal protime. Ultrasonography revealed a distended gallbladder with cholelithiasis and cholecloithiasis with dilation of intra/extrahepatic ducts and common bile duct. Duodenoscopic view during ERCP showed large blood clots extruding from the orifice of the main papilla. Cholangiogram revealed multiple filling defects within a dilated common bile duct, which were confirmed to be large blood clots status post removal. A nasobiliary drain was placed for biliary decompression and continuing drainage of blood. Subsequent angiography studies did not reveal any pseudoaneurysm. An abdominal CT scan demonstrated a possible mass within the gallbladder. Patient underwent exploratory laparotomy with findings of fixed adenopathy in the retroperitoneal region. A 2.5cm lesion in the Hartman’s pouch was identified as a well-differentiated gallbladder adenocarcinoma invading through the serosa. Following discussion with the patient’s family intraoperatively, a palliative cholecystectomy to prevent further hemobilia was chosen over a radical surgery.

Discussion: Hemobilia causing painful obstructive jaundice mimicking that of cholecloithiasis is an unusual presentation of gallbladder carcinoma as in our patient. The tumor at the Hartman’s pouch with partial blocking of the outflow from the gallbladder and the accumulation of clots in both gallbladder and bile duct may have accounted for the abdominal pain. The acute bleeding and obstructive nature of the hemobilia resulted in anemia but not melena. The presence of cholelithiasis makes it difficult to distinguish between stones and clots in the gallbladder. In this case, ERCP with identification and removal of the clots effectively raised the clinical suspicion. Gallbladder cancer is often silent and presents late at the time of initial diagnosis and should be suspected early on especially in elderly patients with chronic cholelithiasis.

544

A RARE CASE OF RAPAMYCIN INDUCED SECRETORY DIARRHEA IN A LIVER TRANSPLANT PATIENT
Kadakkal R. Radhakrishnan, M.D., Lori Mahajan, M.D., Vera Hupertz, M.D.*. Cleveland Clinic Foundation, Cleveland, Ohio.

Rapamycin, a macrolide, is a novel immunosuppressive agent that works through the target of rapamycin (TOR), resulting in reduced cell growth, reduced rate of cell cycle progression, and reduced rate of proliferation. Rapamycin is known to cause diarrhea, but there have not been any reports of secretory diarrhea associated with this drug. We are reporting a 13 year old female, who had a liver transplant for familial intrahepatic cholestasis, type 1, two years previously. She had 4 documented episodes of pancreatitis after transplant, which was believed to be secondary to tacrolimus. Three weeks after changing her immunosuppressive to rapamycin alone, she developed profuse diarrhea, up to 6 liters a day. Stool cultures for Salmonella, Shigella, Yersinia, Campylobacter, and E. coli were negative. Rotavirus was negative. CBCs, hepatic function, and pancreatic enzymes remained normal. An EGD and colonscopy were normal without signs of inflammation. CMV culture from colonic biopsy was negative. Serum rapamycin levels were in the normal range. Serum VIP and urine hydroxy indole acetic acid were normal. After stopping her rapamycin and placing her on cyclosporine, her stool output gradually improved and this correlated with her serum rapamycin levels declining. Oral clonidine was also started after stopping her rapamycin. In conclusion, we believe that our patient had secretory diarrhea secondary to rapamycin by diagnosis of exclusion and by the improvement in symptoms after stopping the medication. This is possibly the first report of secretory diarrhea associated with rapamycin.

545

EPSTEIN-BARR VIRUS INDUCED HEPATITIS: AN EVOLVING CAUSE OF CHOLESTASIS
Aasma Shakat, M.D., Frank Anania, M.D.*. Emory University School of medicine, Atlanta, Georgia.

Epstein Barr Virus (EBV) infection frequently involves the liver, presenting as elevations in transaminases. However, EBV infection associated hepatitis presenting with hyperbilirubinemia is rare. We describe a case of infectious mononucleosis that presented with cholestasis, and summarize twenty-three cases from the literature to categorize this increasingly recognized clinical spectrum of EBV infection induced cholestatic hepatitis.

We conducted an extensive literature review of all cases of EBV in pediatric and adult literature with cholestasis using MEDLINE and EMBASE. We also included information on one case from our institution We identified twenty-four cases. Median age was 20 years (range 1–72 years), with 14(58%) females. On presentation, fever (72%), jaundice (67%) were the most common sign and symptoms. Biochemical data showed that the median aspartate aminotransferase or alanine aminotransferase level was 179 mg/dl (range 56–2518 mg/dl), median serum bilirubin level 12.6 mg/dl (range 2.2–47.5 mg/dl), median alkaline phosphatase 749 mg/dl (range 31–3105 mg/dl). Diagnosis was confirmed using EBV viral capsid antigen IgM in 20 (83%). One elderly patient died from the illness, while full recovery was reported in all other cases, with median follow up of 30 days (range 5–180 days).

Cholestatic hepatitis is associated with EBV infection, and should be part of the differential diagnosis in all age groups, presenting with hyperbilirubinemia.

546

MARKEDLY ELEVATED 24 HR URINARY COPPER MAY NOT ALWAYS BE DUE TO WILSON’S DISEASE
Kadakkal R. Radhakrishnan, M.D., Lori Mahajan, M.D.*. Cleveland Clinic Foundation, Cleveland, Ohio.

18-year-old African American girl presented with jaundice and right upper quadrant abdominal pain. She was known to have systemic lupus
GRANULOMATOUS HEPATITIS DUE TO ECHINACEA

A 60-year-old white female was found to have elevated liver enzymes when she presented with left lower abdominal pain. Her alkaline phosphatase (360) and AST (84) were more than 2x normal; these were normal 5 years ago. She received antibiotics for diverticulitis and was well after 4 days. Tests remained abnormal 2 weeks later (ALP 472, AST 58, and ALT 104). Work-up for other etiologies were negative. She was treated for ovarian cancer 11 years ago, and denied alcohol or illicit drug use. Patient was on estrogen, which she first took > 5 years ago and continued throughout the duration of her follow-up. Concerns over the worsening cholestasis led to a liver biopsy, which showed granulomas within the parenchyma without features of other liver diseases. Sarcoidosis, histoplasmosis, and tuberculosis were excluded. Patient later admitted taking Echinacea for the past 3 years. 3 months after she discontinued Echinacea, her liver enzymes decreased and normalized by the 11th month. The patient declined to have a follow-up liver biopsy.

Discussion: Echinacea is a plant extract available over-the-counter in pill form. It is recognized for its immune stimulating properties and used to prevent various infections. Echinacea had been associated with a few cases of hepatitis; these reports did not include a histologic diagnosis. Because our patient had a liver biopsy, we had shown that her abnormal liver tests were likely due to granulomatous hepatitis. Other etiologies relevant to her presentation were excluded, and the most plausible explanation was Echinacea-related granulomatous hepatitis. The patient’s diverticulitis was unlikely the cause of her cholestasis, which persisted long after resolution of the infection. Demonstrating recurrence of the abnormality with re-exposure might strengthen the association, but it was not possible in this case. It is believed that Echinacea helps prevent infections by its ability to stimulate macrophages, and increase phagocytosis and cytokine production. Similarly, granuloma formation results from the accumulation of macrophages in response to a foreign agent. It is interesting that the mechanism of action of Echinacea in boosting the immune system is similar to the pathogenesis of granuloma formation; we propose that this similarity might explain the association of Echinacea use and granulomatous hepatitis.
while failing to stain for kappa light chains, transthyretin, beta 2 microglobulin, or amyloid-associated protein. Skeletal survey and Bence-Jones protein were repeatedly negative. EGD revealed no mucosal abnormalities. Bone marrow biopsy revealed 14% plasmacytosis, however diagnostic criteria for multiple myeloma were not met. Bone marrow cytogenetic studies were normal. Echocardiogram and kidney function were also normal. Two cycles of VAD chemotherapy did not impact her hepatomegaly. She remained asymptomatic for several months and underwent evaluation for autologous stem cell transplant. Unfortunately, she succumbed to her illness eight months after hepatomegaly was noted. Criteria for multiple myeloma were never met.

Discussion: Primary AL amyloidosis typically deposits in a variety of organs, including liver, heart, kidney, and small intestine. In those with primary amyloidosis, approximately three out of four have liver involvement at autopsy. In contrast, clinically significant amyloid liver disease is rare. A review of the Medline database from 1955 to 2004 using the search terms “liver” and “amyloid” was performed. To our knowledge, isolated primary amyloid (AL) deposition in the liver at ill presentation, without criteria for multiple myeloma, has been reported twice. Neither of these reports was in the English language. As in the other reported cases, the patient’s outcome was poor.

550

SUPERIOR MESENTERIC VEIN (SMV) THROMBOSIS AFTER COLECTOMY IN CROHN’S DISEASE
Andrew S. Ross, M.D., Roger Hurst, M.D., Arunas Gasparaitis, M.D., David T. Rubin, M.D.*. The University of Chicago Hospitals, Chicago, Illinois.

An 18 year old woman with a history of fulminant Crohn’s colitis and with end-ileoectomy and Hartman’s pouch six months prior presented with severe, crampy epigastric pain, nausea and vomiting of four hour’s duration. Medications included azathioprine 100 mg daily.

Physical examination revealed a well developed female in obvious distress. The blood pressure was 100/70 mm Hg and the pulse was 110 beats per minute; she was afibrile. Bowel sounds were normal, the abdomen was non-distended. The stoma appeared viable. Initial laboratories and plain films revealed no free air. A CT scan revealed thrombosis of a small intrahepatic segment of the portal vein. Intravenous heparin was initiated, but the next day she developed a fever and warfarin was added. No workup was done for family history of colon cancer. No prior colonoscopy had been performed. The procedure was moderately difficult. The ligament of Treitz during colectomy. She had an initial dramatic spontaneous improvement after hepatomegaly was noted. Criteria for multiple myeloma were never met.

Discussion: Primary AL amyloidosis typically deposits in a variety of organs, including liver, heart, kidney, and small intestine. In those with primary amyloidosis, approximately three out of four have liver involvement at autopsy. In contrast, clinically significant amyloid liver disease is rare. A review of the Medline database from 1955 to 2004 using the search terms “liver” and “amyloid” was performed. To our knowledge, isolated primary amyloid (AL) deposition in the liver at ill presentation, without criteria for multiple myeloma, has been reported twice. Neither of these reports was in the English language. As in the other reported cases, the patient’s outcome was poor.

551

RETROPERITONEAL AMYLOIDOMA PRESENTING AS UPPER GASTROINTESTINAL BLEEDING
Katherine K. Nguyen, M.D., Andrejs Avots-Avotins, M.D.*. Scott and White Hospital Texas A&M University System Health Science Center, Temple, Texas.

Amyloidosis is a disorder characterized by abnormal deposition of hyaline, a proteinaceous material, in various organs. Although amyloidosis is commonly a systemic disorder involving multiple organs, it rarely can present as a localized mass known as an amyloidoma. We report a case of an amyloidoma presenting in a rare anatomical site and in an unusual manner with a review of the literature.

Case: A 31 year-old African American pregnant, 6 week gestational age, female with past medical history significant for hypertension presented with upper gastrointestinal bleeding and acute renal failure. An upper endoscopy revealed gastric varices. A noncontrast CT of the abdomen and pelvis showed a retroperitoneal mass involving the spleen and splenic vein with bilateral ureteral obstruction and hydronephrosis. An exploratory laparotomy was performed with splenectomy to decompress the gastric varices. Biopsies of the mass were obtained, and the histology was consistent with the diagnosis of a soft tissue retroperitoneal amyloidoma. Post-operatively, a work-up for systemic amyloidosis was negative.

Discussion: Amyloidomas most commonly occur in the respiratory tract and genitourinary tract. Other sites of involvement include skin, bone, lymph nodes, spleen, stomach, brain, and salivary glands. The diagnosis of a retroperitoneal amyloidoma is exceedingly rare and difficult to make. To our knowledge, only four previous cases of amyloidoma presenting as a retroperitoneal mass have been reported. Of the previous cases, three were associated with systemic amyloidosis while the fourth case was associated with multiple myeloma. Our patient’s presentation was unique as there was no evidence of systemic amyloidosis or chronic disease leading to amyloidosis. Other unusual features in our case include gastrointestinal bleeding and renal failure from direct compression by the tumor. Diagnosis and treatment of the amyloidoma was particularly challenging in the setting of this patient’s pregnancy.

552

SPLENIC RUPTURE FOLLOWING COLONOSCOPY TREATED SUCCESSFULLY WITH SPLENIC ARTERY EMBOLIZATION

Introduction: Common complications of colonoscopy include bleeding and perforation. Rarely, abdominal viscera may be injured. Given its proximity to the colon, the spleen is at risk for injury. The proposed mechanism of trauma involves tearing of adhesions or excessive strain on the splenocolic ligament, resulting in capsular rupture. The first reported case was in 1974 by Wherry and Zehner. To date, 34 cases of splenic injury have been reported in the literature, with only one treated by selective splenic artery embolization. All other cases were treated with splenectomy. We present a second case of splenic injury following colonoscopy, treated successfully with splenic artery embolization.

Case Presentation: A 73 yo female presented with severe left lower quadrant abdominal pain 36 hours after colonoscopy. Colonoscopy was performed for family history of colon cancer. No prior colonoscopy had been performed. The procedure was moderately difficult secondary to a redundant colon. External abdominal compression was applied. Past medical history was significant for mechanical mitral valve requiring chronic anticoagulation, cholecystectomy, appendectomy, and TAH/BSO. Warfarin was held and prophylactic enoxaparin given prior to the procedure and was restarted the day after colonoscopy. In the emergency department she developed abdominal distension, tachycardia, and acute anemia without melena or hema-tochezia. Chest film revealed no free air. A CT scan revealed active splenic
hemorrhage. Following reversal of anticoagulation and blood transfusion, she underwent selective splenic artery embolization without further evidence of hemorrhage.

**Discussion:** Splenic injury at the time of colonoscopy is an uncommon complication. Radiographic confirmation and clinical status dictate the need for operative intervention. The current trauma literature advocates splenic artery embolization over splenectomy caused by blunt abdominal trauma given its lower incidence of morbidity and mortality. Our colonoscopy patient was successfully treated with selective artery embolization in a similar manner to the previously reported case. The key to improved outcomes is to have a high index of suspicion for visceral organ damage following colonoscopy. We hope to increase the awareness of this rare complication and if found, consideration should be given for alternatives to traditional splenectomy.

**Methods:**

A 42 year-old previously healthy female presented to her primary care physician with a chief complaint of maroon stool. She denied any associated abdominal pain, nausea, vomiting, or hematemesis. An extensive evaluation at the time, including colonoscopy, upper endoscopy, and small bowel follow through, was unremarkable. The patient actually dropped her hemoglobin to a level of 7 mg/dL. She was treated empirically with Aciphex for intermittent symptoms of hearburn and did well for two years. She again presented with maroon colored stools, and an outpatient tagged RBC scan was positive for an actively bleeding lesion in the mid-jejunum. She was admitted to the hospital and underwent upper endoscopy and mesenteric angiography which were both negative. The patient now reports a case of an inflammatory pseudotumor of the small bowel presenting as an obscure overt gastrointestinal bleed along with a review of the literature regarding these rare tumors.

**Discussion:** Inflammatory pseudotumors are spindle cell proliferations with a distinct fibroinflammatory appearance. These lesions most often occur in the soft tissue and viscera of children and young adults. Most original descriptions of these lesions focus on their occurrence in the lungs, which is better described and possibly more common than their extra-pulmonary counterparts. Most extra-pulmonary inflammatory pseudotumors occur in the first two decades of life and tend to be larger than ones involving the lung. We now report a case of an inflammatory pseudotumor of the small bowel involving the wall of a normal appearing ileum.

**Methods:** A previously healthy female infant was admitted to the hospital and underwent upper endoscopy and mesenteric angiography which were both negative. Finally, the patient underwent capsule endoscopy to rule out a small bowel mass. The capsule was inserted. A small slit-like opening of the CBD was identified within the pyloric channel. The opening was cannulated using a standard catheter. Cholangiogram confirmed it was the CBD and revealed several small filling defects within a normal appearing CBD. While most of the filling defects were thought to be air bubbles, small stones cannot be ruled out. Due to the location of the opening, sphincterotomy cannot be performed and a biliary stent was inserted for drainage. The pancreatic duct could not be cannulated, and no separate opening for the pancreatic duct was found. The patient’s symptoms subsequently resolved and he was later taken for cholecystectomy. Our case demonstrates an opening of the CBD into the pyloric channel. Other sites of bile duct insertion that have been described include the stomach, duodenal bulb, third and fourth portions of the duodenum. Clinical implications of these anomalous sites of insertion are not known. Some authors suggest these openings are at higher risk for biliary disease based on altered duct anatomy and lack of sphincter of Oddi function. In addition, when biliary disease occurs it may be more difficult to treat due to altered anatomy.

**Results:**

The patient was resuscitated with 6 liters of crystalloids with a blood product by the trauma team followed by ileal resection for a fungating mass consistent with an inflammatory pseudotumor. The patient was later discharged with a normal upper endoscopy and mesenteric angiogram.

**Conclusion:** Inflammatory pseudotumors should be considered in the differential diagnosis of obscure gastrointestinal bleeding, especially when the history, physical, and laboratory findings are consistent with a high degree of suspicion. If the lesion is suspected, capsule endoscopy should be performed. This will allow for identification of the site of bleeding as well as identification of any masses or strictures. Treatment can then be directed at the site of bleeding, and the mass, if present, can be further evaluated.
Anorectal manometry is still the gold standard for determining whether it is necessary to proceed on to rectal biopsy, and should be performed first.

556

ANORECTAL MANOMETRY IN INFANTS: THE GASTROCOLIC REFLEX AS THE FUNCTIONAL EQUIVALENT OF THE RECTOANAL INHIBITORY REFLEX
Rita M. Steffen, M.D.* , Robert Wyllie, M.D., Barbara S. Kaplan, M.D., Marsha H. Kay, M.D., Lori A. Mahajan, M.D., Vera F. Hupertz, M.D. Cleveland Clinic Foundation, Cleveland, Ohio.

Anorectal manometry in infants is indicated to detect the rectoanal inhibitory reflex of the internal anal sphincter upon inflation of the rectal balloon with small increments of air. The most important information obtained is the normal functional relaxation of the sphincter, thus ruling out Hirschsprung’s disease. The procedure is challenging to perform in infants and requires a good deal of patience and an interest in gastrointestinal motility on the parts of the health care providers doing it. Placing the catheter in the desired target zone of highest pressure in the internal anal sphincter is challenging in quite small in newborns, and even smaller in premature infants. In addition it is preferable to avoid using conscious sedation in this very young age group. Consequently, motion artefact may significantly override the tracings and cause false positive rectoanal inhibitory reflex detection.

We now have altered the preparation for these infants to include a three to four hour fast prior to the procedure. After placing the manometry catheter a few centimeters into the rectum, it is slowly withdrawn and held in the zone of highest pressure. Then the infant is fed during the test. The babies settle into a comfortable sleep posture lying on the left side. Typically 90% - 95% of the time, it is possible to successfully perform the manometric recording, making suction rectal biopsy unnecessary. The observation was made that during a vigorous feeding, the rectoanal inhibitory reflex spontaneously appears, and is usually promptly followed by stooling. This provides additional functional information in this group of constipated infants. Appearances of the spontaneous native reflex relaxation of the internal anal sphincter also rules out the possibility of a short segment of Hirschsprung’s disease in infants.

557

TEGASEROD STIMULATES NORMAL BOWEL FUNCTION IN PSEUDOOBSTUCTION
Rita M. Steffen, M.D.* , Robert Wyllie, M.D., Lori A. Mahajan, M.D., Barbara S. Kaplan, M.D., Vera F. Hupertz, M.D., Marsha H. Kay, M.D. Cleveland Clinic Foundation, Cleveland, Ohio.

Chronic Idiopathic Intestinal Pseudooobstruction has been traditionally resistant to medical management. Patients with severe pseudooobstruction often require parenteral nutrition during the phases of bowel dilatation when even enteral feeds cannot be tolerated. We report a child with CIIPO who had a return to normal bowel function when tegaserod was instituted. Tegaserod has been approved for use in women with constipation predominant irritable bowel syndrome. Tegaserod is a partial neuronal 5-HT4 receptor agonist. Its action at the receptor site leads to stimulation of the peristaltic reflex and intestinal secretion, and modulation of visceral hypersensitivity. The time to peak absorption is one hour, and it is recommended that the medication be ingested prior to meals.

Due to the effects on peristalsis of the intestines, we became interested in attempting to use this drug in a nine year old boy who had undergone re-anastomosis of his small intestine with 30 centimeters of out of circuit colon. The patient had chronic bowel problems, and had undergone resection of a dilated loop of bowel with creation of an ileostomy. Colonic manometry was performed on the defunctionalized colon and demonstrated a high amplitude peristaltic contraction when provocative stimulant laxative was administered through the colon manometry catheter. The patient also stooled some water and secretions during the test. Based on this information, it was decided to reanastomose the large and small intestines. However, the patient could not tolerate feeds, and eventually ended up back on total parenteral nutrition. Within a short time of starting the tegaserod, the child was able to tolerate feeds and began to stool normally. To our knowledge this has not been previously reported. Tegaserod may have a role in treating patients with chronic intestinal pseudooobstruction.

558

SEVERE INTRAHEPATIC CHOLESTATIC JAUNDICE AS THE INITIAL MANIFESTATION OF SECONDARY (AA-TYPE) SYSTEMIC AMYLOIDOSIS CAUSED BY GIANT CELL ARTERITIS

Accumulation of amyloid fibrils within the liver is typical in both primary (AL-type) and secondary (AA-type) systemic amyloidosis but is most often clinically silent. Systemic amyloidosis presenting with cholestatic jaundice has a reported incidence of less than 5%, is considered to be a preterminal sign and has only been reported in patients with AL-type amyloidosis. Furthermore, although giant cell arteritis (GCA) is characterized by chronic inflammation, AA-type amyloidosis appears to be an exceptionally unusual complication of this disorder and the few reported cases of AA-type amyloidosis associated with GCA describe only extrahepatic presentations of amyloidosis (including nephrotic syndrome and musculoskeletal disease).

We describe here a 78 year-old woman presenting with severe cholestatic jaundice and coagulopathy due to secondary (AA-type) systemic amyloidosis seven years after her biopsy proven diagnosis of GCA. Her initial exam revealed marked icterus and hepatomegaly. Transaminases were normal; total bilirubin (majority direct) and alkaline phosphatase were >11 times upper limits of normal; and, aPTT and PT were two and three times upper limits of normal, respectively. Viral, drug, alcohol and autoimmune etiologies were all excluded. An ultrasound showed an enlarged liver with diffusely increased echogenicity and nondilated bile ducts. Transjugular liver biopsy revealed advanced amyloidosis confirmed by electron microscopy. Thorough investigations for serum and urine monoclonal proteins including immunofixation and 24 hour urine studies were unremarkable except for near nephrotic-range proteinuria. A severe amyloidosis-related deficiency of clotting factor X was noted. Unfortunately, over subsequent weeks she developed rapid renal failure, declined hemodialysis and died three months after the initial onset of jaundice. To our knowledge, this is the only reported case of giant cell arteritis causing secondary (AA-type) amyloidosis initially presenting with severe intrahepatic cholestasis.

We suggest that hepatic amyloidosis due to secondary (AA-type) amyloidosis must be considered in the differential diagnosis of unexplained cholestatic jaundice given a history of a chronic inflammatory condition.

559

CARDIAC CATHETERIZATION AS A NOVEL CAUSE OF FATAL TOXIC EPIDERMAL NECROSIS (TEN) INVOLVING A SIGNIFICANT PORTION OF THE GASTROINTESTINAL TRACT
Austin E. Garza, M.D., Jay Mamaj, M.D.*. University of South Florida, Tampa, Florida.

Our case represents a previously unreported, fatal complication of cardiac catheterization. We report a fatal case of toxic epidermal necrolysis (TEN) involving a majority of the body surface of this patient as well as a significant portion of his upper gastrointestinal tract. TEN was induced by the nonionic radiopaque agent used in the cath.

Mr. W. was a 62-year-old male, who underwent outpatient cardiac catheterization for unstable angina. He had a history of DMII, hyperlipidemia, and renal insufficiency. The cath revealed three-vessel CAD. Two days after returning home, the patient became edematous and blistering of his skin
developed. This exanthem eventually resolved. Conservative medical management was pursued, but the patient continued to have symptoms. Four months later, he was admitted for a second cardiac catheterization. He was pretreated with prednisone, diphenhydramine, and ranitidine. Intravenous fluids and N-acetylcysteine were also administered. Findings once again revealed three-vessel disease. Several hours later, the nursing staff noted a generalized red rash, and a fever to 102°F. Within two days, his skin began to slough off near the neck and upper torso. The desquamation spread, reaching his buccal mucosa. The dermatology service took skin biopsies, which were consistent with toxic epidermal necrolysis. He was transferred to the regional burn center. There, he was diagnosed with 70% total BSA involvement. He became hypotensive, bacteremic and required vasopressor support and sustained a myocardial infarction and respiratory failure. The patient began having hematemesis and passing hematochezia, and a 6-gram drop in hemoglobin was noted. Upper endoscopy revealed diffuse gastritis. A PPI infusion was begun. Several days later, his nasogastric tube which yielded large amounts of bright red blood, prompting repeat EGD. This time, sloughing of his esophageal and gastric mucosa was noted, consistent with GI involvement of TEN. Compared with his prior EGD, there was a marked progression of a diffuse, confluent gastritis and duodenitis with ulceration. The mucosa sloughed readily upon any contact with instrument or lavage. The entire upper GI tract from upper esophagus through duodenum was involved and bleeding. Renal failure developed requiring dialysis. Upon request of the family, care was withdrawn. The patient expired twenty-one days after his second cardiac catheterization.

A case of a gangliocytic paraganglioma (GP) of the duodenum in a 78 year old woman is presented. The GP was incidentally found in the second part of the duodenum during a percutaneous endoscopic gastrostomy. The mass was excised and histological examination showed spindle cells, ganglion-like cells and epithelioid cells, which are the histological feature of a GP. During the time of the operative procedure a lymph node was found to contain metastasis of the tumor. The present case is one of the few cases reported in the literature found to have local lymph node metastasis.

A 57-year-old white male was admitted to Tampa General Hospital with fevers, and abdominal pain for three days. The pain was epigastric, aching, and without radiation, no alleviating or aggravating factors. He had melena for one day and nausea but no vomiting, hematemesis or coffee ground emesis. He had no syncope, dizziness, chest pain or shortness of breath. No other acute complaints on initial exam. His medical history was pertinent for hypertension and gastric ulcers. He had history of a hiatal hernia repair. He had no other surgeries, including vascular surgery. He was a smoker and drank 3–6 beers daily. He denied drug use. He was only on an antihypertensive medication at home. He denied use of NSAID medications. In the hospital he was on a pantoprazole drip. On physical exam he was normotensive and tachycardic. His head, neck, cardiovascular, and pulmonary exams were otherwise normal. His abdomen had a well-healed midline surgical scar from the mid-epigastrum to the suprapubic region. He had hyperactive bowel sounds. He was tender in the periumbilical region but did not have pain out of proportion to exam. There was no guarding or rebound tenderness. There was no hepatosplenomegaly or other palpable masses. He had no peripheral stigmata of chronic liver disease. Electrolytes were normal aside from hypokalemia, and hyperglycemia. Transaminases were elevated 4–5 times normal levels. He had a normocytic anemia with hemoglobin of 10.0. Platelets were normal, as were coagulation studies. An abdominal CT scan from the outside hospital revealed inflammatory tissue around the aorta adjacent to fourth segment of the duodenum. Otherwise the CT scan was normal. An EGD was performed. The esophagus, stomach, and duodenal bulb had a normal appearance. At the junction of the third and fourth portions of the duodenum there was noted to be a raised, pulsatile area in the posterior wall. On this raised area there was a small nipple of tissue with a central umbilication. There was a fresh blood clot, but no active bleeding. This was felt to be consistent with a primary aortoduodenal fistula. The patient was brought to emergently to the operating room and underwent resection of the affected aorta and duodenum. Surgery confirmed presence of a fistula, and was without incident. Pathology showed an aortic aneurysm with a superimposed atheromatous plaque, which had ruptured. There was superimposed mural thinning and a large amount of inflammatory tissue. The patient was doing well 5 days post-operatively.
Gastrointestinal bleeding accounts for more than 300,000 hospitalizations per year in the United States. A majority of these bleeds can be diagnosed with upper endoscopy or colonoscopy. In some cases, the etiology of blood loss remains unexplained despite these tests. The development of capsule endoscopy has proven useful in the approach to obscure intestinal bleeding, allowing users for the first time to directly visualize the entire length of small bowel. However, this modality is not without its limitations. We describe the case of a patient who presented with new onset hematochezia. No upper or lower source was found with colonoscopy, upper endoscopy, or tagged red blood cell exams. Capsule endoscopy identified numerous arteriovenous malformations throughout the small intestine, but was unable to identify the offending lesion. In addition, the capsule endoscopy study was incomplete due to delayed gastric emptying time. The patient stabilized initially after push enteroscopy was able to visualize and treat a midjejunal arteriovenous malformation with argon plasma coagulation. Nevertheless, after continued bleeding, the patient ultimately underwent intraoperative push enteroscopy which identified a small submucosal protrusion with central ulceration 10 cm from the ileocecal valve. The patient had this portion of bowel removed, after which he had no further bloody bowel movements. Pathology report of the resected bowel described focal mucosal ulceration and arteriovenous malformation. This case illustrates the importance of diagnostic methods other than capsule endoscopy as well as treatment considerations once a source of bleeding has been identified which may be difficult to access without invasive means.

Cerebrospinal fluid ascites (CSF-A) or ascites related to ventriculoperitoneal (VP) shunts has been described in the pediatric literature. Here we describe an adult patient with CSF ascites that responded to revision of the VP shunt.

**Case:** A 24 year old man was referred for new onset ascites over 4 months. Past medical history was significant for congenital hydrocephalus requiring placement of three VP shunts. Physical examination revealed an erythematous sessile lesion measuring 1.2 cm × 5 cm on the left side, 2 cm from anus at 7 o’clock position. The remainder of his exam was unremarkable. Physical examination was unchanged from the prior admission. The patient had no evidence of malignancy or infection. Six months into the present hospitalization, the exception of the VP shunt to a ventriculoatrial shunt. Awareness of CSF ascites as a unique clinical entity and its inexorable reaccumulation until definitive surgical revision of the VP shunt is important in management of these patients.

Interferon is a group of glycoproteins with a diverse spectrum of biological activities including antiviral, antiproliferative and antineoplastic properties. We report a case illustrating the curative effect of Interferon on perianal squamous cell cancer.

**Case Report:** 45-year-old caucasian man was referred to the hepatology clinic for management of chronic Hepatitis C infection. He was started on Pegylated Interferon Alfa 2a at 180mcg sq. q weekly and Ribavirin 1000 mg PO q day. Patient gave history of perirectal pain for the past several months. Physical examination revealed an erythematous sessile lesion measuring 1.2 cm × 5 cm on the left side, 2 cm from anus at 7 o’clock position. The remainder of his exam was unremarkable. Patient was evaluated by dermatology and underwent a biopsy after 2 weeks of interferon therapy. Microscopic evaluation revealed squamous cell cancer extending to deep and lateral margins of excision. Subsequently he underwent surgical excisions of the remainder of the lesion, 6 weeks after the initiation of the interferon therapy, which failed to show any evidence of tumor. Considering erroneous localization repeat excisional biopsy was performed at 14 weeks, which was also normal. We postulate that regression of perianal squamous cell cancer was caused by interferon.

**Discussion:** Squamous cell cancers of skin have been treated by various modalities including surgical excision, cryotherapy, radiation therapy and topical 5-fluorouracil. In various experimental studies interferons by intraleisonal injection therapy have been used as a form of treatment for cutaneous squamous and basal cell cancers. Our patient was seen with a 6-month history of perianal squamous cell cancer of the skin and was incidentally started on pegylated Interferon Alfa-2a for the treatment of hepatitis C. His initial biopsy was positive for involvement of lateral and deep margins. Subsequent surgical excisions at the local site failed to show any tumor, suggesting regression of remaining tumor. Our case is unique as most of the experimental studies are being done with local injection of Interferon Alfa-2b instead of systemic therapy with pegylated Interferon Alfa-2a.

**Conclusion:** Systemic therapy with pegylated Interferon Alfa-2a has a role in treating squamous cell cancers. Further studies need to be done to define its role in the management of cutaneous squamous cell cancers.

**STREPTOCOCCUS BOVIS SEPTICEMIA FOLLOWING ISCHEMIC COLITIS AND UNDERLYING LIVER DYSFUNCTION: A LESS RECOGNIZED TRIAD**

Eyob Feyssa, M.D., Salma Akram, M.D.*. Harbor Hospital Center, Baltimore, Maryland and Mayo Clinic, Rochester, Minnesota.

The Case: A 60 years old black female was brought to the hospital after being found unresponsive at home. She was noted to have some abdominal pain with diarrhea and appeared somewhat lethargic and drowsy a day prior to presentation. She had a history of bronchial asthma, hypertension, hepatitis C and depression. She smoked crack cocaine one day before arrival. In ED she was hypotensive and intubated for airway protection. Her abdominal was soft, non tender, with active bowel sounds. Stool was hemoccult positive.
Other systems were otherwise unremarkable. After stabilizing the patient empiric antibiotics were initiated.

**Laboratory Data:** A total WBC count was 13,900/mm³ with 54 bands. BUN and creatinine levels were 70 and 5.8, respectively. AST 308, ALT 110, Alkaline phosphatase 138, Creatine kinase 2266, Troponin I 4.4 and CK-MB Mass 35. Urine drug screen was positive for cocaine. Blood culture grew *S. bovis* in both aerobic and anaerobic bottles. Echocardiogram was unremarkable.

**Hospital Course:** On the 3rd hospital day the patient developed abdominal distention with diminished bowel sounds. Lower small bowel obstruction pattern was seen in abdominal CT. Colonoscopic evaluation showed swelling around the ileoceleal valve with areas of patchy mucosal edema and erythema, interspersed with areas of normal appearing mucosa. Two days later patient underwent right hemicolectomy. Histopathologic examination of the surgical specimen was compatible with Ischemic colitis.

Her post-op course was unremarkable and she was discharged home after 2 weeks of hospital stay.

**Discussion:** *S. bovis* is a constituent of normal colonic flora only in 2.5 to 15% of individuals and fecal carriage can be an early clue to the presence of serious and clinically unexpected colonic disease. The association between *S. bovis* bacteremia and carcinoma of the colon has been appreciated for many years. The association with other GI pathology is much less reported entity. A triad of *S. bovis* bacteremia, colonic pathology, and liver disease is presented here. We assume chronic hepatitis C might have caused intrahepatic blood shunting and impaired clearance of the bacteria by reticuloendothelial system.

**Conclusion:** In the setting of *S. bovis* bacteremia a screening for underlying liver disease should be performed along with a large bowel survey for cancer as well as colonic ulcerations.

### 567

**INFLAMMATORY FIBROID POLYP MIMICKING CROHN’S DISEASE**

**Ritesh Jha, M.D., Robert Tepper, M.D.**, Eugene S. Bonapace, M.D. North Shore University Hospital, Manhasset, New York.

**Introduction:** Inflammatory fibroid polyps (IFPs) are uncommon submucosal lesions of the gastrointestinal tract whose pathogenesis remains unknown. We report the case of a patient with an IFP whose presentation was consistent with Crohn’s disease.

**Case:** A 46 year old female with no prior medical history presented with abdominal pain, nausea, vomiting and diarrhea. Physical examination was unremarkable. Her stool was positive for occult blood. Laboratory tests were normal. Flexible sigmoidoscopy revealed grossly normal mucosa. An upper gastrointestinal series six days later revealed a rigid terminal ileum consistent with Crohn’s disease. Three days later she was admitted to the hospital with similar symptoms, and placed on methylprednisolone succinate resulting in complete relief of symptoms. One month later she was readmitted to the hospital with similar symptoms along with a low grade temperature. A computed tomography scan revealed an ileocolic intussusception. Colonoscopy revealed a mass as the cause of the intussusception. Surgical resection was performed and at pathology the mass was found to be consistent with an IFP. The patient had complete resolution of symptoms following surgery.

**Discussion:** IFPs are most commonly found in the stomach, but are also found in the small and large bowel. In the stomach they present with symptoms of epigastric pain and digestive bleeding, while intussusception and obstruction are the most common symptoms in the small bowel. IFPs commonly mimic gastrointestinal neoplasms, however they rarely mimic Crohn’s disease. We believe this is the first reported case of an IFP presenting as a case of presumed Crohn’s disease.

### 568

**LYMPHOMA OF THE POUCH AFTER IPAA FOR MEDICALLY REFRACTORY ULCERATIVE COLITIS**

Michelle Kang Kim, M.D., Ellen Scherl, M.D.**, Morton Coleman, M.D. Weill Medical College of Cornell University, New York, New York.

Inflammatory bowel disease (IBD) associated lymphoma occurs with prolonged disease. We present a patient with ulcerative colitis (UC) of short duration, who developed lymphoma after ileal pouch-anal anastomosis (IPAA). Y.T. was a 29 year old male with five years of medically refractory UC, initially diagnosed as ulcerative proctitis, but progressing to universal colitis. The patient became refractory to steroid therapy and responded to intravenous cyclosporine (CSA) (4 mg/kg). After one month of oral CSA (8mg/kg), 6-mercaptopurine (6-MP) was added. Over the next three years, he continued to flare. The aggregate time on prednisone (greater than 20 mg per day) was 8 months, 6-MP nearly 2 years, and CSA 7 months. After one infusion of infliximab (5 mg/kg) yielded no clinical response, he underwent a two-staged IPAA. Pathology was consistent with ulcerative colitis.

Post-operatively, he developed increasing diarrhea. Pouchogram and manometric studies were normal. Treatment for presumed pouchitis and irritable pouch syndrome was ineffective.

Eleven months after IPAA, pouchoscopy revealed a polypoid friable mass in the distal pouch. Pathology showed Epstein-Barr virus (EBV) positive high grade lymphoma consistent with an immunoblastoma. PET scan revealed lymphoma in the cervical nodes, mediastinum, and pelvis. He received chemotherapy and underwent pouch excision. Two years later, he continues to be without signs of recurrent lymphoma.

**Discussion:** IBD-associated lymphoma occurs in disease of long duration. The role of concomitant immunomodulator and biologic therapy remains controversial. Neither the addition of cyclosporine to 6-MP or azathioprine in UC nor the addition of infliximab to 6-MP, azathioprine or methotrexate in Crohn’s disease has clearly demonstrated an increased risk of lymphoma. In this case of short duration UC where infliximab was added to steroids, 6-MP, and cyclosporine, the patient quickly developed EBV-positive lymphoma of the pouch. While none of the immunomodulators or biologic agents alone may be a well-established risk factor for lymphoma, the combination of more than three agents may confer an increased lymphoma risk. IBD patients who receive more than three immunomodulators or biologic therapies may behave more like patients with post-transplant EBV-positive lymphoma and warrant more aggressive diagnostic surveillance and evaluation.

### 569

**NON-OPERATIVE TREATMENT FOR PERFORATED DUODENAL ULCER**

Hiroaki Omori, M.D., Hiroshi Asahi, M.D., Takashi Irinoda, M.D., Kazuyasu Saito, M.D.**, Iwate Medical University, Morioka, Iwate, Japan.

The aim of this study is to review our recent experience with selective non-operative management of perforated duodenal ulcers (PDU).

The patients included in this study had PDU treated non-operatively between 1995–2002. The protocol for the management of PDU has been developed based on experience at our department. Our policy of the selective treatment for PDU was that patients over 65 years old had immediate laparoscopic omental patch repair (LOPR) and the other was selected non-operative management. Non-operative management consisted of intravenous fluids, broad-spectrum antibiotics, nasogastric tube suction (occasionally) ultrasound guided percutaneous drainage of intraperitoneal fluids (occasionally) and H2 blockers. All patients had emergency endoscopies before treatments and were made diagnoses of PDU. If evidence of perforitisis progressed, or if there was not evidence of regression by 24–48 hours, laparoscopic surgery was indicated. Endoscopic examination was performed on about 4–5th day, and if the perforation sealing was confirmed, oral diet resumption was then started. Helicobacter pylori (HP) status was checked after discharge.

One hundred twenty-six PDU patients were evaluated. The patients ranged in age from 17 to 99 years old, with a mean age of 49 years. Males predominated in a ratio of 4:1. Ninety-nine (79%) of the 126 cases with PDU had non-operative treatment. There were 85 men and 14 women. Non-operative treatment was abandoned in 9 cases (9%) due to deteriorating perforitisis and converted to laparoscopic interventions. Mean hospital stay for the 27 patients treated operatively was 30+–22 days; the mean hospital day of the 99 patients primarily treated non-operatively was 20+–11 days. Re-perforation
did not occur. The overall mortality rate was 7%. The mortality rate for the patients treated operatively was 26%; the mortality of the patients primarily treated non-operatively was 2%. The lethality in this latter group occurred in a patient with cardiopulmonary arrest on arrival and the other death occurred in a man with chronic pulmonary failure. Overall positive rate of IgG and IgM were 73 and 56%, respectively.

Non-operative management for the relatively younger patients with PDU can be safely performed. We emphasize in our study the labour intensive process that is required to achieve acceptable results.

570

ENTER YX CAN BE USED SAFELY IN PATIENTS WITH FAILED LAPROSCOPIC NISSEN FUNDOPLICATION - A CASE STUDY

Allen Blosser, M.D.*; Ursula Dettman, R.N.; Angel Waldo, C.G.R.N.; Carla Rowe, Ph-C. INOVA Fair Oaks Hospital, Fairfax, Virginia.

Introduction: ENTERYX, an injectable polymer, recently approved for the endoluminal therapy for the treatment of gastroesophageal reflux disease (GERD) had been discouraged by the developer, Boston Scientific Corporation, for use in patients with previous gastric surgeries. We report a case of successful deployment of ENTERYX in a symptomatic reflux patient previously treated with a LNFP.

Case: DB is a 38 year-old female nurse with an extensive history of refractory, steroid dependent asthma and refractory GERD. In an attempt to control her GERD, a LNFP was performed in October 2002. Postoperatively, she did well for the first 6 months until repeated hospitalizations were required for asthma exacerbations. Each hospitalization required steroid administration and high dose Proton Pump Inhibitors (PPIs). In February 2004, an UGI Series revealed GER to the level of the thoracic inlet. She was informed of the ENTERYX procedure and consented to its use. EGD revealed no esophagitis. The procedure was performed per protocol (fig2). The patient was discharged home the day of the procedure and had an uneventful post-op course. UGI Series performed 5 days post–injection revealed good position of the implants (fig 3) and no GERD. Three months post-procedure, she remains well controlled on maintenance asthma medications. She denies chest pain or GERD symptoms and requires no daily PPIs.

Summary: ENTERYX can be performed safely and successfully in patients with failed LNFP. Refractory asthmatics with documented GERD should be considered candidates for ENTERYX.

571

DUODENAL DIVERTICULUM PRESENTING AS A HYPERMETABOLIC MASS ON F18-FDG PET/CT

Michael Piesman, M.D., Marten Duncan, D.O., Inks Hwang, M.D.*, Frank Moses, M.D., Thomas W Allen, M.D. Walter Reed Army Medical Center, Washington, District of Columbia.

Background: The use of fluorine-18 positron emission tomography with computed axial tomography (F18 FDG PET/CT) is increasing in this country. This modality has shown to be an accurate test for the diagnosis and staging of various primary and metastatic malignancies to include colorectal carcinoma. Although false positives can be seen with various non-malignant processes, including infectious and inflammatory conditions, duodenal diverticulum causing false positive uptake on PET/CT has not yet been described in the literature. We report the first case report of this finding.

Case: The patient was an 80-year-old woman with a history of stage I breast cancer status post modified mastectomy and tamoxifen treatment for 5 years. She was felt to be in remission when a routine blood test showed mild elevation in alkaline phosphatase. After initial work up, an F-18 FDG PET/CT was performed to further evaluate this finding, which showed a focus of abnormal radiotracer accumulation adjacent to the duodenal sweep with a delayed standardized uptake value (SUV-m) of 7.10. This focus of activity corresponded to a round 3 cm lesion on CT. As the PET/CT findings were suggestive of a neoplasm, further endoscopic evaluation with an EGD and EUS was performed. EGD using a front viewing scope showed no abnormalities in the duodenum. The EUS confirmed a 2.8 by 3.0 cm hypoechoic, well-circumscribed, fluid filled, cystic lesion adjacent to the duodenal sweep corresponding to the finding on PET/CT. On review of this area with the side-viewing camera on EUS, a duodenal diverticulum was identified which matched these findings.

Discussion: PET/CT is becoming more commonly used for various malignancies. Although it is a very sensitive imaging test for hypermetabolic malignancies, there are several reported false positives, especially with infectious and inflammatory processes which utilize glucose metabolism. To date, there has not been a report of false positive F-18 FDG uptake within a duodenal diverticulum. Given that duodenal diverticulum are relatively common, it may be important to consider it as a possible source of false positives by endoscopist who evaluate these patients.

Conclusion: Duodenal diverticulum are common and typically asymptomatic. They may be a source of false positive F-18 FDG PET/CT scans. Endoscopists need to become more familiar with this possible source of abnormal PET findings as this modality becomes more widespread in the evaluation of oncology patients.

572

SYMPTOMATIC ESOPHAGEAL DUPLICATION CYST: CASE REPORT AND REVIEW OF LITERATURE

Joseph M. McKinley, M.D., Tawfik M. Chamī, M.D.*. Moffitt Cancer Center, University of South Florida and Florida Medical Clinic, Tampa, Florida.

A 34 yo female with a history of gastric ulcers, gerd and asthma presented for follow up egd of her recurrent dyspepsia and recent dysphagia of solids for two months duration. Pt. denied any odynophagia, weight loss, early satiety or fevers. Pt.’s medications included omeprazole and albuterol. Pt. has a family history of colon cancer, a 15 pack year tobacco history, occasional alcohol use and no recent history of travel or risk factors for HIV disease. Physical exam was unremarkable.

On EGD, extrinsic compression of the distal esophagus was noted, as well as an irregular Z line and an antral ulcer. CT scan of the chest revealed a 3.5x2.0 cm rounded, smooth walled, soft tissue mass in the anterior border of the distal esophagus. A submucosal mass imaged between 35 and 37 cm was identified on EUS. The mass was localized to the left anterior aspect of the esophageal wall and appeared to involve all layers. There was no adenopathy detected on EUS. Biopsies done at time of EUS were unrevealing for cancer. They may be a source of false positive F-18 FDG PET/CT scans. Endoscopists need to become more familiar with this possible source of abnormal PET findings as this modality becomes more widespread in the evaluation of oncology patients.

573

AN UNUSUAL CASE OF HUMAN INTESTINAL SPIROCHETOSIS INCIDENTALLY DIAGNOSED IN AN ASYMPTOMATIC IMMUNOCOMPETENT NORTH AMERICAN PATIENT

Fadi Antaki, M.D., Mostafa A.H. Ibrahim, M.D.*. Henry Ford Hospital, Detroit, Michigan.
Intestinal spirochetosis describes the presence of spirochetes in the human gastrointestinal tract. Most of the recent reports have involved homosexual male patients with advanced human immunodeficiency virus (HIV) infection. In immunocompetent patients, a variety of symptoms have been attributed to spirochetal infections with different degrees of improvement after treatment of that infection. We present a case of human intestinal spirochetosis diagnosed in an asymptomatic 64 year-old female patient who was referred for screening colonoscopy. Diagnosis was made on biopsies obtained from a single superficial ulcer of the transverse colon. A prominent brush border was noted on routine light microscopy and confirmed with the Warthin-Starry stain. The patient was immunocompetent and had no risk factors or recent travel outside the United States. She was treated with a short course of oral antibiotics and remained asymptomatic afterward. This case supports the opinion that human intestinal spirochetosis is possibly more prevalent than traditionally taught. Clinical significance of this condition remains unclear as patients can be completely asymptomatic. Diagnosis can be easily missed as the histopathological changes are subtle. More research is needed to better define both the prevalence and the significance of this infection.

PARAESOPHAGEAL VARICES MIMICKING A MEDIASTINAL MASS MADE APPARENT BY ENDOSCOPIC ULTRASOUND

A 77 year old male with alcoholic cirrhosis was admitted for progressive dyspnea. A chest x-ray showed a large right pleural effusion. Percutaneous catheter drainage was performed confirming a transudative effusion consistent with hepatic hydrothorax. Computed tomography (CT) scan of the chest with intravenous contrast demonstrated a large, lobulated, mediastinal mass extending from the superior mediastinum to the peri-aortic retroperitoneal space. CT-guided core needle biopsy obtained only bloody material. Cytology was hypocellular, consisting mainly of blood. No malignancy was seen and no calciuity was demonstrated on flow cytometry. Due to suspicion of lymphoma referral was made for endoscopic ultrasound (EUS)-guided sampling of the mass. Radial array EUS revealed multiple round masses in patients with portal hypertension. Percutaneous or transbronchial biopsy can mimic mediastinal masses. One uncommon anomaly, azygos continuation, involves involvement in the form of abscess or inflammation. Symptoms were nonspecific in one case and “classic” for diverticulitis in the other. Physical examination and laboratory data suggested diverticulitis, whereas CT scanning revealed not only diverticulitis but also adenexal involvement. While rare, this complication of diverticulitis should be diagnosed rapidly, particularly in premenopausal women whose fertility may be adversely affected if adenexal involvement were to be unrecognized and untreated.

Table 1.

<table>
<thead>
<tr>
<th>Table 1.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical exam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WBC (k/ul.)</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>CT Surgery Pathology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sigmoid diverticulitis, extra-aneurysmal gas extending to L. adnexa/uterine wall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. adnexal inflammatory mass adherent to posterior uterine border/L. adnexa.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sigmoid colectomy/colectomy performed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute/chronic sigmoid diverticulitis with abscess through bowel wall, associated acute peritonitis, L. ovary with dense granulation tissue and acute inflammation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VIDEO CAPSULE ENDOSCOPY DIAGNOSIS OF OXALIPLATIN-INDUCED ENTERITIS IN A PATIENT WITH X-RAY NEGATIVE CROHN’S DISEASE

Advanced colorectal cancer (CRC) is commonly treated with fluorouracil, leukovorin and oxaliplatin (FOLFOX), but the effects in patients with Inflammatory Bowel Disease (IBD) are unknown. The treatment of IBD-associated CRC does not differ from sporadic cancers, yet Crohn’s disease (CD) may present particular challenges to diagnosis and therapy. We present a case of small bowel series (SBS)-negative FOLFOX-induced enteritis, diagnosed by video capsule endoscopy (VCE).

MS is a 30 year old man with longstanding perianal and ileocecal CD since age 8. He underwent an ileocolic resection in 2000 for stricturing ileitis with an ileocolic fistula. Preoperative colonoscopy showed only cecal CD. One year later, after a normal SBS, his prophylactic 6MP was discontinued. In 9/03, he presented with a new sensation of fleeting buttock pain. Colonoscopy revealed a friable rectal malignancy, and he underwent an abdominoperineal resection. Pathology revealed a moderately differentiated anorectal adenocarcinoma with 12 out of 12 lymph nodes involved and focal extra-nodal extension (Stage IIIc). He received external beam radiation therapy to the pelvis. Prior to receiving FOLFOX, a baseline SBS showed no evidence of CD.
After chemotherapy, he developed melena with a hemoglobin of 5.4 g/dL. Colonoscopy showed mild ileitis. VCE showed an active enteritis with bleeding, edematous folds, and scattered erosions and ulcerations. Mesalamine (Pentasa) and budesonide (Entocort) were started, and his chemotherapy was suspended.

The risk of developing CRC in patients with long-standing CD with more than 1/3 colonic involvement is similar to patients with ulcerative colitis. FOLFOX has not been reported to cause either gastrointestinal hemorrhage or exacerbation of IBD. In light of the diffuse hemorrhagic jejunoileitis and recent normal SBS, it is likely that this patient’s GI hemorrhage is due to chemotherapy-induced enteritis rather than a CD flare.

Conclusion: Patients with CD may be more likely to develop FOLFOX-induced enteritis. More than 2/3 of suspected of small bowel CD, undetected by conventional SBS, is correctly diagnosed by VCE. Patients with SBS-negative CD may warrant VCE to detect subclinical CD prior to initiation of oxaliplatin combination chemotherapy. In select VCE-positive CD patients, mesalamine and budesonide prevention therapy may be recommended prior to initiation of FOLFOX chemotherapy for IBD-associated CRC.

LOWER GI BLEEDING FROM ANGIOECTASIA COMPLICATING SPLANCHNIC REVASCULARIZATION
Patricia L. Kozuch, M.D., Lawrence J. Brandt, M.D., M.A.C.G.*. Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, New York.

A 67 year old man was referred with 9 months of epigastric pain and an abnormal abdominal MRA, prompting a working diagnosis of chronic mesenteric ischemia (CMI). His pain began one hour after eating solids, causing him to ingest only liquids. The duration of pain was initially 45 minutes, but had increased to seven hours and was accompanied by a 35 lb weight loss. His medical history included coronary artery and peripheral vascular disease, diabetes and hypertension; he had smoked cigarettes heavily. He appeared ill and much older than his age; bilateral bruits transmitted from the femoral arteries were noted on an otherwise unremarkable abdominal examination. His albumin was 2.1 g/dL and his hemoglobin was 9.8 g/dL. Splanchnic angiography showed high-grade stenosis at the origin of the celiac axis (CA); moderate stenosis at the origin of the superior mesenteric artery (SMA) with complete occlusion 3–4 cm from the origin; pancreaticoduodenal arteries from the SMA as well as left colic and sigmoid branches from the inferior mesenteric artery (IMA) filled the CA retrogradely. SMA angioplasty was performed and two overlapping stents were placed. Repeat angiography showed normal filling of the entire SMA and filling of the CA via the pancreaticoduodenal arcade. The next day the patient enjoyed his food without any pain; however, his immediate post-angiogram hospital course was complicated by three episodes of rectal bleeding requiring several blood transfusions. Colonoscopy showed angioectasites of the cecum and right colon, with fresh clots overlying two lesions. The ectases were treated with argon plasma coagulation (APC). He had no subsequent bleeding or abdominal pain. We hypothesize that this patient’s diagnoses of CMI and lower GI bleeding from angioectasites were linked in the following way: when splanchnic blood flow was low enough to cause CMI, the angioectasites were not under sufficient arterial pressure to bleed. After SMA revascularization, these delicate vessels bled as a result of increased perfusion pressure to the right colon. While this complication is not reported, the unusual potential sequence of events is important to recognize in elderly patients who undergo splanchnic revascularization and subsequently have GI bleeding.

Intramural colonic air, also known as pneumatosis coli, represents a manifestation of severe ulcerative colitis and often heralds impending perforation within areas of colonic necrosis. We present a case of an 18 year old female with severe UC who developed pneumatosis coli requiring emergent colectomy.

An 18 year old female previously diagnosed with factor V leiden coagulopathy and mild proctitis presented with profuse bloody diarrhea and abdominal pain. Colonoscopy revealed severe pancolitis with backwash ileitis. Surveillance colonoscopy revealed no dysplasia. The patient was started on high dose corticosteroids and mesalamine 4.8g/d. 3 days later her baseline lower abdominal pain worsened slightly and the patient developed a low grade fever. CT scan demonstrated cecal pneumatosis coli. Emergent colectomy was performed.

PNEUMATOSIS COLI-A RARE MANIFESTATION OF SEVERE ULCERATIVE COLITIS HERALDING IMPENDING PERFORATION WITHOUT ACUTE ABDOMEN IN AN IMMUNOSUPPRESSED PATIENT
Mark E. Zafereo, Med Student, Douglas G. Adler, M.D.*. University of Texas-Houston Health Science Center, Houston, Texas.

Subtotal colectomy and ileostomy were performed. Pathologic evaluation revealed severe ulceration, crypt abscesses, cryptitis, pseudopolyp formation with inflammation extending into the submucosa and the muscularis propria. The wall was not yet perforated. Pneumatosis coli represents a severe complication of ulcerative colitis. This rare condition can occasionally present without an acute abdomen, especially in immunosuppressed patients (e.g. steroid therapy). Pneumatosis coli represents air, often from gas forming bacteria, within the colonic wall and...
Hepatotoxicity associated with herbal use is a well known cause of fulminant hepatic failure. Liver failure is a cause of death for over 30,000 patients each year in the United States. Liver failure is one of the leading causes of death in the United States.

Introduction: Hepatotoxicity associated with herbal use is a well known cause of fulminant hepatic failure. Liver failure is a cause of death for over 30,000 patients each year in the United States.

Case presentation: A 50 year old lady presented with altered mental status for 2 days. She had no history of fevers, chills, nausea or vomiting. She had a 1 year h/o breast cancer s/p mastectomy currently in remission. On physical exam her abdomen was distended, liver span was 15 cm, and she had no signs of chronic liver disease. Labs: AST 11,846 U/L, ALT 2063 U/L, Alk. Phos 249 U/L, Bilirubin 8.9 mg/dl, ammonia 302 unit; creatuloplasmin 13.2 unit, BUN 22 mg/dl, Creatinine 2.2 mg/dl; PT 49.5 sec and INR 5.29. Drug screen was negative. CT scan of head was negative and Ultrasound of abdomen was normal. Tylemol, aspirin and serum alcohol levels were undetectable. Hepatitis panel was negative. Patient was not a candidate for liver transplantation due to recent history of breast cancer. She was subsequently started on extracorporeal liver support with continuous veno-venous hemodialysis (CVVH) and charcoal absorption. The detox module enables removal of albumin bound toxins; CVVH is added to the system with replacement of the ultrafiltrate with fresh frozen plasma. She tolerated the procedure well and became more responsive. Her liver enzymes started to return towards normal and her coagulopathy improved over next 3 days. The patient was discharged home with creatinine of 1.0 mg/dl; AST 66U/L, ALT 73 U/L, PT 16.2s and INR 1.25. Retrospectively, she gave a history of taking herbal medications KavaKava and St.John’s wort, from a local dollar store. At a six month follow up she has stopped taking herbal medications and her liver function tests are normal.

Discussion: Cheaper herbal preparations are often adulterated by heavy metals, toxic herbs and western medicines. The only available current option for patients with Fulminant hepatic failure is liver transplant, which is not universally available and is severely limited by the availability of donor organs. Current modality of liver dialysis is inexpensive and a readily available alternative to liver transplant in patients with Fulminant Hepatic Failure. Further use will depend on more successful clinical trials.

Conclusion: In light of the increasing incidence of liver disease and continuing shortage of donor organs, artificial liver support devices are gaining attention as promising treatments for Acute Liver Failure.

LIVER DIALYSIS FOR TREATMENT OF FULMINANT HEPATIC FAILURE: A SUCCESS STORY

Multiple colonic ulcers in an adult cystic fibrosis patient on pancreatic enzyme supplements
Shailly Jain, M.D., Kevin P Blanchard, M.D., Charu Subramony, M.D., Anil Minocha, M.D., F.A.C.G.*. University of Mississippi Medical Center, Jackson, Mississippi.

Acute pericarditis: A previously undocumented presenting sign of Crohn’s disease
James F. Jackson, M.D., Shanthi V. Sitaraman, M.D., Ph.D.*. Emory University, Atlanta, Georgia.

A 32 year old female presented for evaluation of a febrile illness and shortness of breath. Vital signs were remarkable for temperature 101.4°F and HR 140. Exam identified clear lung fields and a pericardial rub. Leukocyte count was 10,000, with 51% bands. EKG showed T wave inversions in the lateral leads. Echocardiogram demonstrated absence of pericardial effusion, and a “glistening” pericardium. Pulmonary embolism and infiltrate were excluded with V-Q scan, ultrasound of the lower extremities, and CT scan of the chest. These findings led us to a diagnosis of acute pericarditis.
Pericarditis is the most common cardiac manifestation of IBD. Disproportionately fewer cases of pericarditis have been described associated with CD than UC. Pericardial diseases may occur independently from gut disorder, or, as in this case, coexistent with a flare of the patient’s disease. The temporal relationship between onset of pericarditis and colonic activity is imprecise, however. Pericarditis most commonly coincides with colonic inflammation, but has been described with small bowel-predominant disease. Pericarditis preceding the diagnosis of inflammatory bowel disease has been described in the case of UC, and has been described as the initial manifestation of UC, but not CD.

Pericarditis is an important extraintestinal manifestation of inflammatory bowel disease. This is, to our knowledge, the first case report of acute pericarditis heralding the diagnosis of CD. Chest symptoms in patients with IBD should be closely evaluated to exclude this condition.[figure1]

582

IS THERE AN ASSOCIATION BETWEEN ULCERATIVE COLITIS AND FAMILIAL NONKETOTIC HYPERGLYCINEMIA: A REPORT OF 2 SIBLINGS

Brock J. Doubledee, D.O., Dean L. Antonson, M.D.*. The University of Nebraska Medical Center, Omaha, Nebraska.

Introduction: Familial Nonketotic Hyperglycinemia (FNHG) is an autosomal recessive disorder of amino acid metabolism, a defect in glycine cleavage, which leads to rapidly progressing neurologic symptoms. These symptoms include failure to thrive, hypotonia, seizures, drowsiness and lethargy which can progress to a comatose state. There is currently no known association between FNHG and Ulcerative Colitis (UC); we here present our experience with a brother and sister who have both.

Case Reports: Our patients are a 20-year-old female and a 15-year-old male, both of whom were diagnosed with FNHG shortly after birth, and despite lifelong treatment with Sodium Benzoate, have experienced the continued CNS deterioration associated with this disease. They have severe mental retardation, cortical blindness and seizures. The 20-year-old female presented at 7 years of age with bloody stools and severe abdominal pain. She was subsequently diagnosed with UC based on the microscopic pathology of biopsies obtained endoscopically from her upper and lower GI tract. Since diagnosis, her UC has been relatively well controlled with Sulfasalazine and steroid bursts for infrequent exacerbations. Her 15-year-old brother presented with failure to thrive and bloody stools at 6 years of age, and was also diagnosed with UC based on microscopic pathology. Initially his colitis was also manageable with Sulfasalazine and Prednisone. However, he soon became refractory to treatment. More aggressive treatment, which included Cyclosporine and Methotrexate, was unable to control his symptoms, and he required multiple hospitalizations for repeated lower GI bleeding. At 7 years of age, his UC could no longer be medically managed, and he required a colectomy. He did well for approximately 2½ years after the colectomy, requiring only low dose steroid therapy. At 9 years of age, he had a sudden and life threatening lower GI bleed of the retained rectal segment that could not be controlled. This uncontrollable bleeding necessitated a complete proctectomy and anal closure. Family history is negative for Inflammatory Bowel Disease.

Conclusion: We note these siblings with FNHG both developed UC at an early age. Even with the differing severities of their UC, it raises the question as to whether there is an association between Familial Nonketotic Hyperglycinemia and Ulcerative Colitis.

583

GIANT PSEUDOPOLYP CAUSING COLONIC OBSTRUCTION IN A PATIENT WITHOUT INFLAMMATORY BOWEL DISEASE

Micha Rojany, M.D., Walter Trudeau, M.D.*. UC Davis Medical Center, Sacramento, California.

Colonic pseudopolyps occur frequently in the setting of inflammation in Inflammatory Bowel disease (IBD). We report an unusual case of a giant pseudopolyp causing colonic obstruction without the presence of IBD. A 51 year-old male with a history of renal cell carcinoma presented for diagnostic colonoscopy after a sigmoid mass was seen on surveillance CT scan. The patient underwent a right nephrectomy 7 years ago with complete excision of the tumor. In addition, the patient had an episode of diverticulitis six months prior to presentation. He improved quickly and was discharged from the hospital after a course of antibiotics and bowel rest. The patient denied any current fevers, chills, or weight loss. He did complain of diarrheal left-lower quadrant abdominal pain with an increased frequency of loose stools. Physical examination and laboratory values were unremarkable.

Colonoscopy revealed a 1 cm rectal polyp and an obstructing polyloid mass within the sigmoid colon with adherent stool. The rectal lesion was removed and multiple biopsies were taken of the sigmoid mass. The patient underwent a barium enema that confirmed a 10 cm long sigmoid mass highly suspicious for metastases. Pathology from both the rectal polyp and sigmoid mass reported pseudopolyps. The patient’s abdominal pain and diarrhea continued and he was referred for surgical resection of a likely metastatic lesion. The patient underwent a surgical resection of the sigmoid colon with primary reanastomosis. The surgical specimen revealed a hard nearly circumferential lesion that nearly obstructed the colonic lumen. Pathology demonstrated a giant pseudopolyp that enclosed an abscess within the colonic wall.

Pseudopolyps can be found in any form of severe colitis but are commonly seen in IBD. They form during the regenerative and healing phases of acute inflammation. The management of pseudopolyps in asymptomatic patients is conservative because they have no malignant potential. This case illustrates a rare cause of intestinal obstruction mimicking neoplasia in a patient with a history of diverticulitis and expands the differential diagnosis of the practicing clinician.

584

“HIGH-TECH” DIAGNOSIS OF A “LOW-TECH” DISEASE

Rajalakshmi V. Iyer, M.D., William B. Riles, M.D., Melchor Demetria, M.D., Benjamin Go, M.D., Stephanie Young, M.D., Bashar M. Attar, M.D., F.A.C.G.*. John H Stroger Hospital of Cook County and Rush Medical College, Chicago, Illinois.

Intestinal parasitism has become increasingly rare in the developed world. We report a case of hookworm infestation causing iron deficiency anemia that was diagnosed at upper endoscopy.

Case: A 70 year old Nigerian woman was referred for endoscopy for workup of iron deficiency anemia. She admitted to some periumbilical pain and denied obvious bleeding from the gastrointestinal tract. Past medical history was non-contributory: she was not on any medication and denied NSAID use. There was no significant weight loss. Physical examination showed severe platynychia and kolonychia. There was mild tenderness to deep palpation in the mid abdomen and heme positive brown stool. Hemoglobin was 8.2 gm/dl, HCT 24%, MCV 68, Ferritin 7 ng/ml Albumin was 3 gm/dl. WBC was 9000 cells/cc with absolute eosinophil count of 1260 cells (ULN 1000). Colonoscopy was essentially normal. On EGD multiple brownish live worms, 5 mm to 7 mm long, attached to the mucosa in the second and the third part of the duodenum were seen. The worm was identified as hookworm (Ankylostoma duodenale) and confirmed to be attached to the duodenal mucosa on histopathology. A stool exam showed the characteristic hookworm ova. The patient was treated with Albendazole and iron supplements with resolution of the abdominal discomfort and anemia.

Discussion: Hookworms attach to the duodenal and proximal jejunal mucosa, causing blood loss and anemia by lacerating capillaries and ingesting extravasated blood. An adult hookworm can consume up to 0.5 ml blood per day so that massive infestation can result in significant blood loss. Hookworms are an important cause of iron deficiency anemia and protein calorie
malnutrition in developing countries. In this era of routine endoscopy in the work up of iron deficiency anemia, keeping in mind patient history and demographics in determining the etiology of the anemia has practical importance.

585

DIVERTICULUM OF KOMMERELL: A RARE CAUSE OF DYSPHAGIA
Rajalakshmi V Iyer, M.D., Jason M. Erickson, M.D., Bashar M. Attar, M.D., Mary J. Atten, M.D., Benjamin T. Go, M.D., Mark J. Pisanschi, M.D., John H Stroger Hospital of Cook County and Rush Medical College., Chicago, Illinois.

Non progressive intermittent dysphagia to solids is usually due to esophageal rings. Dysphagia due to a vascular ring is extremely rare. Here we describe a case of dysphagia lusoria due to a diverticulum of Kommerell in an 83 year old man.

Case: The patient presented with complaints of intermittent, non-progressive dysphagia to solids over the past few months. He denied symptoms of GERD, weight loss or gastrointestinal bleeding. Physical examination was normal. EGD showed a submucosal mass versus extrinsic compression in the mid esophagus compromising about half of the esophageal lumen. A chest CT scan showed that the esophagus was compressed between a right sided aortic arch with mirror image branching and an aberrant left subclavian artery arising from a diverticulum of Kommerell. Given the patient's advanced age and intermittent nature of symptoms surgery was deferred. Apparently he had also recently stopped using his dentures and so his dysphagia improved after using his dentures again.

Discussion: Dysphagia lusoria or dysphagia due to vascular rings are due to congenital abnormalities of the aortic arch and its branches that completely or partially encircle the trachea and esophagus causing symptoms from compression. These are more common in the pediatric age group where they can be a potential medical emergency. Adults are often completely asymptomatic and these anomalies can be found incidentally. About 5% of adults experience symptoms after development of atherosclerotic rigidity and tortuosity of the aorta. This is especially so if the aberrant left subclavian artery originates from the diverticulum of Kommerell. Kommerell's diverticulum is a very rare anomaly (incidence 1:100,000) and represents the nonresorbed remnant of the embryonic left fourth aortic arch situated at the point of merger between the right arch and the proximal descending thoracic aorta. CT or MR angiography would help in defining vascular anatomy. Surgery with vascular reconstruction would be the treatment of choice in cases of intractable dysphagia.

586

ESOPHAGEAL PLASTIC STENTS (EPS) FOR REFRACTORY BENIGN ESOPHAGEAL STRICTURES (RBES) – A NEW APPROACH WITH DISAPPOINTING OUTCOMES
Stuart L. Triester, M.D., Mayo Clinic in Scottsdale, Scottsdale, Arizona.

Metal stents have poor long-term outcomes for treatment of RBES. Recently, a removable EPS (Polyflex, Boston Scientific, USA) was approved in the US for management of RBES. An EPS is an ideal option for the management of RBES, but data on outcomes of EPS in RBES are lacking.

Aim: To study the outcome of EPS in patients with RBES. Patients and Methods: A retrospective review of 3 patients that underwent EPS placement for dysphagia due to RBES that were resistant to conventional dilation therapy. Patient #1: A 56 yo WF with esophageal cancer resected after neo-adjuvant chemoradiation with an anastomotic stricture (diameter 3mm). There was no evidence of residual cancer. She underwent 19 attempts at dilation of the stricture (Savary-6 (maximum dilation 36 Fr), TTS balloon-5 (60 Fr), TTS balloon with triamcinolone injection-4 (54 Fr), needleknife strictureplasty followed by TTS balloon-4 (54 Fr)). #2: A 37 yo WF with a stricture (6 cm in length, 11 mm in diameter) due to lye ingestion, treated with self-dilations (38 Fr/week) but with some residual dysphagia. #3: A 47 yo WM with laryngeal cancer treated with total laryngectomy and radiation with an anastomotic (3mm) and a radiation stricture (5mm). Patient underwent 2 Maloney dilations (45 Fr) by ENT without resolution of dysphagia.

Results: All patients had successful EPS placement for their RBES. Patient 1 had 5 migrations of the EPS treated with endoscopic EPS repositioning and later with placement of a larger EPS that also migrated. Patient 2 developed severe chest pain post EPS placement requiring hospitalization and EPS removal on day 7. Endoscopy revealed severe ulceration and granulation at the proximal phalange of the EPS. Patient 3 developed cellulitis in the neck region on day 6 post EPS placement. Barium swallow revealed a contained perforation at the proximal phalange of the EPS. Endoscopy revealed significant ulceration due to pressure necrosis at the proximal phalange and a contained perforation. All patients required EPS removal and are currently being managed satisfactorily with esophageal self-dilation.

Conclusions: EPS are a promising technique to manage RBES. EPS are technically easy to place and remove. However, our initial experience reveals poor outcomes due to adverse events. Improvements in EPS design aimed at preventing stent migration and avoiding ulceration and granulation tissue formation at the proximal phalange may improve outcomes.
METASTATIC LEIOMYOMATOSIS CAUSING SEVERE LOWER GI BLEED
Robin Forman, D.O., Valerie Nozad, D.O., Adrienne Fleckman, M.D.*
Beth Israel Medical Center, New York, New York.

A 41 year-old woman presented with tachycardia and black, tarry stools. Her past medical history included a diagnosis of “lung fibroids,” myomectomies for large uterine fibroids, and ultimately TAH/BSO. Three weeks after TAH/BSO she had a second operation for hemorrhage into a pelvic mass. The patient was then placed on conjugated estrogen.

In March 2003 she required transfusion for hemoglobin (Hgb) of 4.1 g/dl. In June, palpitations awakened her. Blood tests revealed Hgb of 5.31 g/dl. Patient was transfused 2 units of PRBCs and sent home. Two days later, she again awoke tachycardic and was hospitalized.

An upper and lower endoscopy; small bowel series; three bleeding scans; and a capsule endoscopy study were inconclusive. A chest/abdomen/pelvis CT revealed multiple soft tissue masses within the pelvis, one abutting the sigmoid junction and one abutting the upper rectum; multiple pulmonary nodules increased in size from prior CT in 1998; and a leiomyoma of the inferior vena cava (IVC) without invasion of the right atrium. Tissue from the TAH/BSO was retrospectively tested for estrogen (ER) and progesterone (PR) receptors with positive results.

Gastrointestinal bleeding progressed to hematochezia. The patient required 22 units of PRBC’s. Exploratory laparotomy revealed soft tissue masses entangling and invading both the ileum and the sigmoid colon. Pathology showed multiple benign hemorrhagic degenerating leiomyomatous with vascular invasion.

Leiomyomatosis is a rare, histologically benign smooth muscle tumor with a tendency to intravascular invasion. It is infrequently associated with life-threatening symptoms. What is unique to our case is the impressive intravascular invasion of the lower GI tract, which has never been reported in the literature, and which resulted in near-exsanguination. The ER/PR positivity of the tissue supports our hypothesis that estrogen therapy resulted in metastatic leiomyomatosis and the rapid invasion of multiple sites including the peritoneum, IVC, lungs, and GI tract.

GASTRIC SARCOIDOSIS: TREATMENT WITH METHOTREXATE AS SECOND LINE AGENT
Nandini Nagaraj, M.D., James C. Reynolds, M.D.* Drexel University College of Medicine, Philadelphia, Pennsylvania.

Sarcoidosis is a systemic granulomatous disease of unknown etiology involving multiple organs. Gastrointestinal (GI) tract involvement is well recognized but the true incidence of the disease is not known as symptomatic presentation is rare. Steroids remain the primary choice of treatment with good short term response. But not all cases respond and also many experience serious side effects including weight gain with long term use or may have contraindication like depression. We present a case of a 53 year old man with sarcoid of the stomach, initially on steroids without disease control, who responded with complete resolution of non-casing granulomas on methotrexate (MTX). He also interestingly had associated celiac disease reported in up to 40% of the patients with sarcoidosis.

Case Report: Our patient is a 53 year old male with history of biopsy proven pulmonary sarcoid in remission. He presented to our hospital with an episode of severe hemoptysis. An upper GI endoscopy performed showed no specific bleeding site but the fundus was completely obscured by a large pool of blood. A repeat endoscopy done disclosed small submucosal hemorrhages. Biopsy obtained from the antrum showed non-casing granulomas. A diagnosis of sarcoidosis was made after ruling out crohn’s disease, and was started on 20 mg of prednisone. Repeat endoscopic biopsies done showed poor disease control. He also became cushingoid requiring reduction in steroid dosage. Because of these side effects, he expressed interest in alternative therapy and was started on weekly 10 mg dose of MTX, which was gradually increased to 17.5 mg per week subsequently. On repeat biopsies, he showed progressive improvement with complete resolution of the non-casing granulomas occurring about two years after starting MTX. He was eventually tapered off the drug with remission of disease. During the treatment course, his white cell count and liver function tests were monitored regularly for toxicity. He was also diagnosed with celiac disease during one of the endoscopic biopsies and did well on gluten free diet. On eventual follow up off MTX, he did show recurrence of granulomas but opted not to restart the treatment as he remained asymptomatic.

Conclusion: This case report is to highlight MTX as a relatively safe and effective second line agent in the treatment of GI sarcoidosis. The time taken for the onset of action is usually 4–6 months. The dose of MTX needs to be titrated to control the disease as well as to minimize side effects.

HEPATIC SARCOIDOSIS CAUSING INTRACTABLE PRURITIS
Sarba Kundu, M.D., Manjushree Gautam, M.D.*, Hitender Jain, M.D., Mustfa Shameem, M.D. Mercy Catholic Medical Center, Darby, Pennsylvania and St. Georges Medical School, London, United Kingdom.

Sarcoidosis is a multi-systemic granulomatous disorder of undetermined etiology and pathogenesis. Although all organs can be affected by sarcoidosis, the lungs and intrathoracic lymph glands are the most common sites of involvement. We describe an unusual case of extra pulmonary sarcoidosis presenting as obstructive jaundice and severe pruritis.

A 34-year-old female with no prior medical history presented with progressive pruritis for three months. Review of systems was unremarkable. Her pruritis did not respond to commonly used antipruritic medications. On examination, patient was jaundiced with multiple scratch marks on her skin. She had no stigmata of chronic liver disease and rest of her physical examination was essentially benign. Her laboratory work showed elevated levels of bilirubin (2.1mg/dl) that was predominantly direct bilirubin (1.5mg/dl). Her liver functions showed a significantly elevated alkaline phosphatase (1034U/L) and GGT (780U/L) with moderately elevated AST (154U/L) and ALT (168U/L). Antimitochondrial antibody levels were negative. A CT scan of her abdomen showed a moderately enlarged liver, normal gall bladder and pancreas without any evidence of intra hepatic or extra hepatic biliary dilatation. There was a suggestion of possible mass near the porta hepatis. Her ERCP showed a short stricture in the distal common bile duct. She underwent a liver biopsy that showed non-casing epitheloid granulomas suggesting biliary sarcoidosis. Angiotensin converting enzyme level and CT scan of her chest was normal. She was started on prednisone and responded very well to this therapy with a dramatic resolution of her symptoms and normalization of liver functions.

Liver involvement is common with systemic sarcoidosis, however it is usually clinically silent. It is extremely rare to have extra pulmonary involvement as the only manifestation of disease. In the literature there are very few case reports of patients with sarcoidosis presenting only with liver involvement as was seen in our patient. The clinical manifestations of hepatic sarcoidosis vary from asymptomatic elevation of liver enzymes to cholestatic jaundice, cirrhosis and hepatic vein thrombosis. The diagnosis is established by biopsy that shows non-casing granulomas. It is important to consider sarcoidosis in these patients, since the differential diagnosis of hepatic granulomas includes infectious diseases in which treatment with corticosteroids could be fatal.
KETOROLAC INDUCED ACUTE PANCREATITIS
Douglas A. Boyce, M.D., Michael Cannon, M.D.*. William Beaumont Hospital, Royal Oak, Michigan.

To date, only two cases of acute pancreatitis have been attributed to ketorolac tromethamine (Toradol). Both cases were associated with the intramuscular route of administration. Ketorolac is a widely used anti-inflammatory that works through inhibition of cyclooxygenase. We present a third patient with Ketorolac induced acute pancreatitis.

A 74-year-old female was admitted with acute abdominal pain located in the epigastrium, with radiation to the back. Evaluation by her primary care physician three days prior for right hip discomfort prompted an intramuscular injection of ketorolac (30mg). Four hours later she developed sudden, severe epigastric pain, requiring inpatient hospitalization. Amylase was 234 U/L, lipase 166 U/L, calcium 8.5mg/dL. The white blood cell count was normal, liver function tests were two times ULN. Computed tomography showed a normal appearing pancreas with mild biliary duct dilation, felt to be normal status post cholecystectomy and given her advanced age. Treatment with intravenous fluids and bowel rest was undertaken. Symptoms resolved over two days, and her biochemistries normalized prior to discharge. MRCP revealed a cystic area in the unincate process suspicious for neoplasm. EUS and biopsy are pending.

This is the third case of documented ketorolac induced acute pancreatitis. Two previous cases had symptom onset two to eighteen hours after drug administration. Pancreatitis is not listed as a potential complication in the drug-product packaging. Our patient also had been on celecoxib for many years. Pancreatitis has been associated with use of celecoxib, sulindac, ketoprofen and rofecoxib, both short term and long term use. Review of her medical history revealed two prior admissions for acute pancreatitis in the past five years. She could not recall whether she had received ketorolac tromethamine during those time periods, but it is possible.

Her current presentation prompted further imaging, now revealing a suspicious lesion in the pancreas. This is likely drug induced pancreatitis with a newly discovered pancreatic lesion resulting in chronic dilation of the biliary tree. The mechanism of pancreatic injury from ketorolac is unknown. Most likely this is a hypersensitivity or idiosyncratic reaction. The temporal relationship of ketorolac administration and onset of pancreatitis in this patient, and the two prior case reports highlights the importance of this complication. Inclusion of pancreatitis as a side effect of ketorolac administration should be included in its drug packaging.

INFLAMMATORY JEJUNITIS SECONDARY TO ACUTE PANCREATITIS: AN UNUSUAL CAUSE OF OBSCURE OVERT GASTROINTESTINAL BLEEDING
Nathan E. Slinde, M.D., Colm J. O’loughlin, M.D.*. Medical College of Wisconsin Affiliated Hospitals, Milwaukee, Wisconsin.

Introduction: Wireless Capsule Endoscopy (WCE) allows direct visualization of the entire small intestinal (SI) mucosa and has proven to be a significant addition to the evaluation of SI diseases. We report the finding of a segmental inflammatory jejunitis by WCE performed for suspected SI bleeding in a patient with acute pancreatitis (AP).

Case Report: A 52 year-old woman with a history of hypertension, hyperlipidemia, and diabetes mellitus presented to our institution with sudden onset of central abdominal pain radiating to her back, associated with nausea and passage of maroon stools. She denied alcohol or non-steroidal anti-inflammatory drug (NSAID) use. Examination revealed a tender abdomen without rebound. Bowel sounds were diminished. WBC was 11.5, Hct 25, Pts 380, Lipase 17,100, Amylase 1,360, Bun-64 and serum Creatinine-2.2. Liver function tests, serum calcium and triglycerides were within normal limits. CT scan of the abdomen revealed peripancreatic inflammatory fat stranding with fluid extending into the left paracolic gutter. Abdominal ultrasound with doppler confirmed no cholelithiasis or biliary dilation and a patent splenic vein. EGD was normal. Colonoscopy showed dark red blood throughout the colon and distal ileum. A technetium labeled RBC scan, 3 vessel mesenteric angiogram, small bowel series and push enteroscopy were negative. A total of 7 units of packed RBCs were transfused. WCE was performed and demonstrated marked mucosal inflammation with luminal narrowing and dark blood in a < 10cm segment of the distal jejenum. An MRCP demonstrated pancreas divisum and CA19–9 and CEA were not elevated. Her acute pancreatitis and gastrointestinal bleeding resolved. WCE was repeated after 6 weeks and demonstrated resolution of the previously noted mucosal inflammation with residual erythema of an otherwise normal appearing distal jejunal mucosa. The patient has had no further bleeding or recurrence of pancreatitis.

Conclusion: The performance of WCE for the evaluation of suspected SI bleeding in the setting of AP has not previously been reported. This case report demonstrates a segmental inflammatory jejunitis secondary to AP resulting in obscure overt gastrointestinal bleeding.

HEPATITIS C VIRUS AS A CO-FACTOR IN AZATHIOPRINE-INDUCED CHOLESTASIS
Background: Pre-existing liver disease is not believed to potentiate the risk of most idiosyncratic drug-induced hepatotoxicities. Fibrosing cholestatic hepatitis (FCH) related to the hepatitis C virus (HCV) has been reported in the transplant literature in immunocompromised patients on azathioprine (AZA), suggesting a synergistic toxicity of HCV and AZA. We report a case of prolonged AZA-induced intrahepatic cholestasis in a non-transplant patient with HCV and non-alcoholic steatohepatitis. This case and a review of the medical literature suggest that patients with HCV may be at greater risk for AZA toxicity.

Case Report: A 53 year-old African American man with chronic HCV and steroid-dependent polymyositis presented with a two-week history of jaundice and intense pruritus. Twelve weeks before presentation he was started on AZA 100 mg bid and four weeks before presentation his dose of prednisone was increased to 40 mg/d for control of worsening muscle weakness. Before the start of AZA, his baseline AST (U/L)/ALT (U/L)/Total bilirubin (mg/dl) was 147/172/0.8 and at the time of presentation, these values were 227/225/19.3. A liver biopsy showed intense intrahepatic cholestasis, feathery degeneration, moderately active steatohepatitis, and portal-portal bridging fibrosis. Ductopenia was not observed. Two months after discontinuation of AZA, his pruritus resolved and his bilirubin decreased to 11.5 mg/dl.

Discussion: In the absence of other causes, the temporal relationship of AZA to the onset of jaundice implicates this drug as the cause of prolonged jaundice. The world medical literature documents only a few bona fide cases of AZA-induced cholestasis in patients without prior organ transplantation. One such case, reported before 1989, likely involved a patient with HCV. The present case bears clinical resemblance to FCH in patients with chronic HCV post-liver and kidney transplantation. In those cases, AZA was suspected to be a contributing factor in the development of cholestasis, but other immunosuppressive agents, as cofactors, could not be excluded. This case corroborates recent reports suggesting that HCV patients, independent of steroid immunosuppression, may be more susceptible to the hepatotoxic effects of AZA and that AZA may be responsible for FCH in the HCV post-transplant setting.

Mycobacterium Tuberculosis: Right Sided Colitis in a Patient with End Stage Renal Disease
Joseph Chemtob, M.D., Daniel S. Mishkin, M.D., Stanley Goldberg, M.D., Daniel Gerulad, M.D.*. Jacobi Medical Center, Albert Einstein College of Medicine, Bronx, New York.

A 51 year old Mexican man presented with colicky generalized abdominal pain, nocturnal nonbloody diarrhea and weight loss for a three month period. He had lost 10 kg over the last 6 months. He had no recent travel, antibiotics, sick contacts, fevers or night sweats. His medical history was significant for hypertension and end stage renal disease (ESRD) on hemodialysis for 8 years. Exam revealed tenderness in both lower quadrants, without peritoneal findings. The rest of the exam was within normal limits except for guiac positive stool. All other stool studies were negative. A CT scan showed thickening of the cecum and proximal ascending colon, a small amount of pericolonic fluid. Colonoscopy demonstrated congested mucosa in the cecum and ascending colon with mucopurulent exudate, deep ulceration and fissuring. Histologically, this area revealed evidence of a severe colitis with gland distortion, ulceration, granulation tissue, fibrinopurulent exudate, and multiple non-caseating granulomata. The AFB stain of the tissue was negative. A tuberculin skin test, done without anergy panel, was negative. The incidence of intestinal TB is on the rise. The increased rate of TB in patients undergoing hemodialysis is documented in Asia and in the United States. Screening with a tuberculin skin test is not helpful in ESRD since defects in cell mediated immunity are common. In fact, the sensitivity of the Mantoux test in extrapulmonary TB is only 77% and a positive PPD is observed in only 19% of patients with ESRD and TB. Intestinal mucosal biopsies may not identify granulomata as they tend to be located deeper in the submucosa. Additionally, as in our case, AFB smear may be negative even in the presence of multiple granulomata. The nonspecific symptoms encountered in intestinal TB warrant a high index of suspicion. Clinicians should be aware of the pathophysiology, diagnostic and treatment regiments involved. Risk factors for extrapolmonary TB should never be ignored.

Mycophenolate Mofetil (CellCept®) Associated Enterocolitis
Thomas C. Liu, M.D., T. Carlton Moore, M.D., Francis A. Farnaye, M.D., F.A.C.G.*. Boston Medical Center, Boston, Massachusetts.

Mycophenolate mofetil (CellCept®) inhibits purine synthesis and is a commonly used agent in immunosuppression regimens for patients after solid organ transplantation. In addition mycophenolate mofetil (MMF) has also been used experimentally in steroid resistant or steroid dependent inflammatory bowel disease patients. Gastrointestinal side effects are the most common adverse reaction with diarrhea affecting as many as 31% to 51% of patients taking MMF. We describe a renal transplant recipient who developed ileocolitis related to MMF.

A 28 year old man presented to the emergency room 19 months after undergoing a living-related renal transplant with malaise, nausea, and two weeks of diarrhea which became bloody several days prior to admission. Medications included prednisone, tacrolimus, mycophenolate mofetil, gemfibrozil, clonidine, quetiapine, pioglitazone and buproprion. Pertinent admission labs: WBC 3.9 with 33% polys and 11% bands, Hct 25.8, platelets 320K, creatinine 3.4, and BUN 60. Stool samples were negative for clostridium difficile toxin and enteric pathogens. An empiric course of levofloxacin did not improve his symptoms. The patient developed progressive hematochezia, nausea, vomiting, and abdominal pain. Colonoscopy demonstrated diffuse areas of ulceration involving the terminal ileum, cecum, ascending colon and transverse colon. There was sparing of the left colon and rectum. Pathology of the terminal ileum demonstrated severe atrophy, reparative changes, mucous depletion, edema, inflammation and prominent apoptosis. Colonic biopsies demonstrated cryptitis, crypt distortion, atrophy and prominent apoptosis. No viral inclusions were seen and immunostains for CMV were negative. A diagnosis of erosive enterocolitis associated with MMF was made. The MMF dose was reduced and his symptoms resolved. He remains well 12 months later without recurrent diarrhea.

Clinicians caring for patients on mycophenolate mofetil must be aware of the commonly encountered gastrointestinal side effects. The frequency of gastrointestinal side effects appear to be dose related and may frequently progress after initiation of therapy. Dose reduction may result in symptom resolution. The histology of MMF related erosive enterocolitis has features similar to graft-versus-host disease predominantly demonstrating apoptosis. Gastrointestinal side effects of mycophenolate mofetil may limit its use as an immunosuppressive agent in patients with inflammatory bowel disease.

Aspergillus Cholecystitis as a Complication of ERCP
Christopher J. Christensen, M.D., Anil Minocha, M.D.*. University of Mississippi Medical Center, Jackson, Mississippi.

Although Aspergillus is ubiquitous in the environment, infections of the bile tract are very rare. An Aspergillus infection as a complication of ERCP has not been described before.
A previously healthy 29 year male with a history of mild asthma presented with RUQ abdominal pain and jaundice for three months. He was repeatedly admitted and treated for recurrent pancreatitis believed to be secondary to alcohol use. CT scan of the abdomen revealed diffuse dilatation of intra- and extra- hepatic ducts, pancreatic duct, and a prominent pancreatic head. ERCP revealed a 5cm distal CBD stricture treated with a spincterotomy and stent placement which resolved the symptoms. However, jaundice and RUQ pain returned 10 days after this initial ERCP. He also developed fever and an eosinophil predominant leukocytosis. Treatment with broad spectrum antibiotics was initiated. Repeat ERCP, CT, ultrasound, and HIDA scan were performed. Findings included continued CBD dilation, a patent stent with no evidence of obstruction or cholangitis, moderate sludge in the gallbladder, and lymphadenopathy of peripancreatic and periaortic lymph nodes. Patient was taken to surgery for an exploratory laparotomy because of failure to respond to conservative therapy. Operative findings revealed porta hepatis lymphadenopathy, pancreatic head inflammation, and a necrotic gallbladder. Pathology of lymph nodes revealed granulomatous eosinophilic lymphadenitis with positive fungal stain for aspergillus species. Transmural acute eosinophilic and granulomatous cholecystitis with aspergillus was also noted. Aspergillus IgG antibody was positive with a titer of 1:44. Treatment with oral voriconazole was initiated resulting in normalization of his liver tests. A subsequent ERCP revealed complete resolution of the stricture.

The tissue reaction in our case was similar to that commonly seen in the lungs with allergic bronchopulmonary aspergillosis (ABPA), a condition of asthmatic patients with eosinophilia, IgE antibodies to Aspergillus, and pulmonary infiltrates. To our knowledge, the histologic manifestations of ABPA have not been described outside of pulmonary tissue. Infectious diseases consultants opined that the infection had been introduced at time of first ERCP. This may have been due to a contaminated endoscopy suite or from the organism being pushed down with the scope from the oropharynx. The patient’s occupation as a press operator at a local cotton gin may have led to above normal exposure to this ubiquitous organism.

CMV PSEUDOTUMOR OF THE COLON IN AN AIDS PATIENT
Jaime Chen, M.D., Thomas Savides, M.D.*. UCSD Medical Center, San Diego, California.

Aim: We describe a rare case of gastrointestinal CMV infection presenting as a colonic pseudotumor in an AIDS patient.

Case Presentation: A 47-year-old Hispanic man with AIDS, CD4 count 5 and viral load > 750,000, presented with several days of lower abdominal pain. He denied having fever, diarrhea, or hematochezia. He had a prior history of PCP pneumonia and a PPD positive skin test treated with INH. On presentation, the patient was not on any medication nor HAART due to prior noncompliance. He was afebrile and normotensive. His abdomen was tender in the low midline area without peritoneal signs. Initial labs reported WBC 3.6 (38% segmented neutrophils, 43% bands), Hgb 10.8, and anion gap 9. Abdominal CT showed bowel thickening in the ileocecal segment with adjacent fat stranding. Stool studies, including AFB and O&P, and blood cultures, including for CMV, were negative. Colonoscopy revealed a 5 cm ulcerated mass in the cecum extending into and through the ileocecal valve. Numerous biopsies were taken which demonstrated cytomegalic cell with cytoplasmic inclusions, consistent with CMV. The patient was given oral valganciclovir for CMV pseudotumor ileocolitis. HAART was not instituted due to concerns for noncompliance. The patient did not followup and eventually developed non-Hodgkins lymphoma several months later and died.

Discussion: This case represents a rare manifestation of CMV gastrointestinal disease. Mass lesions of the colon in AIDS patients typically represent a neoplasm, particularly Kaposi’s sarcoma or lymphoma. Infectious mass lesions are less common, usually M. tuberculosis or Histoplasmosis. Only 6 cases of CMV colonic pseudotumor have been reported of which 5 had atocellular carcinoma. Since multiple lobes were involved, the patient was not a candidate for resection and was treated with gluten free diet, proton pump inhibitors and palliative care. He reported symptomatic improvement, though prognosis remained guarded.
underlying AIDS and was post-renai-transplant. Most of those cases had non-diagnostic colon biopsies and were diagnosed after surgical resection for presumed malignancy. This is a lesion that when diagnosed by endoscopic exam can potentially be managed medically.

Conclusion: CMV pseudotumor is rare but should be considered in the differential of a colonic mass lesion in an AIDS patient.[figure1]

WIRELESS CAPSULE ENDOSCOPY IN CLINICAL PRACTICE: 18-MONTH EXPERIENCE IN A PRIVATE GI PRACTICE, BROOKLYN, N.Y. USA
Jonathan A. Erber, M.D., William F. Erber, M.D.*, Susan Sagiv. Montefiore Medical Center; Bronx and Maimonides Medical Center; Brooklyn, New York.

Large multi-center clinical trials have demonstrated the utility of Wireless Video Capsule Endoscopy (WCE), in the detection of small bowel pathology. How practical and useful is WCE in a GI practice?

Methods: 138 patients were referred for WCE between January 2003 and June 2004. 80 patients were studied. The group was 60% (48) female, 40% (32) male; average age 58 (range 11–86). All patients underwent EGD and Colonoscopy, most ileoscopy and Small bowel series, all within 1 year prior to their study. All studies were reviewed by 4 independent readers.

Results: 48 patients had Obscure GI blood loss (30 occult; 18 overt); 13 had Indeterminate Colitis; 9 had diarrhea and abdominal pain; 10 had suspected small bowel polypysis. Reading times: 40 to 80 minutes. Average Small bowel transit was (SBT) 245 minutes. The capsule reached the ce-

ENDOSCOPIC DRAINAGE OF METASTATIC SARCOMA TO THE PANCREAS

Synovial sarcoma is a neoplasm that arises in the para-articular regions with a high metastatic rate. Common locations for metastases include: lungs (80%), regional lymph nodes (10%), bone (5%), brain (3%), liver, heart, duodenum, peritoneum (1%), and multiple sites in 15%. This is the first reported case of endoscopic biliary drainage for obstructive jaundice due to synovial sarcoma metastatic to the pancreas.

Case report: A 44-year-old female presented with three months of abdomi

LUPRON-INDUCED PARASITIC FIBROID EROSION INTO THE RECTOSIGMOID COLON
Patricia L. Kozuch, M.D., Deborah Sherman, M.D.*. Jack D. Weiler Hospital/Albert Einstein College of Medicine; Bronx, New York.

A 34 y.o. woman with two months of anemia and rectal symptoms was referred to our service by gynecology. She underwent termination of pregnancy four months previously at 12 weeks gestation due to large subserosal fibroid tumors; Lupron® was started at this time and a myomectomy planned. She noted rectal discomfort with intermittent bleeding. She had no abnormal vaginal bleeding, but did have occasional abdominal pain from the fibroids. Past medical and surgical history were otherwise unremarkable. Medications included iron and ibuprofen in addition to Lupron®. She did not use tobacco, alcohol or illicit drugs; family history was non-contributory. On physical examination, she was thin with normal vital signs; a large fibroid uterus was palpated; rectal exam was normal with Hemoccult® positive brown stool. Her hemoglobin was 7.6 g/dL with an MCV of 78. Colonoscopy revealed friable rectal mucosa and two flat polypoid lobulated rectal lesions with exudative ulceration. Histology showed non-specific inflammation and granulation tis-

Discussion: The pancreas is a well described site of secondary metastasis of solid tumors and is not as rare as once thought. Our patient had a late recurrence of her primary tumor. The ERCP revealed extrinsic compression of the common bile duct in a similar manner to that seen in primary pancreatic cancer. The definitive diagnosis was made by CT-guided pancreatic biopsy. As in many, our patient was deemed unresectable due to extensive spread of disease. Palliation of symptoms, as we have shown here, can be successful with endoscopic biliary drainage. Although rare, metastatic sarcoma should be considered as a cause of malignant biliary obstruction.
Background: Anti-tumor necrosis factor IgG (Infliximab) therapy offers a promising new strategy in the treatment of rheumatoid arthritis and crohn’s disease. Despite good clinical efficacy and tolerance, the occurrence of drug-induced autoimmune disorders remains a concern. The induction of antinuclear (ANA), anti-DNA, and anti-histone antibodies has been widely observed in patients on infliximab therapy. However, clinically relevant systemic lupus erythematosus (SLE) is extremely rare with only a few scattered cases reported in the literature. We report a case of infliximab-induced SLE in a patient with crohn’s colitis and review the literature.

Case Report: A 37-year-old female with crohn’s colitis initially presented with a severe flare-up that was refractory to mesalamine, steroid, and mercaptopurine therapy. Infliximab, 5 mg/kg of body weight, was initiated and a complete response was achieved. Shortly after her 5th dose, she became weak and began developing severe arthralgias and myalgias. Her symptoms progressed to the development of pleuritic chest pain and dyspnea. She was admitted to the ICU where and EKG revealed diffuse ST elevations with an echocardiogram showing RV collapse during inspiration. A pericardial window was performed with the fluid analysis for AFB, viral cultures, and cytology all being negative. Serologic evaluation revealed and ESR of 67 mm/hr with antibodies to nuclear antigens (1:640), double-stranded DNA, and histone protein. The diagnosis of drug-induced SLE was made and her infliximab therapy was discontinued. The patient’s symptoms began to resolve within 8 weeks of the discontinuation of her anti-TNF therapy.

Conclusion: The introduction of TNF blockade has been a breakthrough in the management of severe treatment-resistant crohn’s disease. An emerging problem with infliximab therapy, however, is the development of autoimmunity. Reports show that infliximab treatment is associated with the induction of ANA in 56.8%, dsDNA in 32.5%, and histone in 21% of patients. Despite the high incidence of autoimmunity, clinical relevant SLE is extremely rare. In the six cases reported, clinical SLE was associated with the developments of ANA, dsDNA IgM, histones, and the female sex.

A 52-year-old man presented with generalized abdominal pain, nausea and vomiting 3 days after undergoing a laparoscopic cholecystectomy for chronic cholecystitis. Physical examination revealed tachycardia (106 beats/minute), abdominal distension and tenderness. Lab: WBC = 167000/UL, AST = 40U/L, ALT = 73U/L, Alkaline Phosphatase = 72U/L, Total Bilirubin = 5.9MG/DL and Direct Bilirubin = 2.6MG/DL. Abdominal x-ray showed ileus. CT scan showed a dropped gallstone in the abdominal cavity. Patient was started on intravenous antibiotics and fluids. HIDA scan did not show bile leak but ERCP revealed a leakage from cystic duct without any evidence of choledocholithiasis and a stent was placed. Repeat HIDA scan done 5 days later showed continuous leakage in late pictures. The patient continued to experience abdominal pain and fullness and a repeat CT scan showed a large biloma which was later drained percutaneously by interventional radiologist. Culture of fluid grew Streptococcus viridans, Staphyllococcus epidermidis and Candida albicans, and antibiotics were changed accordingly. The CT scan also showed a small collection of fluid where dropped stone was seen before, however, surgical team decided to observe him without any surgical intervention. Follow up HIDA scan, 12 days after biliary stent placement, did not show any sign of bile leakage. Patient’s clinical condition and biochemical parameters improved, and he was discharged in stable condition.

Conclusion: Bile leak after cholecystectomy may be difficult to detect and can complicate the clinical course. If abdominal pain continues following laparoscopic cholecystectomy, further imaging should be done to rule out bile leak. ERCP is an excellent diagnostic and therapeutic modality that could prevent further surgical intervention. Any abscess should be drained and treated according to microbiology results. The outcome of a single dropped stone is difficult to predict, however, if patient’s condition improves, watchful waiting may be justified.

**ESOPHAGUS**

**TRIPLE TROUBLE AFTER LAPAROSCOPIC CHOLECYSTECTOMY: DROPPED STONE, BILE LEAK AND ABSCESS**

Hatuf Massouni, M.D., Manoj Punicottl, M.D., Ajit Kokkat, M.D., Mario Ricci, M.D., Nejat Kiyici, M.D., Hilary Hertan, M.D., F.A.C.G.*. Our Lady of Mercy Medical Center, Bronx, New York.

A 52-year-old man presented with generalized abdominal pain, nausea and vomiting 3 days after undergoing a laparoscopic cholecystectomy for chronic cholecystitis. Physical examination revealed tachycardia (106 beats/minute), abdominal distension and tenderness. Lab: WBC = 167000/UL, AST = 40U/L, ALT = 73U/L, Alkaline Phosphatase = 72U/L, Total Bilirubin = 5.9MG/DL and Direct Bilirubin = 2.6MG/DL. Abdominal x-ray showed ileus. CT scan showed a dropped gallstone in the abdominal cavity. Patient was started on intravenous antibiotics and fluids. HIDA scan did not show bile leak but ERCP revealed a leakage from cystic duct without any evidence of choledocholithiasis and a stent was placed. Repeat HIDA scan done 5 days later showed continuous leakage in late pictures. The patient continued to experience abdominal pain and fullness and a repeat CT scan showed a large biloma which was later drained percutaneously by interventional radiologist. Culture of fluid grew Streptococcus viridans, Staphyllococcus epidermidis and Candida albicans, and antibiotics were changed accordingly. The CT scan also showed a small collection of fluid where dropped stone was seen
GI dysmotility has been successfully managed with steroids, plasmapheresis and IVIG.

606

INTESTINAL TUBERCULOSIS PRESENTING WITH SEVERE LOWER GI BLEEDING
Joseph M. Bruno, M.D., James C. Reynolds, M.D.*. Drexel University, College of Medicine, Philadelphia, Pennsylvania.

A 28-year-old Vietnamese woman who immigrated to the US in 1993 presented to the ED with 5 days of LLQ abdominal pain and 5 bloody bowel movements in the past day. She felt feverish and had some nausea and vomiting. She lost several pounds in the past few weeks. She had no prior history of GI bleeding or abdominal pain or diarrhea. Her only medical history was a vaginal delivery one year ago and possible reactive PPD in the past. She smoked, drank 2 beers a month, and denied illicit drug use. She had no travel since 1993, but did have food items shipped from Vietnam. Her only family history was a brother who had a renal transplant in 1993.

On exam, she had a temperature of 99.6°F, pulse of 108, and blood pressure of 91/51. She was awake and alert. Pertinent findings of physical exam included tachycardia, a clear chest, hyperactive bowel sounds, mild upper abdominal tenderness, and streaks of dark red blood on rectal exam. Labs included a hemoglobin of 9.1 that dropped to 4.9 over 6 hours and normal liver injury tests, coagulation factors, white cell count, and platelet count. Obstruction series showed mildly dilated loops of distal small bowel and reticulated opacities in the upper lung fields. Stool culture and O&P were normal. A colonoscopy was performed and showed nodular, erythematous mucosa with ulcerations around the ileocecal valve. The remainder of the cecum and terminal ileum appeared normal. Biopsies were obtained.

The endoscopic findings were suggestive of Crohn’s disease, but given the abnormal chest radiography and possible history of reactive PPD, TB was also considered. Biopsies were sent for pathology and bacterial and AFB stains and cultures. The histology showed chronic inflammatory changes, submucosal noncaseating granulomas, and crypt abscesses. Pulmonary evaluation for underlying TB included a CT of the Chest showing cavitary areas in upper lobes. Bronchoscopy was normal and bronchial washings had negative AFB. Pulmonary evaluation for underlying TB included a CT of the Chest showing cavitary areas in upper lobes. Bronchoscopy was normal and bronchial washings had negative AFB staining and culture. Colonic tissue staining for AFB was negative. Colonic tissue culture grew Mycobacterium tuberculosis by nuclear hybridization.

Cases of TB have risen in the US in the past 15 years, but intestinal tuberculosis remains very uncommon, and massive lower GI bleeding is an uncommon presentation for intestinal tuberculosis. It is often difficult to distinguish from Crohn’s disease. The diagnosis requires high clinical suspicion and diligent evaluation with multiple biopsies.

607

ACUTE SENSORY NEUROPATHY ASSOCIATED WITH HEPATITIS C INFECTION
Hatuf Massoumi, M.D., Harish Muniswamy, M.D., Aijit Kokkat, M.D., Mario Ricci, M.D., Nejat Kiyici, M.D., John Hughes, M.D., Hilary Hertan, M.D., F.A.C.G.*. Our Lady of Mercy Medical Center, Bronx, New York.

A 52-year-old African American woman was admitted to the hospital for evaluation of 2 weeks of abdominal pain, nausea and vomiting. She also complained of numbness and tingling of the extremities and urinary incontinence. Physical examination was remarkable for abdominal distension, sluggish bowel sounds, nystagmus and signs of peripheral sensory loss. Comorbid conditions included diabetes, hypertension and irritable bowel syndrome. She was given a trial of intravenous immune-globulins with no immediate effect; however, her condition began to show some improvement 5 days later. Patient was started on physical therapy and subsequently discharged to a rehabilitation center.

Discussion: Sensory neuropathy occurs when sensory ganglion cells, or neurons, are affected by a pathologic process. This is different from sensory neuropathy in which the primary destruction happens in peripheral nerves. There have been reports of acute sensory neuropathy related to paraneoplastic syndromes, especially with small cell carcinoma of lung, and connective tissue disorders, particularly Sjogrens syndrome. Infection with HTLV1 is the most common infectious disease reported in relation with this condition. In our case, an extensive work up did not reveal any specific reason for neuropathy besides Hepatitis C infection. Pathogenesis of this condition may be related to an immune reaction against antigens shared by both the neurons and hepatitis C viruses.

608

DIFFUSE SINUSOIDAL INVOLVEMENT OF LIVER BY METASTATIC RENAL CELL CARCINOMA: FIRST CASE REPORT

A 65-yr-old non-alcoholic gentleman, with recently diagnosed left renal cell carcinoma and known bone metastases, was treated with 2 cycles of IL-2 at 3 weeks interval, last dose given 10 days prior to admission. He presented with increasing fatigue and rising liver function tests for two weeks. On examination he had deep icterus and enlarged, firm, smooth, minimally tender liver. His laboratory values were as follows: AST 133U/L, ALT 109U/L, ALP 198U/L, GGT 378U/L, and bilirubin 16 mg/dL (direct 9.9 mg/dL). There was no evidence of sepsis. Hepatitis serology and iron studies were negative. CT scan with contrast showed enlarged liver without focal lesions or biliary dilatation. Liver biopsy revealed diffuse sinusoidal involvement of liver parenchyma by the tumor cells that were identical to the primary renal cell carcinoma and the bone marrow metastases.

Renal cell carcinoma is known to cause Stauffer’s Syndrome, a paraneoplastic elevation of alkaline phosphatase and other liver enzymes that are suspected to be mediated by interleukin-6. Focal hepatic metastases is also known to occur with renal cell carcinoma but diffuse sinusoidal involvement of liver by renal cell carcinoma has never been reported before.

In such cases, even if imaging shows no hepatic metastases, a liver biopsy is warranted to exclude microscopic liver involvement by tumor cells. This is especially important if a potentially curative nephrectomy is being considered.

609

ADULT ACUTE LYMPHOBLASTIC LEUKEMIA PRESENTING AS JAUNDICE
Ritesh Jha, M.D., S. Devi Rampertab, M.D., Sherman Chamberlain, M.D.*. North Shore University Hospital, Manhasset, New York.

Introduction: Juvenile is a rare presenting feature of acute lymphoblastic leukemia (ALL). We report the case of a patient with ALL who presented with jaundice, which regressed with chemotherapy.

Case: A 43 year old male with no past medical history, presented to the hospital with symptoms of epigastric pain, fatigue, jaundice and pruritus of one month’s duration. He was admitted with a presumed diagnosis of acute cholecystitis. Physical examination revealed scleral icterus and hepatosplenomegaly. Laboratory tests showed a white blood cell count of
two year old male with a history of a Schatzki ring, dilated two years earlier, presented with intermittent abdominal cramping, fever, night sweats, nausea and vomiting of six weeks’ duration. He had previously been treated for gastroenteritis and irritable bowel syndrome (IBS) with antibiotics and anticholinergic medications without relief. Physical examination revealed a left sided palpable axillary mass. His abdomen was soft and non-distended, with minimal epigastric tenderness. He had a positive fecal occult blood test. Laboratory tests were normal. A computerized tomography scan of the abdomen demonstrated low grade obstruction due to intussusception of the ileum, with diffuse small bowel mural defects and thickening of the small bowel wall. Upper endoscopy revealed extensive polyposis involving the stomach and duodenum. Colonoscopy was unremarkable. Pathology reports were suspicious for lymphoma. Bone marrow biopsy studies showed neoplastic cells positive for tumor markers CD-10 and CD-20, consistent with BLL. The patient was started on chemotherapy treatment with cyclophosphamide, vincristine and dexamethasone his liver chemistries normalized.

Discussion: Jaundice as the presenting feature of ALL is a rare phenomenon and has been infrequently reported in the pediatric literature. We believe this is the first reported case of an adult with ALL whose presenting feature was jaundice. Due to the absence of extrahepatic obstruction on imaging studies and dramatic improvement of liver function tests following chemotherapy, we postulate that leukemic infiltration of the liver was responsible for the patient’s symptoms. This case demonstrates that jaundice associated with acute leukemia responds well to successful treatment of the underlying hematologic malignancy.

610
CASE OF SUBCUTANEOUS EMPHYSEMA POST ENDOSCOPIC SPHINCTEROTOMY
N. Nagovskiy, M.D., C. Guillaume, M.D.*, V. Hooper, D.O., A. Akinwale, M.D. St. Barnabas Hospital, Bronx, New York.

The role of therapeutic Endoscopic Retrograde Cholangiopancreatography (ERCP) is well established. The most common complications include hemorrhage, pancreatitis and sepsis. Retroperitoneal perforation occurs in 10% of cases, with an overall mortality rate of about 1.5%. We report the management of massive subcutaneous emphysema following ERCP with sphincterotomy and balloon extraction of a Common Bile Duct (CBD) stone.[figure1][figure2]

611
BURKITT-LIKE LYMPHOMA PRESENTING AS MULTIPLE POLYPOSIS
Ritesh Jha, M.D., Andrea Goldstein, M.D., Robert Tepper, M.D.*. North Shore University Hospital, Manhasset, New York.

Introduction: Burkitt’s lymphoma (BL) is one of the highly aggressive non-Hodgkin’s lymphomas. It is a rare occurrence in adults. Burkitt-like lymphoma (BLL) is a morphologic variant of BL. Tumors often involve lymph nodes, the nasopharynx and gastrointestinal tract. However, the stomach is a rare site of occurrence. We report the case of a patient with BLL presenting as multiple polyposis of the stomach and small intestine.

Case: A 28 year old male with a history of a Schatzki ring, dilated two years earlier, presented with intermittent abdominal cramping, fever, night sweats, nausea and vomiting of six weeks’ duration. He had previously been treated for gastroenteritis and irritable bowel syndrome (IBS) with antibiotics and anticholinergic medications without relief. Physical examination revealed a left sided palpable axillary mass. His abdomen was soft and non-distended, with minimal epigastric tenderness. He had a positive fecal occult blood test. Laboratory tests were normal. A computerized tomography scan of the abdomen demonstrated low grade obstruction due to intussusception of the ileum, with diffuse small bowel mural defects and thickening of the small bowel wall. Upper endoscopy revealed extensive polyposis involving the stomach and duodenum. Colonoscopy was unremarkable. Pathology reports were suspicious for lymphoma. Bone marrow biopsy studies showed neoplastic cells positive for tumor markers CD-10 and CD-20, consistent with BLL. The patient was started on chemotherapy with methotrexate, cyclophosphamide, doxorubicin, vincristine and cytarabine.

Discussion: BLL is a rare entity which infrequently involves the stomach. We believe this is the first reported case of BLL presenting as multiple polyposis of the stomach and small intestine. This case demonstrates that if abdominal pain presumed to be from gastroenteritis or IBS persists or worsens with treatment, or is associated with alarming features such as weight loss, fever, night sweats or bleeding, more serious pathology should be considered in the differential diagnosis.

612
SMALL INTESTINAL ADENOCARCINOMA IN CELIAC DISEASE: A ROLE FOR CAPSULE ENDOSCOPY?
Chad E. Potteiger, D.O., James Brady, M.D., Diane Leonard, M.D., Donald Schneider, M.D.*. Geisinger Medical Center, Danville, Pennsylvania.

Introduction: Adenocarcinomas represent 25–50% of small bowel neoplasms. Celiac disease increases the relative risk of small bowel adenocarcinoma 60–80 fold. These cancers typically affect the duodenum but can affect any portion of the small intestine. Utilizing standard diagnostic studies, the
diagnosis of small bowel cancers is often delayed. This leads to advanced stage of disease, increased risk of distant metastasis and poor prognosis. Unfortunately, conventional radiology detects only 50–60% of small intestinal neoplasms. Small bowel enteroscopy establishes the diagnosis in 50% of patients. We present a patient with celiac disease that underwent capsule endoscopy (CE) with early detection of a small bowel adenocarcinoma resected for cure.

**Case Presentation:** A 74 yo male with a history of prostate cancer s/p radiation therapy was evaluated for iron deficiency anemia and guiac positive stools. Colonoscopy revealed minimal radiation induced mucosal changes in the rectum. EGD showed esophagitis, gastritis, and a normal appearing duodenum. Celiac sprue was diagnosed by duodenal biopsy. The patient was started on a PPI and a gluten free diet. However, blood transfusions were still required for symptomatic anemia without overt evidence for GI blood loss. Initially, his anemia was believed to result from radiation proctitis. Enteroscopy was performed which was normal to the mid-jejunum. A small bowel series was also normal. Wireless CE revealed a villous appearing ulcerated lesion in the distal jejenum. Five months into his evaluation, surgical resection was completed. Pathology revealed a T3N0M0 adenocarcinoma. To date, the patient is disease free without evidence for local recurrence or distant metastasis.

**Discussion:** Small bowel neoplasms although rare, continue to present a diagnostic challenge. In the setting of diseases known to increase the likelihood of these tumors, the clinician must maintain a high index of suspicion.

Traditional endoscopic and radiographic studies can miss a large percentage of these cancers. Therefore, many patients have distant metastasis and poor prognosis at time of diagnosis. A recent editorial in *Gastroenterology* suggests that new technology should change clinical outcome not simply management. In this case, CE allowed for accurate diagnosis and early surgical resection. Perhaps well-designed clinical trials will show that early CE should be the next tier in our diagnostic armamentarium in this select group of patients with Celiac disease.

### 613

**EATING DISORDER: ELECTROLYTE AND METABOLIC ABNORMALITIES**

Anjana Myneni, M.D., Kishan K. Jasti, M.D.*. Mercy Catholic Medical Center, Darby and Lankenau Hospital, Wynnewood, Pennsylvania.

47 year old African American male from Ghana was brought to the hospital by family for abnormal dietary habits which includes complete restriction of carbohydrates in the diet and significant weight loss over a period of six months. Patient claims that he was voluntarily losing weight to get rid of his diabetes mellitus which was diagnosed recently. Patient denied history of alcohol or drug abuse. Review of Cardiovascular, Pulmonary, and Gastrointestinal systems was within normal limits. His vital signs on presentation include BP of 90/40, heart rate of 106/min, temperature of 98.2 F and respiratory rate of 20/min. On general examination he appeared cachectic and weighed only 130 pounds. Skin and mucosa appeared dry, conjunctiva pale with mild icterus. Abdominal exam revealed presence of shifting dullness suggestive of ascites. No evidence of hepatomegaly, spider angioma or gynecomastia. Testicular size within normal limits. Examination of cardiovascular and pulmonary systems was unremarkable.

Laboratory data revealed hemoglobin of 9.7, platelets 97 K/UL, sodium 141, potassium 2.9, bicarbonate 33, creatinine 0.9, phosphorus 0.9 and magnesium 1.4. Liver panel showed AST 1986, ALT 2731, alkaline phosphatase 234, total bilirubin 3.1 with direct bilirubin of 0.9. Iron panel revealed serum iron 1162, TIBC 155, Transferrin 124 and Ferritin level of 2248. Hepatitis panel was negative. Screening for hemochromatosis with C282Y genetic testing was negative. Liver biopsy did not reveal any cirrhosis and the hepatic iron index was within normal range. Eating disorders are associated with a variety of electrolyte and metabolic abnormalities. The most commonly seen abnormalities are hypokalemia, hypophosphatemia, hypogamaglobulinaemia, hypocalcaemia, amenorrhoea-oligomenorrhea, delayed puberty, hypothroidism, hypercortisolism, and IGF-1 deficiency. There are few case reports in literature where they present with abnormal transferrin saturation and ferritin levels mimicking hemochromatosis. African American immigrant men who consumed traditional beer brewed in steel drums had high serum ferritin and a transferrin saturation of over 70%, a combination that indicates a risk of liver disease and other pathological effects from excess body iron. Management requires a team approach in which different professionals work together. Treatment for eating disorders includes nutritional rehabilitation, behavioral therapy, and often antidepressant therapy.

### 614

**NUTRITIONAL MANAGEMENT OF PEDIATRIC CHYLIC ASCITES**

James R. Rick, M.D., Richard Cordie, M.D.*. Keesler Medical Center, Biloxi, Mississippi and Wilford Hall Medical Center, San Antonio, Texas.

Chylous ascites is rare in children and can result from a multitude of etiologies. Management is often nutritional and the majority of Pediatric cases respond to dietary therapy. We describe the nutritional approach taken in two Pediatric cases of chylous ascites. CASE 1. A 16 month old female with stage 3 neuroblastoma presented with increasing abdominal distention. Abdominal computed tomography (CT) showed ascites and a large retroperitoneal mass. Paracentesis showed 60 cc of milky fluid with triglycerides (TG) of 2298 mg/dl, albumin of 1.9 mg/dl and WBC of 9400/mm3 with 95% lymphocytes. There were no malignant cells. Long chain fatty acid restriction (LCFA) with high medium chain triglyceride (MCT) formula resolved the ascites over the next 3 weeks. Unfortunately, the tumor was unreatectable and the patient died 2 months later from post-operative complications. CASE 2. A 20 month old male with irritability, unexplained facial trauma and elevated liver enzymes was admitted for child abuse. Ascites was found on abdominal CT and paracentesis showed bloody fluid with TG of 1228 mg/dl. A diagnostic laparoscopy was negative. Treatment involved high MCT diet and LCFA restriction as well as total parenteral nutrition (TPN). Dietary LCFA were gradually advanced and TPN eliminated over 1 month. The ascites resolved and he was discharged to foster care on a regular diet. Neither case demonstrated evidence of essential fatty acid deficiency (EFAD) or other nutritional complications.

The initial oral or enteral nutritional therapies for chylous ascites include LCFA and total fat restriction. This restriction is often successful, but in absence of a response TPN should be considered. Monitoring for the manifestations of EFAD is required for children on LCFA restriction. Surgical intervention is recommended for those with correctable secondary causes or unresponsive to conservative medical management.

### 615

**MYCOPHENOLATE MOFETIL–INDUCED COLONIC ULCERATIONS IN RENAL TRANSPLANT PATIENTS**

Tauseef Ali, M.D., Arun Sachdev, M.D., Ronald A. Squires, M.D., Ralph T. Guild, M.D., Sikandar A. Mesiya, M.D.*. University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma.

**Introduction:** Mycophenolate mofetil (MMF) is a common immunosuppressive agent used to prevent rejection in renal transplant patients. We report two cases of colonic ulcers associated with MMF in renal transplant recipients.

**Case Reports: Case #1:** A 48-year-old Caucasian man who received a renal transplant in December 2002. His maintenance immunosuppression regimen included prednisone, sirolimus and mycophenolate mofetil (2 gmi/day). After 8 months of immunosuppressive therapy he presented with melena and anemia. Patient denied use of aspirin and other non-steroidal anti-inflammatory medications. Colonoscopy with biopsy was performed which revealed a large solitary ulcer in the ascending colon. Pathology revealed necrotic debris and was negative for malignancy. Immunohchemical stains and serology for cytomegalovirus (CMV) and herpes simplex virus (HSV) were also negative. The anemia resolved after discontinuation of MMF. Repeat colonoscopy two months later revealed complete resolution of the colonic ulcer.

**Case #2:** A 51- year- old African American man who underwent renal transplant in 2002. His immunosuppressive regimen included tacrolimus,
A RARE CASE OF COLCHICINE TOXICITY
Kelly B. Crawford, M.D., Shanti Sitaraman, M.D.* Emory University Hospital, Atlanta, Georgia.

The patient is a 47-year-old male with a history of a cadaveric kidney transplant in 1991 who presented to our hospital with watery diarrhea for two months. He was having up to twenty bowel movements per day. The diarrhea would wake him at night and continued with fasting. He began to lose weight and became dehydrated. He saw a gastroenterologist who performed an EGD and a colonoscopy. Biopsies obtained from the colon were consistent with graft-versus-host disease. He developed a rash, continued to have symptoms, and was referred for further management.

His past medical history consisted of glomerulonephritis with a living related transplant in 1991 who presented to our hospital with watery diarrhea for two months. Patient did not report overt symptoms of gastrointestinal bleeding. Colonoscopy revealed a medium sized ulcer in the cecum. Pathology showed acute ulceration with inflammation and no evidence of malignancy or viral infection. MMF dose was reduced to 1 gm/day with improvement of patient’s anemia.

Discussion: MMF is associated with various gastrointestinal (GI) side effects including nausea, vomiting and diarrhea. Gastro duodenal ulceration with bleeding has also been reported with the use of MMF, however development of colonic ulcers is rare and limited to case reports. The actual mechanism of MMF induced colonic ulcer is unknown. It has been hypothesized that colonic ulcers develop due to high levels of active MMF metabolites in the colon in patients with renal transplant. While infection, especially CMV colitis, remains the more common cause of colonic ulceration and lower GI bleeding in immunosuppressed renal transplant patients, MMF-induced colonic ulceration should be included in the differential diagnosis. Healing of the ulcer can occur with dose-reduction or discontinuation of the drug.

A RARE CASE OF COLCHICINE TOXICITY
Kelly B. Crawford, M.D., Shanti Sitaraman, M.D.* Emory University Hospital, Atlanta, Georgia.

The patient is a 47-year-old male with a history of a cadaveric kidney transplant in 1991 who presented to our hospital with watery diarrhea for two months. He was having up to twenty bowel movements per day. The diarrhea would wake him at night and continued with fasting. He began to lose weight and became dehydrated. He saw a gastroenterologist who performed an EGD and a colonoscopy. Biopsies obtained from the colon were consistent with graft-versus-host disease. He developed a rash, continued to have symptoms, and was referred for further management.

His past medical history consisted of glomerulonephritis with a living related kidney transplant. Secondary to chronic rejection, he had a cadaveric transplant in 1991. He now has renal insufficiency with a creatinine of 1.3 mg/dl. He has gout, hypertension, and a history of elevated transaminases with allopurinol. His medications on admission were prednisone, cyclosporin, verapamil, colchicine 0.6mg per day, allopurinol, and esomeprazole. On review of systems, he had a twenty-pound weight loss and a recent gout flare. His vital signs were normal. His physical exam was normal except for a macular, reticular rash on his abdomen and back. His liver span was 12cm. His initial laboratory data revealed a hematocrit at 36.8% with a normal white blood cell count. His AST was 108 u/l, ALT was 308 u/l, and total bilirubin was 1.0 mg/dl. His stool studies were normal. Hepatitis serologies and right upper quadrant ultrasound were normal.

We report a case of a 75 year-old female who presented with vomiting, bloating, and epigastric discomfort. She reported a recent 15 pound weight loss following a laparoscopic cholecystectomy performed one month prior. Physical examination was unremarkable: the patient was afebrile with stable vital signs and a benign abdominal examination. Laboratory assessment revealed an elevated serum alkaline phosphatase with otherwise normal liver chemistries. The complete blood count was also normal. An abdominal plain film demonstrated dilated loops of small bowel, and a follow-up abdominal CT scan revealed minimal small bowel wall with no point of obstruction, as well as a 6 cm x 4 cm pancreatic mass that encased the mesenteric vessels. The presence of the mass was confirmed with an abdominal MRI that also showed a mass encasing the superior mesenteric artery and vein. Tumor markers, including CA 19–9 and CEA, were normal. The patient underwent EUS-guided fine needle aspiration of the mass followed by a core biopsy under CT guidance and ultimate staging laparotomy. Histologically, the tumor was composed of poorly defined fascicles of plump spindle cells enmeshed within a collagenous stroma, most consistent with an inflammatory myofibroblastic proliferation.

We report a case of a 75 year-old female who presented with vomiting, bloating, and epigastric discomfort. She reported a recent 15 pound weight loss following a laparoscopic cholecystectomy performed one month prior. Physical examination was unremarkable: the patient was afebrile with stable vital signs and a benign abdominal examination. Laboratory assessment revealed an elevated serum alkaline phosphatase with otherwise normal liver chemistries. The complete blood count was also normal. An abdominal plain film demonstrated dilated loops of small bowel, and a follow-up abdominal CT scan revealed minimally dilated small bowel with no point of obstruction, as well as a 6 cm x 4 cm pancreatic mass that encased the mesenteric vessels. The presence of the mass was confirmed with an abdominal MRI that also showed a mass encasing the superior mesenteric artery and vein. Tumor markers, including CA 19–9 and CEA, were normal. The patient underwent EUS-guided fine needle aspiration of the mass followed by a core biopsy under CT guidance and ultimate staging laparotomy. Histologically, the tumor was composed of poorly defined fascicles of plump spindle cells enmeshed within a collagenous stroma, most consistent with an inflammatory myofibroblastic proliferation. There was no mitotic activity and no cytologic atypia. CD-34, C-kit, and ALK-1 immunohistochemical stains were negative, supporting this interpretation.

This case is an example of an entity previously described as an “inflammatory pseudotumor,” with atypical radiographic findings suggestive of a pancreatic malignancy. The primary pathologic differential diagnosis includes a neoplastic inflammatory myofibroblastic tumor which can appear similar histologically, but is frequently associated with expression of ALK-1 (anaplastic lymphoma kinase-1), a tyrosine kinase. Distinguishing between these two entities is clinically important because inflammatory myofibroblastic proliferations are inherently benign, non-neoplastic lesions that likely represent an...
exuberant repair response to injury, whereas inflammatory myofibroblastic
tumors are true neoplasms at risk for local recurrence and, rarely, metastasis.

619

AN UNUSUAL CAUSE OF UPPER GASTROINTESTINAL BLEEDING: BLEEDING ULCER WITHIN A MID-ESOPHAGEAL DIVERTICULUM

Background: Esophageal diverticulum is not uncommon. However, upper gastrointestinal bleeding from esophageal diverticulum is uncommon and when occurs usually requires surgical intervention. We report a case of this rare cause of upper GI bleeding that was managed successfully endoscopically.

Case: An 82-year African American woman with history of coronary artery disease, gastrointestinal reflux disease and rheumatoid arthritis presented to the ER with 2 episodes of hematemesis. She had recently undergone PTCA with stent placement, requiring antplatelet agents. She was hemodynamically stable and her physical exam was unremarkable except for rectal examination that showed melanoic stools. Her Hg was 13.4 g/dl. An emergent upper endoscopy was performed that showed a tortuous esophagus with a large, mid-esophageal diverticulum. Within the diverticular lumen was a clot with oozing of blood around the clot. A number of therapeutic approaches including hemoclipping, cauterization, and injection were considered. Hemoclipping was not utilized since no single area of active bleeding was localized. Electrocautery was withheld given the high risk of perforating the thin wall diverticulum, as well as causing thermal injury to adjacent cardiac structures and vessels. The diverticulum was injected with epinephrine, after which the clot was removed revealing a shallow 1.5 cm clean base ulcer.

Conclusion: Although rare, esophageal diverticulum should be considered in the differential of upper GI bleeding, especially in patients with a prior history of esophageal or mediastinal disease. Endoscopic treatment has been considered difficult due to the inaccessibility of bleeding vessels within the diverticulum. We also demonstrated that bleeding from esophageal diverticulum could be managed endoscopically. [figure1]

620

FULMINANT HEPATIC FAILURE REQUIRING ORTHOTOPIC LIVER TRANSPLANTATION ASSOCIATED WITH MALARONE® ANTIMALarial PROPHYLAXIS
Asif M. Qadri, M.D., Nizar N. Zein, M.D.*, William D. Carey, M.D., M.A.C.G., David S. Barnes, M.D. The Cleveland Clinic Foundation, Cleveland, Ohio.

After a thorough evaluation of the literature, we report the first fulminant hepatic failure (FHF) requiring orthotopic liver transplantation (OLT) as a possible life-threatening reaction to Malarone®. Malarone® is a fixed combination of atovaquone with proguanil which is an effective treatment and prophylaxis of multi-drug resistant Plasmodium falciparum. Atovaquone and proguanil (paludrine), which is not available in the United States except in Malarone®, both can cause hepatitis even when given alone. This report should remind physicians of the severity of adverse reactions associated with antimalarial medication.

We describe a 56-year-old female with Hashimoto’s disease and medically untreated hyperlipidemia with no previous hospitalizations or liver disease. A week prior to traveling to India for a month, she initiated antimalarial medication using Malarone®. She remained asymptomatic while on the medication in India and continued to ingest the medication for another week after returning home. After completing the course of prophylaxis, she developed nausea, vomiting and diarrhea. This was followed by intermittent fevers. She finally was admitted to her local hospital after becoming jaundiced. Initial laboratory blood work revealed transaminases in excess of 2000. Complete liver serological work-up was negative. Pancreatic was also negative. Abdominal CT, ultrasound and HIDA scan failed to show an etiology for her hepatitis. The patient’s transaminases improved daily but her bilirubin and protime slowly increased. Because of the fear of imminent hepatic failure, the patient was transferred to the Cleveland Clinic. Although the patient’s transaminases improved, she continued to have worsening hyperbilirubinemia and coagulopathy. She remained pan-culture negative despite spikes in body temperature. While at the Cleveland Clinic, she underwent a complete OLT evaluation and liver biopsy. The liver biopsy showed acute fulminant hepatitis with massive necrosis, and the pattern of injury identified, in combination with the onset of failure in relation to antimalarial medication, strongly implicated a drug or toxin-induced hepatitis. After a brief interlude of improvement, the patient became encephalopathic with decompensated synthetic liver function. She was immediately listed for OLT and was the recipient of a donor liver shortly thereafter. She has done well post-operatively.

621

INTESTINAL CMV: NEW LESSONS FROM AN OLD CLINICAL CHALLENGE

This is a case of Cytomegalovirus (CMV) jejunitis with bleeding and perforation in a patient with HIV. Small bowel perforation from CMV almost always results in patient death. Diagnosis of CMV in the small bowel remains a clinical challenge.

Case Report: A 44 year old, HIV positive man with blindness secondary to CMV was admitted with pneumonia. Six days later, he had rectal bleeding without abdominal pain. On physical examination his abdomen was benign. CD4 count was 50 and his Hgb was 6g/dl. Colonoscopy revealed aphous appearing lesions in the right colon and terminal ileum. Stool cultures were negative. Mucosal biopsies revealed enlarged endothelial cells.
characterized by intranuclear inclusions with clear halos. These findings were consistent with CMV infection. Induction therapy with ganciclovir was started. Three weeks later, the patient again had profuse rectal bleeding. Colonoscopy showed colitis with increasing ulceration seen distally, without active bleeding. EGD was normal. Seven days later, the patient had increased abdominal distension with tenderness. X-ray of the abdomen demonstrated pneumoperitoneum. Exploratory laparotomy revealed two perforations in the small intestine, one 20 cm from the ileocecal valve and another in the distal jejunum. The patient underwent a small bowel resection and his rectal bleeding resolved. Pathology demonstrated CMV. He died two weeks later.

**Discussion:** Cytomegalovirus infections typically present late in the course of HIV infection. It is believed that infection of the vascular endothelial cells occurs which can ultimately lead to mucosal ischemia and perforation. Patients typically present with abdominal pain and diarrhea. This patient was unusual because he presented with rectal bleeding. CMV can infect the small bowel, and it should remain in the differential in a patient with an absolute CD4 count < 100/ul and persistent hematochezia without a clear colonic or upper G.I. source of bleeding.

We suggest that capsule endoscopy could be utilized in patients with potential small bowel pathology related to CMV. Induction and maintenance dosing of antiviral therapy could be based on disease activity documented by capsule images. Aggressive medical and surgical management, including the use of capsule endoscopy in CMV disease should be the standard of care and may lead to decreased mortality.

---

**622**

**ACUTE RENAL FAILURE SECONDARY TO PEGYLATED INTERFERON ALPHA THERAPY**

Gerald T. Arbour, M.D., Tushar J. Vachharajani, M.D., Raza Anees, M.D.*.

Louisiana State University Health Sciences Center and Overton Brooks VAMC, Shreveport, Louisiana.

Pegylated interferon is widely used as a treatment for hepatitis C. There are many well-documented systemic side effects reported with its use. One rarely reported adverse effect is acute renal failure. We report an interesting case of a patient with underlying renal insufficiency was referred for treatment of hepatitis C. He was in his usual state of health and was asymptomatic. He had no known allergies and no previous surgical history. Twelve years ago he quit intravenous illicit drug use, alcohol abuse and smoking. Physical exam was unremarkable. His baseline creatinine was 1.8 mg/dL. Random urine was negative for significant proteinuria (urine protein/creatinine ratio 0.7 mg/dL). Serum cryoglobulins were negative. He was not a candidate for ribavirin secondary to his renal insufficiency and hence was started on pegylated interferon alpha-2a monotherapy. After 6 weeks of therapy, his creatinine increased to 3.8 mg/dL. The patient denied any new medications or lifestyle changes during this period. Pegylated interferon alpha-2a therapy was subsequently discontinued with stabilization of his serum creatinine to 2.9 mg/dL.

**Discussion:** Although the underlying cause of the baseline renal insufficiency is not known in this patient, it is obvious that the precipitating factor in the acute worsening of his renal failure was pegylated interferon alpha-2a. Renal failure, as a side effect of pegylated interferon has rarely been reported in literature. Ribavirin is contraindicated in renal insufficiency, however pegylated interferon has been used in patients with renal dysfunction. We report this unique case to highlight an important side effect that may need further evaluation since it could potentially lead to irreversible renal damage.

---

**623**

**MITOCHONDRIAL NEUROGASTROINTESTINAL ENCEPHALOPATHY: A CASE REPORT**

Katie P. Miller, M.D., Anthony Lupetin, M.D., Amy Goldstein, M.D., Ramamurti Chandra, M.D.*. Allegheny General Hospital and Mercy Hospital of Pittsburgh, Pittsburgh, Pennsylvania.

An 11 year old girl presented with diarrhea, vomiting, and abdominal pain since age 2. Work-up had included normal EGD, colonoscopy, UGI series, and stool studies. Wt 47 lbs, Ht. 51 in. (5th percentile). Cachexia and resting tachycardia were present on exam. Abdomen was soft and mildly distended. Neurologic exam showed decreased vibratory sensation, muscle tone, and bulk, +Rhomberg sign, and trace DTRs. Hgb 11.8 g/dL, anion gap 15. U/A showed amino acids, glucose, and protein. LDH, aldolase, lactate, and pyruvate were elevated.

EGD revealed 1.5 L of bile in the stomach. Esophagaeal, stomach, and duodenal biopsies showed chronic inflammation. Enteroscopy and colonoscopy were normal. Abdominal X-ray showed massive gastric distension. UGI series showed a large atonic stomach with no obstruction. Abdominal CT showed air-fluid levels and massive gastric distension. Brain MRI showed diffuse high signal intensity of the cerebral white matter on T2-weighted images sparing the corpus callosum and internal capsule. Neurology was consulted. Thymidine phosphorylase levels were zero which confirmed MNGIE syndrome. The patient was treated with carnitine, multivitamins, and coenzyme Q10. She eventually developed bilateral 6th nerve palsy and footdrop. Progressive neuropathy, leukoencephalopathy, respiratory and hepatic failure, and multiple eather-related infections complicated her clinical course, and she eventually died at age 17.

MNGIE syndrome is a rare autosomal recessive multisystem mitochondrial disorder characterized by cachexia, ophthalmoparesis, ptosis, peripheral neuropathy, and GI dysmotility which primarily affects the small intestine. Gastroparesis, vomiting, and diarrhea can precede other symptoms by many years. A mutation in the thymidine phosphorylase gene has been identified. Leukodystrophy on MRI, increased CSF protein, and lactic acidosis are other features. The diagnosis of a mitochondrial disorder should be entertained in any patient presenting with idiopathic chronic intestinal pseudoobstruction. MNGIE syndrome is recognizable but often diagnosed late. Recognition of this disease allows prompt treatment that could otherwise avoid unnecessary procedures and decrease overall morbidity.

---

**624**

**ACCESSORY SPLEEN PRESENTING AS A LIVER MASS: A DIAGNOSTIC DILEMMA**

Shams S. M. Tabrez, M.D.*, Salma A. Tabrez, M.D., Michael Hurst, Adil M. Chaudhary, M.D., Frederick B. French, M.D. Southern New Mexico Medical Association, PA, Roswell, New Mexico.

A 63 years old hispanic female admitted with urosepsis and found out to have elevated liver enzymes with a cholestatic pattern and mildly thrombocytopenic. The possibilities of infectious and autoimmune hepatitis were
rulled out by the negative serologies. The ultrasound was also negative for any obstructive cholangiopathy. The abnormal liver tests were then presumed to be secondary to the sepsis. An incidental finding of a mass about 10 cm in size of the left lobe of the liver was seen on the computed tomography of the abdomen which was done with and without intravenous contrast for the workup of the nephrolithiasis. The CT-guided biopsy of the mass was done to rule out the possibility of hepatic adenoma, hepatocellular carcinoma, and focal nodular hyperplasia. The tissue pathology was reported as fragment of hemorrhagic tissue suspicious for splenic tissue, and no hepatic tissue was seen. The tumor markers including Alfa-fetoprotein, CA 19-9 and CEA were negative and as was her colonoscopy. The issue was re-addressed with the radiologist, who suggested to go ahead with the technetium 99m labeled heat treated RBCs nuclear study to rule out the splenic tissue because he was convinced that he had biopsied the “liver mass.” The nuclear study revealed intense activity in the spleen which extended into the suspected liver mass, and the bone marrow. The final diagnosis was that the liver mass was in fact the accessory splenic tissue.

Accessory spleen has been found in about 10–30% of the normal population. It has been clinically associated with hemolytic anemia, idiopathic thrombocytopenic purpura and hereditary spherocytosis. On review of the literature there were none found larger than 2.5 cm. The size of the accessory spleen reported in our case is 10 cm, which is the largest ever documented.

### 625

**AUTONOMIC FAILURE SECONDARY TO A PRESUMED VIRAL ILLNESS- A CASE REPORT**

Amy L. Lobrano, M.D., Kevin P. Blanchard, M.D., Thomas L. Abell, M.D.*, Charu Subramony, M.D., Abelardo Wei, M.D., Jonathan Fratkin, M.D. University of Mississippi Medical Center, Jackson, Mississippi.

**Introduction:** Although severe dysautonomia has been reported as due to viral infections, no histological confirmation of dysautonomia has been previously shown. We report a case which correlates clinical dysautonomia with histological evidence. A 31 y/o WF had a complicated hospital course after an episode of viral gastroenteritis. An extensive evaluation revealed disordered esophageal motility and delayed radionuclear gastric emptying as well as abnormal autonomic studies.

**Methods:** The patient spent most of the next year in the hospital requiring intravenous antiemetics, prokinetics, and analgesics for symptoms of intractable gastroparesis. A temporary and permanent gastric stimulator helped control symptoms of gastroparesis, but she required ongoing total parenteral nutrition and did not tolerate enteral feedings. Hospital courses were complicated by episodes of bacteremia and fungemia. Autonomic studies revealed minimal heart rate variability and a disordered valsalva maneuver. Norepinephrine and epinephrine levels were high, but peripheral nerve conduction studies were normal. Serum antiphospholipid antibodies were noted but despite anticoagulation, she developed a pulmonary embolism. Echocardiogram confirmed a large superior pulmonary embolism. Echocardiogram confirmed a large superior vena cava thrombus and electroencephalogram revealed diffuse encephalopathy with minimal brain activity. The patient’s family withdrew support.

**Results:** Autopsy revealed acute hemorrhagic Candida pneumonia with vasculitis and a left main pulmonary artery thrombus. Neuropathologic studies revealed reduced number of myelinated axons in the sympathetic chain. There was myelin sheath focal granular and vacuolar degeneration and patchy chronic nervous system inflammation consistent with a Guillain-Barre variant, with an unremarkable gastrointestinal tract.

**Conclusion:** A Guillain-Barre like illness following viral gastroenteritis is supported by physiologic and autonomic studies, and histologic findings at autopsy. Gastroparesis can be precipitated by an infectious illness with severe dysautonomia manifested primarily as gastrointestinal symptoms with no abnormal gastrointestinal pathology.

### 626

**COLON CANCER PRESENTING WITH ANAEROBIC LIVER ABSCESS**

Niral Patel, M.D., Elena Crisan, M.D., Joseph Kowalczyk, M.D., Charles Berkelhammer, M.D., E.A.C.G.*. University of Illinois - Christ Hospital, Oaklawn, Illinois.

**Introduction:** Liver abscesses can uncommonly complicate colon cancer. We describe a patient with an anaerobic liver abscess as the presenting manifestation of colon cancer. CASE: A 55 year old male presented with right upper quadrant pain, fever and weakness. On physical exam he was febrile with right upper quadrant tenderness. Stools were positive for occult blood. WBC was 29.9 K/L, Hb 9.9 g/dL, ALP 380 U/L, ALT 110 U/L and AST 91 U/L. CT scan showed a large 7 by 8 cm mass lesion in the right hepatic lobe with thickening of the hepatic flexure of the colon. CT-guided aspiration and drainage of the hepatic mass yielded purulent fluid growing Bacteroides fragilis. Lower GI x-ray revealed a hepatic flexure stricture without extravasation. Colonoscopy showed a partially obstructing colon cancer at the hepatic flexure. Resection showed adenocarcinoma of the colon with a malignant fistula to the ileum. DISCUSSION: Anaerobic liver abscesses can rarely complicate colon cancer. An underlying colon cancer should be considered in patients with an anaerobic liver abscess.

### 627

**SCURVY: AN UNUSUAL CAUSE OF ANEMIA**

Panagiotis H. Panagiotakis, M.D., Scott K. Kawada, M.D.*. University of Utah Hospital, Salt Lake City, Utah.

Scurvy or hypovitaminosis C has been described for centuries. It was recognized as an important problem beginning in the 15th century, corresponding with the time of lengthy seafaring voyages; during which scurvy ravaged the crews of the ocean-going vessels. Petechial hemorrhages, ecchymoses, coiled or corkscrew hairs, and gingivitis are common signs of scurvy. Other manifestations include extremity edema, anemia, hemorrhathrombocytopenia, GI bleeding, poor wound healing, fatigue, weakness and weight loss. We report a case of a 66-year-old man who presented with weakness, altered mental status, anemia and lower extremity ecchymoses as a consequence of scurvy and malnutrition.

**CASE REPORT:** A 66-year-old man was brought to the emergency department by his neighbor, who reported a 10-day history of progressive fatigue, leg pain and generalized weakness. The patient had suffered an ischemic stroke 7 months before and was dependent on his neighbor for his daily care. His caretaker also commented on the patient’s decline in function during the last month, noting some “bloody stools,” shortness of breath, “easy bruising” and leg swelling. Physical examination revealed: lethargy, cachexia, pallor, poor dentition, gingival erythema and pitting edema (2+). The skin examination showed large ecchymoses on the legs. Stool specimen was positive for blood. He was anemic (Hb 9.1, MCV 88) with normal platelet count, PT and PTT. Urinalysis revealed a UTI and appropriate antibiotic therapy was started. Work up for vasculitis and hepatitis was negative. ITP and TTP were ruled out since the PT and PTT were normal. Vitamin B12 and folate were also normal. He was referred to a gastroenterologist for endoscopy. EGD revealed esophagitis (LA class A) and a normal stomach and duodenum. Colonoscopy revealed diverticulosis of the sigmoid colon and internal hemorrhoids. Considering the patient’s poor nutritional status, an ascorbic acid level was ordered and found to be less than 0.2 mg/dL (normal 0.2 - 2.0 mg/dL). The patient was started on a high protein diet with Vitamin C supplementation (250 mg PO bid). After the tenth day of hospitalization the patient was back to his baseline with total resolution of his fatigue, weakness and skin lesions.

**DISCUSSION:** Scurvy is a relatively uncommon cause of anemia. Patients at risk are alcoholics, the elderly, the socially isolated, psychiatric patients, young children and food faddists. With a knowledge of the symptomatology of scurvy, it is easy to diagnose and treatment is simple and effective.
COLONIC NECROSIS INDUCED BY KAYEXALATE-SORBITOL IN A POST-OPTERATIVE PATIENT
Karim Cesario, M.D.*, John Dumot, DO. The Cleveland Clinic Foundation, Cleveland, Ohio.

The Case: An 82-year-old male presented with fevers, diarrhea and abdominal pain. His symptoms began at the time of discharge from the surgical service after undergoing a left nephrectomy for transitional cell carcinoma. Postoperatively, he had experienced acute renal failure and hyperkalemia for which he had been administered two doses of rectal Kayexalate-sorbitol. At admission, he was febrile and tachycardic. His exam was significant for mild tenderness in the left-lower quadrant. CT scan of the abdomen and pelvis revealed severe thickening of the sigmoid colon suggestive of colitis or diverticulitis.

Initially, the patient improved with supportive care. However, he was taken to surgery on hospital day 3 due to the interim development of peritonitis. Operative findings were significant for sigmoid inflammation, and a sigmoid colectomy was performed. Post-operatively, the patient recovered well and was discharged to home within one week.

Surgical pathology revealed a large (11 cm by 5 cm) ulcer within the surgical specimen. The ulcer was embedded with hematophyphilic crystals, diagnostic of Kayexalate toxicity. See Figure #1.

Discussion: Colonic necrosis after Kayexalate-sorbitol administration was first reported in 1987. Several case reports have been published since that time. Clinically, the diagnosis is difficult to establish and can mimic other intestinal disorders such as ischemic colitis, diverticulitis or inflammatory bowel disease. The diagnosis is confirmed by identifying classic hematoxyphilic crystals on a surgical specimen. The incidence of colonic necrosis after Kayexalate-sorbitol administration is thought to be between 0.27% and 1.8%, but may be underestimated due to lack of recognition by both clinicians and pathologists.[figure1]

She underwent an upper endoscopy, which revealed undigested food particles in the stomach with erosive gastritis in the antrum and the body. Food residue precluded the complete examination. She was put on a clear liquid diet and the upper endoscopy were rescheduled. Repeat endoscopy revealed a mucosal band in the duodenal bulb, which partially occluded the duodenal lumen. Biopsy of gastric antrum and body were consistent with chronic Gastritis. H. Pylori was negative.

CT scan of the abdomen and upper GI series reconfirmed the endoscopic findings. The patient underwent a surgical resection. Patient’s symptoms were significantly improve after the surgery. Histopathological study of duodenal band revealed fibrous tissue.

Peptic ulcer disease and malignant lesions are well known for gastric outlet obstruction. No case of duodenal band causing gastric outlet obstruction was found on review of the literature. Etiology of the duodenal bulb band is uncertain, but can be a rare cause of gastric outlet obstruction.

DUODENAL BAND: A RARE ETIOLOGY OF GASTRIC OUTLET OBSTRUCTION
Basher M. Atiquzzaman, M.D., Eldar Baigabatov, M.D., Tahsina Atiquzzaman, M.D., Dhirendra Lamba, M.D., Michael Krickellas, M.D.*. Long Island College Hospital, Brooklyn, New York.

45 year old white woman presented with nausea, intermittent vomiting, epigastric discomfort with fullness and wt loss for over 6 months. Her symptoms worsened after she ate. She took over the counter antacids and Famotidine without any relief. Her past medical history was significant for hypertension and multiple sclerosis. Her medications included Felodipine and Hydrochlorothiazide. Her abdominal examination was unremarkable. Baseline chemistry and hematological studies were within normal limits.

She underwent an upper endoscopy, which revealed undigested food particles in the stomach with erosive gastritis in the antrum and the body. Food residue precluded the complete examination. She was put on a clear liquid diet and the upper endoscopy were rescheduled. Repeat endoscopy revealed a mucosal band in the duodenal bulb, which partially occluded the duodenal lumen. Biopsy of gastric antrum and body were consistent with chronic Gastritis. H. Pylori was negative.

CT scan of the abdomen and upper GI series reconfirmed the endoscopic findings. The patient underwent a surgical resection. Patient’s symptoms were significantly improve after the surgery. Histopathological study of duodenal band revealed fibrous tissue.

Peptic ulcer disease and malignant lesions are well known for gastric outlet obstruction. No case of duodenal band causing gastric outlet obstruction was found on review of the literature. Etiology of the duodenal bulb band is uncertain, but can be a rare cause of gastric outlet obstruction.

REFRACTORY ESOPHAGEAL CROHN’S: A CLINICAL CHALLENGE
Ziad Salem, M.D., Robert Spira, M.D.*. Seton Hall University, School of Graduate Medical Education, South Orange and Saint Michael’s Medical Center, Newark, New Jersey.

Introduction: Although esophageal Crohn’s is thought to occur more frequently than clinically diagnosed, it remains a rare entity. It is often detected once complications such as odynophagia and dysphagia develop from severe ulcerations or strictures. It is usually seen in association with oral aphthous ulcerations and ileocolitis. Most respond adequately to conventional therapy and seldom require surgical intervention.

Case Report: A 26-year old male with a history of fibrostening ileal Crohn’s disease diagnosed at age 12, s/p multiple stricturoplasties and small bowel resection, presented 1 year prior with dysphagia and odynophagia. The patient had previously been treated over the years with multiple regimens including mesalamine, prednisone, azathioprine, 6-mercaptopurine, methotrexate, cyclosporine, infliximab and experimental interleukin. Over the last 3 years, his upper gastrointestinal symptoms had gradually worsened causing significant weight loss requiring long term parenteral nutrition. An upper endoscopy revealed severe ulcerations along the entire esophagus and incidental narrowing of the pylorus which was dilated. There was no response to infliximab as the patient was later found to have developed antibodies. A trial of GM-CSF, thalidomide and ingestion of steroid inhaler proved ineffective. The patient was subsequently referred to the Mayo clinic where other causes including viral and fungal esophagitis were excluded. Dapsone and adalimumab (a fully human IgG anti-TNF) were then started with minimal therapeutic challenge. With innovative endoscopic therapy and endoscopic dilation and triamcinolone injections at the stricture site. The doses of dapsone and adalimumab were increased. At follow up endoscopy for repeat steroid injection, the esophagus appeared dramatically improved as were the patient’s general condition and symptoms.

Conclusion: As this case illustrates, complicated esophageal Crohn’s still presents a significant therapeutic challenge. With innovative endoscopic therapeutics and the emergence of newer biological agents, it is expected that fewer patients will require drastic surgical intervention with its associated morbidity.

HEPATIC INFARCTION DURING PREGNANCY IN CATASTROPHIC ANTIPHOSPHOLIPID SYNDROME (CAPS)
Niral Patel, M.D., Charles Berkelhammer, M.D., F.A.C.G., Robert Stein, M.D., Steven Ambrose, M.D., Shruti Sheth, M.D.*. University of Illinois - Christ Hospital, Oaklawn, Illinois.
Introduction: Antiphospholipid syndrome is a hypercoaguable state that can exacerbate during pregnancy. In CAPS, 3 or more organs or systems become involved within one week and small vessel occlusion may also be present. We describe hepatic infarction during pregnancy in CAPS.

Case: A 27-year-old woman, A.H., with recent diagnosis of IgA lambda multiple myeloma, presented with right lower abdominal pain. In CAPS, 3 or more organs or systems become involved within one week and small vessel occlusion may also be present. We describe hepatic infarction during pregnancy in CAPS.

Case Presentation: A seventy-three year old Vietnamese male presented with abdominal pain and radiate to right lower abdomen. Her prior medical history was significant only for hypertension. Her past obstetric history was unremarkable and she was in the 2nd trimester. Hepatic infarction during pregnancy can occur during CAPS. Conversely one must consider antiphospholipid syndrome in hepatic infarction during pregnancy before the late 3rd trimester.

Discussion: Antiphospholipid syndrome is a hypercoaguable state that can exacerbate during pregnancy. In CAPS, 3 or more organs or systems become involved within one week and small vessel occlusion may also be present. We describe hepatic infarction during pregnancy in CAPS.

GASTROINTESTINAL PLASMACYTOMA AS A CAUSE OF ANEMIA IN A PATIENT WITH MULTIPLE MYELOMA

Tuba Esfandyari, M.D., Amindra Arora, M.D.* Mayo Clinic, Rochester, Minnesota.

Uncontrolled proliferation of plasma cells in multiple myeloma can uncommonly involve extramedullary organs. Plasmacytoma can involve any segment of the gastrointestinal tract, but it is extremely uncommon, accounting for less than 1% of cases. The most common site of GI tract involvement is small bowel, presenting with intestinal obstruction and malabsorption. Other GI sites include stomach, colon, and esophagus, in order of frequency of involvement.

A 70-year-old man with recent diagnosis of IgA lambda multiple myeloma, treated with Melphalan and Prednisone for two cycles, was evaluated for persistent anemia. The cause of anemia was not related to a hematologic cause such as bone marrow erythroid hypoplasia nor deficiency of vitamin B12, folate or hemolysis. However, an EGD clearly demonstrated multiple small red-plaques in the stomach and duodenum that bled easily. Histology confirmed the presence of plasma cells. Endoscopic biopsies. Catheter probe ultrasound can thus serve as a useful aid in the diagnosis of this rare entity.

ENDOSCOPIC ULTRASOUND-FINE NEEDLE ASPIRATION (EUS-FNA) DIAGNOSIS OF AN ECHINOCOCCAL PANCREATIC CYST

William H. Brown, M.D., Raman Mathusamy, M.D.* University of California, San Francisco, San Francisco, California.

Case: A 49-year-old female presented with abdominal pain. This pain was located in the left upper quadrant and would radiate to her right lower abdomen. Her prior medical history was significant for an incidentally discovered hydatid cyst removed by partial hepatectomy five years previously. This partial hepatectomy was complicated by an ischemic bile duct stricture which had previously required serial endoscopic dilations. Her physical examination was significant only for well-healed surgical scars. No abdominal masses were palpated. CT scan of the abdomen and pelvis was performed and revealed a 4 × 2 cm cystic lesion at the junction of the pancreatic neck and body. ERCP revealed a normal pancreatogram. EUS was then performed, revealing a 3.7 × 1.6 cm anechoic cystic lesion in the body of the pancreas. The cyst did not appear to contain septa or connect to the pancreatic duct, but the wall was noted to be thickened and possibly calcified. FNA of the cyst removed 6 cc of clear fluid which eventually revealed brood capsules, free scolices and scattered hooklets which are pathognomonic of Echinococcus. No post-procedure complications were noted. Albendazole therapy was subsequently initiated. The patient was subsequently referred to surgery and resection was performed of the pancreatic echinococcal cyst. Hepaticojejunostomy was also performed to correct the previous bile duct injury. The patient tolerated the operation well and is without recurrence at one-year post-surgery.

Discussion: The vast majority of pancreatic cysts are pseudocysts, mucinous cystadenomas, or serous cystadenomas. Echinococcus granulosus is an extremely rare cause of pancreatic cystic disease. Echinococcus can be found worldwide in areas where dogs are used to help raise livestock. Parasitic infection occurs when humans eat vegetables contaminated by dog feces containing embryonated eggs. The eggs then hatch in the small intestine and liberate oncospheres that penetrate the mucosa and migrate to distant sites, including the liver (52–77%) or the lungs (9–44%). Case reports have
previously described pancreatic involvement and also described the safe aspiration of echinococcal cysts by transabdominal ultrasound FNA. A series in Kuwait described transabdominal ultrasound FNA diagnosis of 11 patients with echinococcal cysts. (Med Princ Pract. 2002) We believe this to be the initial report of the diagnosis of an echinococcal cyst of the pancreas via EUS-FNA.

635

ESOPHAGEAL ENDOSCOPIC ULTRASOUND (EUS) WITH BALLOON DILATION FOR THE DIAGNOSIS OF METASTATIC CERVICAL CANCER PRESENTING AS A SUBCARINAL MASS


Case: A 40 year old female with a remote history of cervical carcinoma presented with a five month history of progressive dysphagia to solids. Physical examination revealed no overt masses. Laboratory values were only significant for a normocytic anemia. CT scan of the chest revealed a 1cm × 3cm subcarinal mass compressing the esophagus. Initial EGD showed a smooth esophageal mucosa with a mid-esophageal stricture that was not traversable by the endoscope. Mucosal biopsies were non-diagnostic. EUS was subsequently performed and a tight stricture was seen at 25cm from the incisors. A diagnostic endoscope was used to inflate a TTS balloon, which was dilated up to 14 mm. The distal esophagus and stomach appeared normal. A linear echoendoscope was then inserted and imaging obtained at the stricture. A 2cm subcarinal mass was noted. FNA × 5 was performed. Cytology revealed a poorly differentiated squamous cell carcinoma with hyperchromasia and high N/C ratio similar to the pathology results of her prior cervical specimen. The patient was referred to the oncology team for further treatment with chemotherapy and radiation.

Discussion: The incidence of pulmonary and mediastinal metastasis in patients who have cervical carcinoma is rare. In one Japanese study, the incidence was 6.1% among 817 patients. (Gynecol Oncol 1989; 33:189) The most common of these manifestations consists of multiple pulmonary nodules. However, mediastinal disease does occur. EUS can play a role in diagnosis of such mediastinal lesions, in which tissue diagnosis is difficult to obtain. Surgical mediastinoscopy or CT-guided FNA previously was often required, which are invasive and technically risky procedures, respectively. EUS can provide a less invasive and safer method of diagnosis. If esophageal compression is a technical difficulty, balloon dilation can safely provide a transient opening for the echoendoscope.

636

A HAIRY SITUATION

Shahina Hakim, M.D., Rakesh Nanda, M.D., F.A.C.G.*. Carl T. Hayden VA Medical Center, Phoenix, Arizona.

In October 2003, a 64-year-old white man presented with dysphagia. He had a history of squamous cell cancer of the larynx that was treated with laryngectomy, creation of a tracheoesophageal fistula and radiation therapy 3 years ago. A few months later he underwent revision of the tracheoesophageal fistula with a transesophageal puncture (TEP). Soon after, he developed dysphagia, requiring multiple dilations for an esophageal stricture located proximal to the TEP. He presented to the Gastroenterology department in February 2003 for progressive dysphagia. He was could only tolerate liquids. He required frequent dilations, (up to 4 dilations per month) without much improvement. Because of refractory symptoms he was referred for esophageal reconstruction surgery to another facility in May 2003. He underwent esophageal reconstruction with radial forearm flap, radical right neck dissection, and split thickness skin graft to radial forearm in July 2003. The patient did well for a short while but had recurrent problems with swallowing.

The patient subsequently returned to us for evaluation in October 2003. At endoscopy, hair was growing into the esophageal lumen 15 cm from the incisors. [figure1] [figure2] This hair was present in the skin graft used for reconstruction of the esophagus. It extended to 18 cm where the anastomotic line was present between the graft and native esophagus. A 9mm stricture was noted at the anastomotic line. Balloon dilation of the stricture was performed. The patient tolerated the procedure well. He does not have dysphagia and is tolerating soft foods.

He occasionally complains of “food catching in his hair.”
MARKED GASTROINTESTINAL MANIFESTATIONS IN THE SETTING OF SYSTEMIC LUPUS ERYTHEMATOSUS

Systemic lupus erythematosus (SLE) involves multiple organ systems in the body. Manifestations in the gastrointestinal (GI) system are less frequently considered but may contribute to significant morbidity in these patients. This is the case of a 52-year-old female with a long standing history of SLE and chronic corticosteroid therapy who presented with complaints of progressive dysphagia, nausea, vomiting, anorexia, and significant weight loss. Symptoms had been progressing over one year with notable worsening in the weeks prior to her admission. Dysphagia initially only with solids had advanced to difficulty with liquids. Oral consumption dwindled to several tablespoons of water or broth daily. Her weight had dropped from 125 pounds 9 months prior to 75 pounds at time of presentation. Physical examination revealed a cachectic, weak female with hypotension, tachycardia, and axillary adenopathy. Abdominal examination was only remarkable for mild, diffuse tenderness. Laboratory exams revealed dehydration, leukopenia, and serum markers consistent with her diagnosis of SLE (positive nuclear, anti-double stranded DNA, and anti-Smith antibodies). Amylase, lipase, and liver function tests were all within normal limits. Computed tomography (CT) of the chest, abdomen, and pelvis was notable only for lymphadenopathy in her bilateral axillae and retroperitoneum. Esophagogastroduodenoscopy (EGD) revealed multiple ulcers in the esophagus and duodenum along with gastritis. Biopsies were negative for infection and malignancy.

During her 4 week hospitalization, the patient received supportive care, as well as more specific therapy directed by other investigations. Corticosteroids were increased as biopsies of multiple lymph nodes revealed necrotizing lymphadenitis, a rare complication of SLE. Pantoprazole was also initiated given the findings on EGD. In time, the patient's dysphagia improved allowing increased oral intake.

GI issues are found in up to 40–50 percent of individuals with SLE. Several possible conditions are dysphagia (the most frequent complaint), abdominal pain, nausea/vomiting, ulcers, mesenteric vasculitis, pancreatitis, hepatomegaly, and elevated liver function tests. Symptoms are often non-specific, but can be attributed to the disease directly or to the medications used in treating the disease. Recognizing the potential disability and morbidity of GI manifestations is important. The realization of GI complications as a manifestation of SLE can lead to more appropriate diagnosis and treatment of these patients.

PORTAL HYPERTENSION. NOT ALWAYS DUE TO CIRRHOSIS
Christine Y. Lee, M.D., Stephen A. Harrison, M.D.*. Brook Army Medical Center, San Antonio, Texas.

55 years old Filipino woman seen for cryptogenic cirrhosis multiple episodes of esophageal variceal bleeding. On exam, her vitals were stable, conjunctival icterus was absent, normal liver span by percussion, no evidence of ascites, spider angiomata, or caput medusa. Neurological exam was afocal, without asterixis. Labs: WBC of 7,100 with 9% eosinophils, platelet count: 85,000, AST: 37 U/L, ALT: 34 U/L, albumin: 3.7 g/dL, total bilirubin: 0.8 mg/dL, INR: 1.0. Serological testing was negative (chronic hepatitis panel, serum protein electrophoresis, alpha-1-antitrypsin level, ceruloplasmin, antinuclear antibody, anti-mitochondrial, and anti-smooth muscle antibodies). Abdominal ultrasonography showed prominent echogenic hilum & portal triad, consistent with extensive fibrosis. Colonoscopy revealed 5mm sessile rectal polyp. Histopathologic evaluation showed submucosal nodular collection of mineralized *Schistosoma japonicum* eggs within area of fibrosis. A liver biopsy revealed mild lobular inflammation with eosinophils, no steatosis, mild reticulin fibrosis surrounding embedded remnants of schistosome eggs, and no evidence of cirrhosis. Patient was diagnosed with pre-sinusoidal portal hypertension secondary to chronic schistosomiasis. *S. japonicum* flukes inhabit fresh water. Humans become infected following exposure to water inhabited by the snails. Cercariae of schistosome parasites penetrates skin & invade circulatory system. Schistosome eggs deposited in the portal circulation can lodge in portal venules of the liver. Eggs release enzymes and antigenic macromolecules inducing T-lymphocyte-dependent granulomatous response. Overtime this produces unique pattern of scarring termed “Simmers pipe stem fibrosis.” The portal vein & tributaries become fibrotic and appear similar to pipe stems. Fibrotic ligation of portal blood flow ensues. This pre-sinusoidal venous obstruction leads to portal hypertension. Thrombocytopenia may be present as a result of splenic sequestration. Classically patients present with esophageal variceal hemorrhage secondary to increased pre-sinusoidal portal hypertension. A diagnosis of S. japonicum induced pre-sinusoidal portal hypertension is made after confirmation of eggs in stool or biopsy specimens. In summary, patients presenting with esophageal variceal hemorrhage who are from or have traveled to endemic areas and have no biochemical evidence of decreased hepatic synthetic function should be evaluated for potential schistosomiasis infection. Endoscopic photos and biopsy photos will be provided.

A CASE OF SIGNIFICANT GASTROINTESTINAL BLEEDING IN A PATIENT WITH ACHALASIA

Achalasia is a disease with loss of peristalsis of distal esophagus and a failure of relaxation of lower esophageal sphincter. It is an uncommon disorder with an annual incidence of 1 in 100,000 and affects men and women with equal frequency. Gastrointestinal bleeding in achalasia is an infrequent complication usually associated with stasis ulcer, esophageal varices, carcinoma, or following pneumatic dilatation of the sphincter. Gastroesophageal reflux with esophagitis is uncommon in patients with achalasia, but may occasionally develop following dilatation or surgical treatment. However, significant recurrent bleeding from such esophagitis associated with achalasia has not been reported in the literature.

We describe here a 76 yrs old lady diagnosed as a case of achalasia by endoscopy and esophageal manometry 10 yrs ago when she presented with dysphagia and weight loss. She underwent pneumatic dilatation three times, but symptoms recurred within a year. Subsequently, she had modified Heller's myotomy. Although her symptoms partially resolved, vomiting and regurgitation persisted. Five years following surgery, she presented with hematemesis and melena. Endoscopy showed severe esophagitis in distal esophagus with ulceration. In spite of being maintained on high dose of proton pump inhibitors, she presented with significant upper gastrointestinal bleeding repeatedly every 3 to 6 months requiring multiple units of blood transfusion. Biopsy from distal esophagus did not reveal malignancy. During the last admission, endoscopy revealed widespread esophagitis with bleeding throughout the esophagus and she was transfused with 6 units of packed red cells. This case emphasizes that although rare, esophagitis associated with achalasia can present with significant bleeding.

RESOLUTION OF ADULT ONSET ASTHMA FOLLOWING THE ENTERYX™ PROCEDURE
Gilbert Simon, M.D., Joseph R. Depasquale, M.D., F.A.C.G.*, Alexia Ksiazek, M.D. Seton Hall University, School of Graduate Medical Education, South Orange; St. Michael's Medical Center, Newark and St. Joseph hospital and medical center, Paterson, New Jersey.

Introduction: Gastroesophageal reflux disease (GERD) has been linked to chronic cough, bronchospasm, and asthma. Many adult onset asthma cases have been treated or alleviated with proton pump inhibitors (PPI). Enteryx™...
is a new endoscopic treatment approved for refractory GERD. It is a solution containing ethylene vinyl alcohol polymer and dimethyl sulfide plus tantalum radiopaque contrast agent that is injected above the lower esophageal sphincter (LES) modifying LES compliance. This procedure has been shown to clinically improve GERD with a reduction or discontinuation of proton pump inhibitor (PPI). We present a patient with long standing asthma and chronic PPI use, whose asthma symptoms were completely resolved after the EnteryxTM procedure.

Case report: A 46 year-old white male with a past medical history of asthma, sinusitis and GERD for three years was treated with esomeprazole, metoclopamide, fluticasone/salmeterol disks inhaler, and albuterol inhaler with minimal improvement. Patient lately had started to experience nocturnal pain, despite diet modification and PPI twice daily, but he denied any changes in his appetite or weight. After a 24-hour pH testing for documentation of pH-induced symptoms, patient was referred to us for the EnteryxTM procedure. Under fluoroscopic and endoscopic visualization, EnteryxTM was injected circumferentially into the muscle layer of the lower esophageal sphincter. The patient tolerated the procedure well and was discharged home. Subsequently, patient reported significant relief of GERD symptoms, complete resolution of asthma and sinusitis symptoms, and discontinued all medications and inhalers.

Discussion: GERD is a prevalent medical condition whose complications include esophagitis, dysphagia, peptic stricture, Barrett’s esophagus, and extraesophageal symptoms like cough, asthma, and laryngitis. EnteryxTM is a novel therapy that has improved patient symptoms and allowed them to discontinue the use of PPI. To our knowledge, this is the first case that demonstrated a complementary advantage of EnteryxTM resolution of adult onset asthma, in addition to its efficacy in treatment of GERD.

642 DUODENAL DIVERTICULUM: A LIMITATION TO CAPSULE ENDOSCOPY?
Gilbert Simoni, M.D., Ziad Salem, M.D., Robert S. Spira, M.D., F.A.C.G.∗
Seton Hall University, School of Graduate Medical Education, South Orange and St. Michael’s Medical Center, Newark, New Jersey.

Introduction: Capsule endoscopy (CE) is a valuable diagnostic tool for small bowel diseases such as obscure gastrointestinal bleeding and Crohn’s disease. Its limitations include suspected gastrointestinal obstruction, strictures, fistulas, and swallowing disorders. Case reports of Zenker’s and Meckel’s diverticuli have previously been reported. We describe two cases of duodenal diverticuli complicating the course of CE.

2 Cases
Case 1: A 67 year-old female, Jehovah’s witness, with a history of chronic iron-deficiency anemia presented with intermittent melena. EGD revealed a small non-bleeding ulcer on the lesser curvature of the stomach and a duodenal diverticum. Colonoscopy was unremarkable. The melena persisted despite a second EGD which showed healing of the gastric ulcer. The patient then underwent a capsule endoscopy. Following a normal transit through the stomach, the capsule had a very slow progress in the duodenum. During this time, the capsule was in fact trapped within a diverticulum. Upon dislodging from the diverticulum an ulcer was noted in close proximity. The rest of the small bowel was essentially normal.

Case 2: A 73 year-old male with a past medical history significant for hypertension presented with melena and normocytic anemia. EGD and colonoscopy showed nonerosive gastritis and colonic diverticuli and a capsule endoscopy was performed. The capsule was noted to have a normal progress through the pylorus after which it remained stagnant in the duodenum for five hours before the signal disappeared. A small bowel enteroscopy showed a large duodenal diverticulum and a solitary ulcer in the proximal jejunum, which was cauterized. Patient had no further melena and hemoglobin normalized.

Conclusion: Capsule endoscopy is a useful and safe procedure. Nevertheless, a duodenal diverticulum may complicate the procedure by trapping, or simply delaying the capsule passage. Although duodenal diverticuli are relatively uncommon, they may still represent a limitation to a capsule’s success, prompting repeated examinations. Since both capsules were capable of dislodging, a longer duration battery may trivialize the complication. No serious complications were noted in either case. More cases are needed to determine the effect of small bowel diverticuli on capsule endoscopy.

643 PATIENT WITH MARKEDLY ELEVATED CA 19–9 NOT ASSOCIATED WITH MALIGNANCY
Douglas Lowe, M.D., Jeffrey Lee, M.D., Robert Schade, M.D., Ayaz Chaudhary, M.D.∗
The Medical College of Georgia and Veterans Administration Medical Center, Augusta, Georgia.

A 66 y/o white male presented with jaundice, pruritus, abdominal cramping, intermittent diarrhea, and 25–30 pound weight loss over the previous two months. There is no past history of inflammatory bowel disease, HIV, or heavy alcohol use. Vital signs were T 35°C, BP 89/51 mmHg, HR 50 beats/minute, and RR 24 breaths/minute. Physical examination revealed scleral icterus but was otherwise unremarkable. Initial laboratory evaluation was unremarkable except for ALT 161 U/L, AST 290 U/L, alkaline phosphatase 2004 U/L, GGT 2552 U/L, total bilirubin 10.2 mg/dL, and albumin 1.8 gm/dL. Carbohydrate antigen 19–9 level was 4374 U/mL. Abdominal ultrasound showed mildly increased echogenicity in the liver and mild gallbladder wall thickening. CT scan did not show any evidence of biliary or pancreatic disease and no pancreatic masses or intra-abdominal
adenopathy was present. Hepatobiliary scan showed homogenous tracer accumulation within the liver, prominent but non-dilated extrahepatic biliary ducts, and normal tracer accumulation in the gallbladder. ERCP showed a possible filling defect in the common bile duct. Sphincterotomy and balloon sweeping of the common bile duct was performed with subsequent normal cholangiogram. Symptoms and jaundice resolved by five months after initial presentation. CT scan performed six months after presentation showed no significant intra-abdominal abnormalities. Carbohydrate antigen 19–9 level was 38 U/mL at eight months and 23 U/mL at one year after initial presentation. Liver biochemistries were normal one year after initial presentation. CA 19–9 has been considered by some to be the “gold” standard serologic marker for the diagnosis of patients with pancreatic cancer. While elevated CA 19–9 levels occur in most patients with carcinoma of the pancreas it can also be elevated in patients with extra-pancreatic malignancies. Also, patients with acute cholangitis can have markedly elevated CA 19–9 levels that can return to normal after the common bile duct is decompressed. This case illustrates the fact that markedly elevated CA 19–9 can be secondary to causes other than carcinoma.

644

GALLBLADDER LYMPHANGIOMA: A CASE REPORT AND REVIEW OF THE LITERATURE
Kyung W. Noh, M.D., Mellena D. Bridges, M.D., Ernest P. Bouras, M.D.*.
Mayo Clinic, Jacksonville, Florida.

A 29 year-old female presented with a six-month history of nausea, vomiting and right upper quadrant pain radiating to the back. Symptoms were precipitated by fatty meals and alcohol. She denied episodes of heartburn, jaundice or pancreatitis. She was empirically treated with proton pump inhibitors without success.

Physical examination was unremarkable with the exception of mild tenderness to deep palpation in the right upper quadrant of the abdomen. Laboratories studies were normal.

To further evaluate these symptoms, an abdominal ultrasound was obtained. This revealed a multi-septated hypoechoic lesion surrounding the gallbladder. (Figure 1) The subsequent MRI (Figure 2) demonstrated an amorphous structure of fluid attenuation engulfing the gallbladder and extending into the liver hilum around the cystic duct and hepatic artery. The gallbladder and bile ducts appeared normal on MRCP and ERCP.

The patient underwent exploratory laparotomy. A cystic structure beneath the liver was removed en bloc with the gallbladder. Histologically, the mass was identified as a lymphangioma.

Lymphangiomas are benign neoplasms found usually in childhood and occur in the head and neck. Intra-abdominal lymphangiomas account for less than 5% of cases. Only 2 cases of a lymphangioma arising from the gallbladder have been reported in the literature. Patients are usually asymptomatic until it enlarges to cause compression and displacement of adjacent structures. Imaging using ultrasound, CT and MRI has been used to aid in the diagnosis of this rare condition. Total resection is the treatment of choice with a good prognosis with complete resection.[figure1][figure2]

645

MASSIVE GASTROINTESTINAL BLEEDING FROM HERPETIC ESOPHAGITIS
Oswaldo Bisbal, M.D., Scott Tenner, M.D., M.P.H., Swaminath Iyer, M.D.*.
Downstate Medical Center, State University of New York, Brooklyn, New York.

Herpes esophagitis is an uncommon cause of esophagitis typically resulting in retrosternal burning, dysphagia and/or odynophagia. Most patients with herpes esophagitis have an underlying immunosuppressive disorder that predisposes to infection. We present an unusual manifestation of this disease, massive gastrointestinal bleeding. A 44 year old gentleman with serum lupus erythematosus, endstage renal disease on hemodialysis, dependent on prednisone presented with hematemesis. On admission, there was malaise, but no complaints of abdominal pain, fever, chills. There was mild tachycardia. Blood pressure was normal. The physical examination revealed a normal oral cavity. Lungs and heart were normal. The abdomen was soft and non-tender. Laboratory testing revealed a normochromic, normocytic anemia. Intravenous pantoprazole was begun. After developing symptoms consistent with unstable angina, intravenous heparin was begun. Melena was noted; hypotension developed; and, the hematocrit had decreased almost 10%. After intravenous saline resuscitation, blood and fresh frozen plasma was transfused. A total of 19 units of packed red blood cells was needed.

GALLBLADDER LYMPHANGIOMA: A CASE REPORT AND REVIEW OF THE LITERATURE
Kyung W. Noh, M.D., Mellena D. Bridges, M.D., Ernest P. Bouras, M.D.*.
Mayo Clinic, Jacksonville, Florida.
to stabilize the patient. An endoscopy was performed. Endoscopy revealed multiple esophageal ulcers, exudates in the mid and distal esophagus. Biopsies revealed herpetic esophagitis with ground glass nuclei. The patient was started on intravenous acyclovir. After 48 hours, no further bleeding was noted. Repeat endoscopy 2 weeks later revealed a normal esophageal mucosa. The patient remains well. Herpes esophagitis is not uncommon. However, unlike the typical appearance of heartburn, dysphagia and odynophagia, gastrointestinal bleeding is uncommon. This case represents the first case of a massive upper gastrointestinal bleed secondary to herpetic esophagitis.

646

A CASE OF STREPTOCOCCUS BOVIS LIVER ABDOMEN IN A SIMPLE HEPATIC CYST WITH ASSOCIATED COLONIC TUBULOVILLOUS ADENOMA
Deborah A. Flomenhoff, M.D., Iliana Bouveva, M.D.*. University of Kentucky, Lexington, Kentucky.

Streptococcus bovis bacteremia, endocarditis, and septic arthritis have been reported in conjunction with colon pathology. However, there have been few reports in the literature of Streptococcus bovis hepatic abscess, and none associated with colon pathology. We present a case of a patient with Streptococcus bovis liver abscess and tubulovillous adenoma in the colon. An 80 year old man with a history of COPD, Coal Worker's Pneumoconiosis, polypectomies for tubulovillous adenomas, and 10 cm simple hepatic cyst presented with a 5 week history of fever to 102 F without associated abdominal pain, nausea, vomiting or jaundice. He had been hospitalized and treated for COPD exacerbation and subsequent Pseudomonal pneumonia with steroids and antibiotics but with no improvement in his fever curve. A CT scan of abdomen revealed an increase in the size of his previously identified hepatic cyst to 13x18 cm with density suspicious for abscess. A drain was placed within the abscess and Streptococcus bovis was recovered on cultures. Shortly after that he was diagnosed with pulmonary emboli and started on treatment with anticoagulants. We entertained the possibility of both biliary and colonic sources for this rare hepatic abscess organism. Since there was no evidence of biochemical cholestasis and the CT scan revealed showed no evidence of gallbladder disease or dilated biliary ducts, the likelihood of cholangitis was dismissed. However, because of the patient's history of a large tubulovillous adenoma in descending colon removed via Argon Plasma Coagulation 18 months prior to this hospitalization, we decided to perform another colonoscopy. It revealed a 3 cm tubulovillous adenoma in ascending colon which was biopsied but not removed secondary to anticoagulation for pulmonary emboli. The patient was treated with Meropenem (the choice of antibiotic was dictated by his multiple allergies) while the hepatic drain remained in place. He completed 6 weeks of antibiotic therapy. Complete resolution of the abscess was documented on ultrasound performed 2 weeks after removal of the drain. The patient was scheduled to undergo endoscopic resection of the polyp after completing anticoagulation therapy for pulmonary embolism; his lung disease limits his surgical candidacy.

647

TUBERCULOUS HEPATITIS IN IMMUNOCOMPETENT PATIENT: IS CULTURE OF LIVER BIOPSY ESSENTIAL FOR DIAGNOSIS?

A 44 y/o AA male with PMH of insulin dependent diabetes and hypertension presented to the hospital with a month's history of nausea, daily vomiting, anorexia, nocturnal fever (up to 103 F) and chills. He had noticed a 15lb weight loss over the month. He also complained of night sweats and pruritis. Tylenol up to 2000mg/day did not relieve his fevers. This Immigration Officer had not travelled out of the country since a trip to Ivory Coast 5yrs prior. He has smoked a pack a day for ten years and had not drank alcohol for over 9 years. He denied any risky behaviour, had no known drug allergies and his family history was not contributory to his current illness. He had not started any new medication and continued on his insulin, cozaar, HCTZ and cardizem. Physical exam was significant only for fever of 101 F, RUQ tenderness but no hepatomegaly. The rest of the examination was unremarkable. WCC-4.5, hb-13.1, Plat-406, PT-12.1, INR-1.0, Normal Chem 7, Amylase-31, Lipase-9.

648

TERMINAL ILEUM PERFORATION SECONDARY TO Clostridium difficile ENTERITIS: TWO CASE REPORTS
Fernando Havetian, M.D., Marc Brozovich, M.D., Robert Garvin, M.D., Pavlos Papasavas, M.D., Philip F. Causaj, M.D.*. The Western Pennsylvania Hospital, Pittsburgh, Pennsylvania.

Pseudomembranous colitis occurs in patients in whom the normal balance of colonic flora has been disturbed, allowing the overgrow of Clostridium difficile (C. diff). The distribution of pseudomembrane formation is generally restricted to the colon with abrupt termination at the ileocecal valve. Pseudomembrane formation involving the small bowel is extremely unusual. We present two cases of patients with intestinal perforation secondary to C. diff enteritis and compare them with seven cases reported in the literature in the last ten years. Small bowel C. diff enteritis is a rare entity. Presenting symptoms are similar to those of C. diff colitis, but may be more severe, with higher mortality rate. The majority of patients, in this review, were older, with prior gastrointestinal surgery. Although rare, C. diff enteritis should be part of the differential diagnosis in any septic patient with persistent severe diarrhea, despite correct antibiotic therapy and colectomy for C. diff colitis.
GALLBLADDER THROMBUS PRESENTING AS BILIARY COLIC
Sara Mitchell, M.D., Michael Komar, M.D., John Altomare, M.D., Nicholas Inverso, M.D.*. Geisinger Medical Center, Danville, Pennsylvania.

Bleeding in patients without malignancy occurs in 0.16% of liver biopsies. Hemobilia is exceedingly rare, occurring in 0.006% of biopsies. We present a case of gallbladder thrombus after liver biopsy masquerading as biliary colic. A 57-year-old obese white female presented for evaluation of elevated liver transaminases drawn prior to treatment of hypercholesterolemia. Previously normal, the transaminases were now two times normal, with normal albumin, alkaline phosphatase, bilirubin, and PT/INR. She rarely drank alcohol, and had no new medication. Ultrasound of the right upper quadrant showed a mildly dilated extrahepatic duct. Serology for Hepatitis A, B, and C, iron studies, ceruloplasmin, and AMA were negative. ANA was 1:320, ASMA was 1:40, and gammaglobulins were 1.6 g/dL. An unguided liver biopsy was performed. The patient developed mild pain in her right shoulder relieved with acetaminophen. Postprandial RUQ pain that radiated to her shoulder and abdomen developed the following morning. Liver transaminases were now four times normal. Complete blood count, alkaline phosphatase and bilirubin were normal. CT scan showed fatty liver and a large opacity in the gallbladder of uncertain etiology. ERCP was performed to assess for biliary obstruction. Hemobilia or opacities of the bile duct were not seen. The filling defect in the gallbladder was suggestive of a blood clot. At no point did she require blood transfusion or operative intervention. Subsequent CT scans showed resolution of the gallbladder opacity. Liver histology revealed moderate hepatic steatosis, without evidence of adjacent nonhepatic tissue. She was treated with Vitamin E and weight loss, resulting in normalization of her liver transaminases.

Hemobilia is an extremely rare complication of liver biopsy, commonly presenting as a triad of gastrointestinal bleeding, jaundice and biliary pain. A series of 68,276 percutaneous liver biopsies identified only four cases. This represents the first reported case of gallbladder thrombus following liver biopsy. This adverse event should be considered in the setting of post-procedure biliary colic and changes in liver enzymes. [figure1]

A RARE SYNCHRONOUS MALIGNANCY OF THE PANCREAS ASSOCIATED WITH THE LUNG
Vijaya D. Boyella, M.D., Basheer Atiquzzaman, M.D., Mohana Karlekar, M.D.*, Ravichandra R. Boyella. Woodhull Medical Center and Long Island College Hospital, Brooklyn, New York.

A 74 year old hispanic female, admitted with acute shortness of breath, hemoptysis and hypoxia. At presentation, she was noted to have a large left sided pleural effusion with mediastinal shift. She had a past medical history of hypertension and a left sided pleural effusion diagnosed one month prior to admission Diagnostic thoracentesis on her previous admission revealed bloody fluid. Tuberculosis was ruled out. Hospital course was significant for a drop in hemoglobin, and hypotension. Subsequently she developed respiratory failure and was intubated. Hypotension did not respond to vasopressors. She suffered an asystolic arrest and expired.

Autopsy revealed two distinct primary carcinomas. The first was a pleomorphic carcinoma of the head of the pancreas, widely metastatic to the tail of pancreas, left lower lobe of lung (inferomedial aspect), liver, vertebral, and lymph nodes. The second was a primary well differentiated mucinous adenocarcinoma in the lower lobe of the left lung (superior lateral aspect with metastasis to the paratracheal lymph nodes, liver and to left adrenal gland). Multiple thrombi were noted in the deep pelvic veins with emboli to the right main pulmonary arteries.

The frequency of synchronous malignant tumors ranges from 2–6.3% of all cancers. In male patients, the most frequent primaries are gastric and lung cancer followed by gastric and esophageal cancer. In female patients, it is gastric and uterine cancer followed by gastric and thyroid cancer. In synchronous malignancy, each tumor must be distinct, and confirmed by histopathology. The probability that one is metastatic from the other must also be ruled out. Review of the literature reveals that reported cases of synchronous double cancers involving pancreas and other organ malignancies are rare. From our review of the literature, only 16 cases of synchronous malignancies involving the lung and pancreas has been reported. This case is unusual in that it involved synchronous malignancies not yet well described together in the literature. Perhaps double synchronous tumors of these types are not commonly diagnosed due to the rapid growth of these tumors. Patients may die from complications from one tumor before the other tumor can clinically manifest symptoms, as in this case. It is fortuitous that the diagnoses of these two tumors were confirmed radiographically and by histopathologically.

INTRACTABLE HICCUPS CAUSED BY SEVERE ESOPHAGITIS

Background: Gastroesophageal reflux disease (GERD) is a common disease. Atypical presentation of reflux is becoming increasingly recognized. Hiccups, the involuntary spasmodic contraction of the inspiratory muscles, has been reported as an atypical symptom of GERD. We report a series of three patients who presented with intractable hiccups as a manifestation of their reflux disease.

Case Series: The first patient is a 59-year-old male who presented with a 2-week history of epigastric discomfort and intractable hiccups. He was unable to tolerate oral intake for 5 days. On admission, he was treated with chlorpromazine that failed to relieve his symptoms. An upper endoscopy revealed grade IV esophagitis. Biopsies showed acute inflammation and no infectious agent. He was started on an oral proton pump inhibitor and his hiccups subsided over 3 days. The second patient is a 69-year-old male who presented with 2-day history of coffee grounds emesis and intractable hiccups. He was started on an oral proton pump inhibitor and EGD showed grade IV esophagitis. Biopsies were negative for infectious etiology of the esophagitis. The patient’s symptoms resolved with oral proton pump inhibitor. The third patient is a 33-year-old male who presented with epigastric pain and 4 days of intractable hiccups. His hiccups did not respond to chlorpromazine. A subsequent EGD showed grade IV esophagitis and the patient was started on an oral proton pump inhibitor with resolution of his hiccups.

Conclusion: Intractable hiccups are not only an atypical symptom for reflux but may also indicate severe esophageal disease. We report three endoscopically proven cases of severe esophagitis masquerading as intractable hiccups. Therefore, when evaluating intractable hiccups, esophagitis must be included on the differential diagnosis.
Superior mesenteric artery syndrome (SMAS) presents with vomiting and abdominal pain due to intermittent obstruction of the third portion of the duodenum by the SMA. In adults, SMAS can occur following rapid weight loss due to severe burns, trauma etc. Patients undergoing bariatric surgery typically lose weight rapidly and may be at increased risk for developing SMAS. We present two cases of presumed SMAS following laparoscopic Roux-en-Y gastric bypass (LRYGBP).

Two patients presented with intermittent abdominal pain and nausea several months following LRYGBP. Both patients experienced symptoms at night while sleeping in the supine position. Leaning forward relieved symptoms in both patients. Their excess body weight loss when their symptoms commenced was 40% and 99%. The first patient underwent an extensive workup over several months that included imaging, endoscopies and exploratory laparoscopies. Exploratory laparotomy in both patients eventually revealed dilated gastric remnant and duodenum up to the level of the SMA and laparoscopic duodenal-jejuno-stomy was performed. Both patients had immediate intraoperative decompression and uncomplicated postoperative course. They remain symptom-free after a follow-up of thirteen and seven months respectively. The diagnosis of SMAS should be considered in post-LRYGBP patients who exhibit rapid weight loss and present with atypical, recurrent obstructive symptoms. The altered anatomy following LRYGBP makes the diagnosis of SMAS elusive. Endoscopy and contrast swallow studies are not helpful in establishing the diagnosis. Laparoscopic duodenal-jejuno-stomy offers immediate and lasting resolution and should be considered the procedure of choice for the treatment of this complication.
Schistosomiasis is a major source of morbidity and mortality for developing countries in Africa, South America, the Caribbean, the Middle East, and Asia. Tourism and immigration result in schistosomiasis cases presenting in the developed world. It is a human disease syndrome caused by infection from one of several species of parasitic trematodes of the genus Schistosoma. The adult flukes lay large numbers of eggs in the walls of the intestines or bladder, some of which flow through the bloodstream to the liver eliciting an inflammatory response in those regions. We present a case of Schistosoma Colitis which is uncommonly seen in the United States.

A 48 year-old male, an immigrant from Brazil, presented with 4 days of severe, intermittent cramping abdominal pain located in the epigastrium and left-lower quadrant. It was associated with nausea, subjective fevers and intermittent non-bloody watery diarrhea. On examination, he was febrile to 100.1 F, tachycardic at 102 beat per minute, and tachypneic at 24 breaths per minute. His blood pressure was 111/67. He had epigastric and left-lower quadrant tenderness with presence of guarding but no rebound tenderness. He had no rectal mass palpable and was guaiac negative. Laboratory data on presentation revealed WBC of 12.2 THU/L with 10.4% eosinophils. CT scan of the abdomen and pelvis showed wall thickening throughout the colon with sparing of the sigmoid. The patient was initially treated with intravenous Flagyl, ampicillin and gentamicin. The stool studies including fecal leukocytes, C difficile, ova and parasites were normal. Colonoscopy revealed mild edema and patchy erythema throughout the colon. Random biopsies from the colon showed moderately active, chronic colitis with reactive glandular atypia. Schistosome eggs were present in the mucosa. Rectal biopsy revealed similar findings. The patient was then started on Praziquantel 1200 mg QID for 3 days with good response. Schistosoma colitis is an unusual etiology of abdominal pain in the nonen-demic areas. It is estimated that 400,000 immigrants from endemic regions may harbor the infection. Exposure to schistosomiasis is a health hazard for U.S. citizens who travel to endemic areas. Hence, we need to be aware of it in our differential when evaluating patients with abdominal pain who are from or have recently travelled to an endemic area.

656

SUPERIOR MESENTERIC ARTERY SYNDROME: AN UNUSUAL CAUSE OF INTESTINAL OBSTRUCTION: A CASE REPORT AND REVIEW OF THE LITERATURE

Theodore M. Perlman, M.D., Steven S. Yang, M.D., Julius Weiss, M.D., M.A.C.G., Ali S. Karakurum, M.D., M.A.C.G.*. Nassau University Medical Center, East Meadow, New York.

Purpose: A 14 year old male without any past medical history was admitted to our hospital complaining of severe back and jaw pain as well as a 25 pound weight loss over 3 weeks. Bone biopsy revealed Burkitt’s Lymphoma. He subsequently began radiation and chemotherapy. On day #14 of hospitalization the patient developed ileocolic intussusception which required right colon resection, on day #22 the patient suffered ileal perforation and repair. After one month of hospitalization, patient developed abdominal distention and multiple episodes of voluminous bilious emesis that began two days prior. Upper GI series showed high grade duodenal obstruction of the third portion of the duodenum with vertical cutoff, which was reversible in the prone position. CTAbdomen revealed edema of the proximal duodenum, partial obstruction of the third portion of the duodenum. A Nasojejunal tube was passed under fluoroscopy to alleviate the obstruction.

Discussion: SMAS also known as Wilkie’s Syndrome occurs when there is vascular compression of the duodenum between the superior mesenteric artery and the aorta. Incidence is estimated to be 0.013–0.3% although some authors believe that it is more common. Clinical conditions that predispose patients to SMAS include: severe wasting diseases where there is loss of mesenteric fat, spinal disease, abdominal surgery, congenital anomalies such as malrotation, adhesions, collagen vascular disease, prolonged bed rest and body casts. Symptoms may be chronic or acute. Abdominal pain, distention, nausea and vomiting are usually relieved by the prone, knee to chest and left lateral positions. Diagnosis is usually confirmed by characteristic radiologic images. Treatments include conservative management i.e. nutritional support, postural therapy; surgical management includes lysis of the ligament of Treitz, mobilization of the duodenum, duodenojunostomy. Our patient had multiple risk factors for SMAS which led to our diagnosis.

657

TOXOPLASMA COLITIS IN A PATIENT WITH ACQUIRED IMMUNE DEFICIENCY SYNDROME

Douglas Love, M.D., Richard Hessler, M.D., Jeffrey Lee, M.D., Robert Schade, M.D., Ayaz Chaudhary, M.D.*. The Medical College of Georgia and Veterans Affairs Medical Center, Augusta, Georgia.

A 53 y/o black male with HIV disease whose most recent CD4 count was 159 cells/mm³ with viral load of 53,229 RNA copies/mm³ presented with intermittent bright red blood per rectum for three years with increased frequency of rectal bleeding for the previous two weeks before admission. There is no past or family history of inflammatory bowel disease. Other symptoms included diarrhea, weakness, and lightheadedness. On examination: T 37.4°C, BP 106/70 mmHg, HR 123 beats/minute, and RR 19 breaths/minute. Physical exam revealed pale conjunctiva and a nontender abdomen but was otherwise unremarkable. Initial laboratory results were: WBC 5,500 cells/mm³, HGB 6.5 g/dL, HCT 19.9%, MCV 78.6 fl., and PLT count 431,000 cells/mm³. Upper endoscopy revealed whitish plaques coating the esophagus consistent with Candidia esophagitis infection and erythema-tous gastric mucosa. Colonoscopy was performed and demonstrated multiple ulcers with raised margins throughout the colon. Biopsies of the ulcers showed colitis, ulceration, and the presence of Toxoplasma gondii organisms within the ulcer bed confirmed with immunohistochemistry staining. MRI of the brain with gadolinium contrast showed too numerous to count enhancing lesions within the brain parenchyma some with ring enhancement. The patient was treated with pyrimethamine, sulfadiazine, and folate resulting in resolution of diarrhea.

In both the United States and Europe, toxoplasma infection has been reported to occur in up to 10–15% of patients with AIDS. Usually the central nervous system (CNS) is involved and infection of organs outside of the CNS is rare. Colonic ulceration is rarely seen. This case demonstrates that Toxoplasma gondii infection should be included in the differential diagnosis of diarrhea and/or lower gastrointestinal bleeding in patients with AIDS.

658

A CASE OF RETROPERITONEAL PLEOMORPHIC Rhabdomyosarcoma


Background: Sarcomas are malignant tumors that arise from skeletal and extra skeletal connective tissues. Retropitoneal sarcomas are rare tumors that accounts for approximately 13% of soft tissue sarcomas in adults. The most common retroperitoneal tumors are leiomyosarcomas and lipo sarcomas. Retroperitoneal sarcomas have a poor outcome because of large size and local invasion of surrounding structures at the time of diagnosis. We report an unusual case of pleomorphic rhabdomyosarcoma of the retroperi-toneum with metastasis to periaortic lymph nodes causing bowel and ureteric obstruction.

Case: A 75-year-old caucasian female was referred to our hospital for evaluation of abdominal pain and distention. Patient had diarrhea alternating with constipation, 17 pounds weight loss in one month as well as early satiety. She also complained of occasional shortness of breath with dry cough. Abdominal examination showed distention with diffuse tenderness to palpation but no rebound tenderness. A mass was palpable in the right lower quadrant. Bowel sounds were hyperactive.
Laboratory studies showed a hemoglobin of 11.9 g/dL, Platelet 505,000/ cu mm, Creatinine 1.7 mg/dL, and ESR 74mm. CT scan of the abdomen showed large bulky masses thought the abdominal cavity with the largest measuring 11.4 X 9 centimeter (cm) at the level of renal vessels. Mass extended circumferentially around the aorta and compressing the ureter causing right sided hydronephrosis.

Patient underwent an endoscopic ultrasonography (EUS) and biopsy of the malignant looking lymph nodes in the upper abdominal periaortic region. Biopsy showed tumor cells with strong nuclear staining with myogenin, negative for ck ae1, 3,c7, ck20. All lymphocytic markers were negative. Confirming the diagnosis of pleomorphic rhabdomyosarcoma.

Patient opted not to have chemo or radiation therapy and was put on hospice care.

Discussion: Retroperitoneal sarcomas usually present with an asymptomatic abdominal mass. Less commonly neuroologic or musculoskeletal symptoms referable to the lower extremities may result from local invasion or compression of retroperitoneal neurovascular structures.

Primary treatment is complete surgical resection followed by adjuvant radiation. Recommended approach is preoperative external beam radiation. A rest of approximately 2.5–3 weeks followed by surgical resection and intraoperative radiotherapy. Prognosis is poor because of the local recurrence as well as the invasion of surrounding structures causing organ failures.

ENDOSONOGRAPHIC FEATURES OF LYMPHOMAS MACYITIC SCLEROSING PANCREATITIS
Aldo A. Garza, M.D.*, Orlando Garcia, M.D., Juan P Flores, M.D.
University Hospital/School of Medicine, Monterrey, Nuevo Leon, Mexico.

The role of endoscopic ultrasound (EUS) in the evaluation of pancreatic disorders is well established. However, little information on the endosonographic features of uncommon pancreatic diseases is available. We describe the case of a rare form of autoimmune chronic pancreatitis evaluated with EUS.

Clinical Vignette: A 31 year-old Mexican male was referred to our institution with jaundice and a common bile duct (CBD) stricture on endoscopic retrograde cholangiopancreatography (ERCP). The patient described a three-month history of malaise, abdominal pain, a forty-pound weight loss, and the recent onset of jaundice; on ERCP he had a 6 cm distal biliary stricture with proximal dilation of the biliary tree. EUS was performed revealing severe changes of chronic pancreatitis including marked lobularity, prominent interlobular septae and a diffusely inhomogeneous echo pattern, features suggestive of diffuse fibrosis. The pancreatic duct was hardly visible. At the level of the pancreatic head, these changes coalesced into a mass-like lesion which involved the distal CBD and produced near-complete biliary obstruction. No lymphadenopathy was present. Concerned for the possibility of an underlying malignancy, no EUS-guided fine needle aspiration (FNA) was performed and the patient was taken for pancreaticoduodenectomy. Histopathologic examination of the surgical specimen demonstrated diffuse lymphoplasmacytic infiltration of the pancreas with marked acinar atrophy, obliterated phlebitis, and extensive fibrosis. The CBD and gallbladder showed marked inflammatory wall thickness. These features were compatible with lymphoplasmacytic sclerosing pancreatitis (LPSP). Serologic markers for autoimmune disease were negative. The patient recovered satisfactorily from the procedure and was discharged home. His follow-up at 21 months has included the development of insulin-requiring diabetes, an episode of acute pancreatitis of the remaining gland, and the need for chronic immunosuppressive therapy.

Conclusion: Lymphoplasmacytic sclerosing pancreatitis is a rare form of autoimmune pancreatitis that can only be accurately diagnosed with histopathology. However, the clinical and endosonographic features (including the information obtained with EUS-guided FNA) can provide important clues to consider this disease in the differential diagnosis of patients with chronic pancreatic disorders.

CARBONATED SODA LAVAGE AS A TREATMENT FOR LARGE PHYTOBEZOAR: THE FIRST U.S. REPORT

Bezoars are collections of ingested foreign matter that accrue and combine to form a mass in the gastrointestinal tract, usually the stomach. The most common type of bezoar is phytobezoar, which is composed of vegetable matter. A number of medical and endoscopic techniques have been attempted in the treatment of bezoars but they often require multiple sessions, and invariably have some risks. We discuss a unique technique for treatment of a large gastric phytobezoar.

Two patients with past medical histories significant for diabetes and abdominal surgeries were found to have large gastric phytobezoars after EGD to evaluate upper tract symptoms. Due to the very large sizes of the bezoars, endoscopic therapy would have been difficult, time consuming, require the use of specialized equipment, and carry potential risk.

In the first case, an 18 F nasogastric tube was inserted, and the patient was admitted to the hospital for observation. Over a 12 hour period 3 liters of diet soda was lavaged through the nasogastric tube. Repeat EGD the next day showed complete resolution of the bezoar. Follow up EGD 2 months later did not demonstrate recurrence of the bezoar. The second patient underwent lavage with 3 liters of diet soda through a nasogastric tube over 6 hours in an outpatient setting. Repeat EGD the following day showed resolution of the bezoar.

There have been 2 previously reported cases of Coca-Cola lavage (the first one from Europe, and another one from Japan). We present the first cases of carbonated beverage treatment for phytobezoars in the United States. We suggest that lavage with high volume of any acidic carbonated beverage over 6 to 12 hours could be used to successfully treat phytobezoars. Carbonated beverage lavage therapy through a nasogastric tube may be used in an outpatient or ambulatory surgery setting as a safe, minimally invasive, cheap, and effective therapy for large gastric phytobezoars.

A UNIQUE ETIOLOGY OF RECURRENT ACUTE PANCREATITIS
Kanal Jajoo, M.D., Priscilla S. Chang, M.D., Robert D. Odze, M.D., Koennuad Mortele, M.D., Robert Osteen, M.D., Peter A. Banks, M.D.*. Brigham and Women's Hospital, Boston, Massachusetts.

Recurrent acute pancreatitis of uncertain etiology poses a complex diagnostic challenge. If a cystic lesion is found, it becomes difficult to clinically distinguish among pseudocyst, benign cystic neoplasm and malignant cystic neoplasm. Several algorithms have been set forth, however the diagnosis is not often obtained without surgical resection.

We present the case of a 54-year-old woman who first had an episode of acute pancreatitis four years ago for which she was hospitalized for 10 days. CT scan at that time revealed active inflammation at the head of the pancreas in addition to a thick walled cyst in the uncinate process that was interpreted as a pseudocyst. She presented to our institution during a bout of abdominal pain three years after the initial episode. CT scan demonstrated slight enlargement of the cystic lesion. Serum tumor markers including CEA and CA19–9 were within normal limits. A percutaneous CT guided aspiration of the cyst was performed and fluid chemistries revealed: lipase 102, 500 U/L; amylase 31,840 U/L; CEA 260 ng/mL. Cytology demonstrated atypical epithelial cells of unknown significance. Given the concern for a pancreatic neoplasm, the patient underwent a Whipple procedure. The surgical specimen contained a 2.5 cm mucinous cystadenoma surrounded by a 3.2 cm pancreatic endocrine tumor. Immunohistochemistry staining confirmed an endocrine tumor.
This represents a unique case of a non-functioning pancreatic endocrine tumor encasing a mucinous cystadenoma and presenting as recurrent acute pancreatitis.

**662**

**TREATMENT OF REFRACTORY ORAL ULCERS IN A PATIENT WITH CROHN’S DISEASE USING INFlixIMAB**

Chris N. Conteas, M.D.*. Kaiser Permanente Medical Center, Los Angeles, California.

A 44-year old male presented to a head and neck surgeon for evaluation and treatment of ulcerative stomatitis. The patient complained of dry, painful and recurrent ulceration of the hard and soft palate, buccal mucosa and pharynx. Over one year the patient was treated with antibiotics, oral and intra-lesional corticosteroids, surgical debridement and topical anesthetics without resolution.

In addition to ulcerative stomatitis, the patient’s complaints now included a 45-pound weight loss, weakness, pain and inability to eat. The patient also reported a long history of lower gastrointestinal (GI) symptoms including diarrhea, constipation, gaseousness, and anorectal bleeding. He was referred to gastroenterologist. Physical exam of the patient was significant for rectal scarring. Laboratory values were significant for an elevated erythrocytedimentation rate and white blood cell count, and a decreased hemoglobin and hematocrit.

Endoscopy of the upper GI tract was significant for several small ulcers and two large ulcers (1.5 x 1.5 cm and 2.0 x 2.0 cm) on the hard and soft palate. The large ulcers were very deep and invaded the underlying muscular tissue. Biopsies of the ulcers revealed anacanthosis and chronic inflammation. A small bowel series was consistent with Crohn’s disease. Colonoscopy showed anorectal ulceration, scarring, and inflammation with scattered areas of colitis. Significant involvement of the right proximal ascending colon, cecum and ileocecal valve was noted. Colon biopsies showed chronic inflammation, reactive lymphoid hyperplasia and crypt distortion.

A diagnosis of Crohn’s disease was made at this time. The patient initially received treatment with oral prednisone, azathioprine, and repeated courses of antibiotics. Although regression of colonic disease and the smaller oral lesions was noted, the larger oral lesions persisted. In August 2001, infliximab was started. Following an initial infusion of 5 mg/kg, 30–40% healing of the large ulcers occurred. Infliximab treatment was performed at 0, 2 and 6 weeks and every 8 weeks thereafter. After the second infusion, complete healing of all lesions was observed. All laboratory values returned to normal. After completion of the third dose, no recurrence was noted. The patient returned to work and regained previously lost weight. The intestinal lesions healed without recurrence.

This case supports the role of infliximab for treatment of oral manifestations of Crohn’s disease. Further investigation is warranted to establish a more standardized treatment regimen.

**663**

**THE CASE OF CARPETED POLYPS: MANTLE CELL LYMPHOMA – A CASE REPORT**

Chad Mehta, M.D., Cameron Kifafar, D.O., Neil J. Shernoff, M.D.*. Francisco C. Ramirez, M.D., F.A.C.G. Carl T Hayden VA Medical Center and CIGNA Health Care, Phoenix, Arizona.

Mantle cell lymphoma (MCL) is a rare, distinct mature B-cell non-Hodgkins lymphoma. We present a case of MCL characterized by multiple large polyps carpeting the colon on endoscopy.

**Case Report:** A 63-year-old white woman was referred for evaluation of intermittent epigastric pain unresponsive to H2RAs, intermittent constipation without relief with fiber and 25 lb weight loss. She had hypertension, hyperlipidemia and hypothyroidism. No FMH of malignancy. Her PE revealed splenomegaly, a non-tender mass in the mid-epigastric region and heme positive stools. Her WBC was 22,000 (66% lymphocytes) and hematocrit of 29.9%. EGD showed a 1.5 cm mass-like ulcer in the duodenal bulb. Colonoscopy revealed multiple polyps from rectum to transverse colon (Figure 1). Immunophenotype and immunostains from both the duodenal mass and colon polyps confirmed the diagnosis of MCL. Immunohistochemical stains were positive for CD20, CD5, cyclin D1 (Fig 2). CT revealed multiple abnormal soft tissue densities ranging from 2–7 cm in size scattered throughout the mesentry and the retroperitoneum. The patient completed 6 cycles of CHOP chemotherapy. She is now (2 years since diagnosis) in remission and doing well.

**Discussion:** MCL, also known as multiple lymphomatous polypsis (MLP), is an uncommon type of GI lymphoma involving mainly the colon and small
intestine, but gastric and duodenal involvements have been reported. It occurs more commonly in men, mean age of 55 to 64. Abdominal pain, diarrhea, hematochezia, and palpable mass are common presenting manifestations. Systemic chemotherapy is the treatment of choice but MCL is presently considered incurable with a median survival of 3 to 5 years.[figure1][figure2]

she continued to do well with very mild right lower quadrant pain to deep palpation.

ENDOSCOPIC ULTRASOUND FINDINGS OF THE HELLP SYNDROME
Aldo A. Garza, M.D.*, Eduardo Giasi, M.D. University Hospital/School of Medicine. Universidad Autonoma de Nuevo Leon, Monterrey, Nuevo Leon, Mexico.

The HELLP syndrome is an uncommon pregnancy-related illness that can pose a clinical challenge due to its similarities with obstructive biliary disorders, particularly with gallstone disease of pregnancy. We present the case and endoscopic ultrasound (EUS) findings of a pregnant patient in whom a final diagnosis of HELLP syndrome was made.

Clinical Vignette: A 32-year-old Mexican woman on her 22nd week of pregnancy was hospitalized after one week of persisting severe epigastric pain and nausea. On admission, the patient was hypertensive and had a gravid but otherwise unremarkable abdominal exam. Chronic vitiligo was noted. Her initial bloodwork and abdominal ultrasound (US) were unremarkable. However, within the next 48 hours her liver function tests increased (AST 137, ALT 97, Tot Bb 2.1), and a repeat US described a thickened gallbladder wall (5 mm). Her Ob/Gyn physicians then requested a GI evaluation to rule out biliary tract stone disease. EUS with minimal sedation was performed. At the time of the procedure, patient had developed anemia (Hb 10.2 g/dl) and marked thrombocytopenia (17,000/mm³). An LDH was also elevated (477 IU/L). EUS demonstrated a thickened gallbladder wall (7.7 mm) with a large amount of sludge and pericholecystic fluid, free intraabdominal fluid and a small right pleural effusion. The liver appeared moderately hypechoic suggesting an infiltrative or inflammatory process. Benign-appearing portal lymph nodes were observed. The CBD was normal. Marked edema of the duodenal wall was observed. Based on the clinical features and EUS findings, a diagnosis of HELLP syndrome was suggested. The platelet count continued to decrease (9,000/mm³). The patient ultimately developed fetal death, requiring a therapeutic abortion. Within 72 hours, her symptoms resolved completely, and her platelet count increased to 91,100/mm³. The patient recovered uneventfully and was discharged home in good condition.

CONCLUSION: The HELLP syndrome is an unusual acute liver disease of pregnancy that can be difficult to diagnose during the initial evaluation. Although the liver is usually the primary target, the biliary tree can also be affected, sometimes mimicking acute cholecystitis as in this case. The diagnosis of HELLP syndrome is rarely based on imaging studies and is usually made with clinical and biochemical data, but EUS as a safe and accurate test can provide important information, especially when biliary tract disease needs to be ruled out.
levels and Pi typing, iron, ferritin and total iron binding capacity studies) and abdominal ultrasound with dopplers was normal. A liver biopsy demonstrated moderate cholestatic injury with microabscesses although no there was no evidence of viral infection histologically or on immunoeroxidase staining. Her clinical course rapidly defervesced after starting anti-biotics and discontinuing penicillamine. Two months later, her liver tests have returned to normal. It was strongly suspected that this patient developed a systemic reaction to penicillamine resulting in pulmonary infiltrates and severe cholestasis that resolved with penicillamine discontinuation. The development of pneumococcal pneumonia was probably secondary to her severely immune-compromised state. Although the patient was not rechallenged with penicillamine, the temporal relationship between drug initiation and adverse events and its resolution after drug discontinuation are very suggestive of an adverse reaction to penicillamine. Clinicians need to be cognizant that cholestasis is a rare but important side effect of penicillamine.

667 MULTIFACTORIAL ACUTE PANCREATITIS IN A CACHECTIC AIDS PATIENT

Kanai Grover, M.D., Srinivas Cheruvu, M.D., Patricia Kloser, M.D., Sita Chokhavatia, M.D., F.A.C.G.*. UMDNJ-New Jersey Medical School, Newark, New Jersey.

Purpose: A 38 year old African American alcoholic male with AIDS (CD4 count = 11), Hepatitis B, and polysubstance abuse was evaluated for sudden onset of severe back pain. He reported a productive cough with yellow sputum as well as 1 week history of brown, non-bloody, watery, loose stools. The patient denied any associated nausea, vomiting, or abdominal pain. He admitted to decreased appetite with a reported weight loss of 15 pounds over the last 3 months. Physical exam was significant for a cachectic male with a fever of 101 F. Exanetaha of injection drug abuse was present diffusely on the skin. Fine rales were present in the lung bases with a benign abdominal exam. Initial labs had cocaine positive in the urine. The general chemistry, liver function tests, and lipase were normal, while the amylase was 208 mcg/dL (ref = 28–100 mcg/dL). Piperclillicine/tazobactam, florconazole, azithromycin, and trimethoprim/sulfamethoxazole were initiated for a presumptive pneumonia. The patient had diarrhea until approximately 10 days into his hospital course when he developed acute epigastric pain, nausea, and vomiting. Patient was afebrile and with clear lung fields. Laboratory data showed a markedly elevated amylase, lipase, ALT and AST consistent with acute pancreatitis. Ultrasound of the abdomen was normal with no abnormalities of the pancreas. The patient was kept NPO for 2 days, trimethoprim/sulfamethoxazole was discontinued, and the nausea, vomiting, and abdominal pain resolved. Amylase and lipase continued to rise despite a lack of symptoms. The patient was started on a clear liquid diet and advanced as tolerated to a regular diet. Repeat ultrasound remained normal. Down trending of amylase and lipase was noted 2 days post feeding. He felt well, left the hospital, and was lost to follow-up.

The etiology of acute pancreatitis may be difficult to ascertain in individuals with polysubstance abuse and AIDS on multiple medications. Since many of these patients are malnourished, early enteral nutrition should be initiated with afebrile, on diet and bulk forming agents rather than surgery, and repeated surveillance colonoscopies.

669 HEPATHYDROTHORAX WITHOUT OVERT ASCITES

Kanai Grover, M.D., Srinivas Cheruvu, M.D., Jessica Zitter, M.D., Linas Riabda, M.D., Sita Chokhavatia, M.D., F.A.C.G.*. UMDNJ-New Jersey Medical School, Newark, New Jersey.

Purpose: A 38 year old African American male with AIDS and cirrhosis due to chronic Hepatitis B and C was evaluated for cough, shortness of breath, and decreased oral intake for 1 week. The patient had no fevers, chills, sick contacts, chest pain, abdominal pain or distention. The patient's initial physical exam was remarkable only for decreased right chest breath sounds. The patient had laboratory values that showed mild anemia, normal renal function, and pancytopenia. He had an initial chest x-ray which was remarkable for an isolated right pleural effusion. The patient became progressively short of breath necessitating intubation. The following chest films showed worsening of the effusion. Two-liter thoracentesis of right chest was done revealing a golden colored, transudative effusion. In 48 hours, the right pleural effusion recurs along with a new left sided effusion. Ultrasound of the abdomen showed a small amount of ascites not present on prior exam from six months earlier. A repeat thoracentesis for symptomatic relief removed two liters of transudative fluid. Several therapeutic options were considered in the management of this case of hepatohydrothorax including TIPS. However, worsening liver and renal function complicated the patient’s hospital course. At that time, the family decided to pursue a non-aggressive, supportive care approach. The patient subsequently expired.

While hepatohydrothorax occurs with a prevalence of 10% in decompensated end stage liver disease, it is relatively uncommon for these patients to have clinically undetectable ascites.

668 A RARE CASE OF MUCOSAL PROLAPSE SYNDROME: CLINICAL CASE AND REVIEW OF THE LITERATURE


To describe a case of mucosal prolapse syndrome with a review of the literature. A 60-year-old female with a past medical history significant for hypertension, hyperlipidemida, and hyperthyroidism presented for a screening colonoscopy. She denied having any hematochezia, melena or weight loss. The colonoscopy revealed multiple sigmoid diverticuli along with a single, hyperemic, 1 cm polypoid mass on a stalk. The lesion was removed via snare cautery. Pathologic evaluation revealed colonic mucosa with changes consistent with mucosal prolapse syndrome (MPS), no adenoma was seen. Mucosal prolapse syndrome is a rare entity that was first described in 1983 by Du Boulay et al. This syndrome encompasses a variety of conditions including solitary rectal ulcers, inflammatory cloacogenic polyps, inflammatory “cap” polyps, gastric antral vascular ectasia, and prolapsing mucosal polyps of the colon. All these conditions share similar histologic characteristics including crypt abnormalities (diamond shaped crypts), fibromuscular obliteration of the lamina propria, thickening of the muscularis mucosa, and the presence of mixed inflammatory cells. Usually the patients present with occult or gross GI bleeding, or with recurring abdominal pain. On occasion there have been cases where the patients remain asymptomatic as in our patient. Unlike our patient, majority of the reported cases have been in men. MPS is a benign condition without any potential for malignant transformation. They are usually present in the sigmoid colon in conjunction with diverticular disease. The theory in the pathogenesis of this syndrome arises from mucosal redundancy resulting from stretching and shearing forces on the mucosa and submucosa leading to small vessel hemorrhages and episodic ischemia and congestion. Endoscopically, the polyps usually appear as well circumscribed, hyperemic masses that contrasts sharply with normal appearing mucosa. When the polyps are suspicious for malignancy, endoscopic ultrasound may be used to delineate prolapsing mucosal polyps from neoplastic lesions. This distinction is important due to its impact in the management and follow-up. For mucosal prolapse polyps the management is aimed at alleviating the underlying cause (constipation, straining) with a high fiber diet and bulk forming agents rather than surgery, and repeated surveillance colonoscopies.

670 ACUTE PANCREATITIS IN ASSOCIATION WITH SCHISTOSOMA MANSONI: A MOST UNUSUAL FINDING

Richard Prudencio, M.D., Manish Mehta, M.D., James S. Evans, M.D., Sulem Desai, M.D., Manish Tandon, M.D., Julio C. Ayala, M.D.*. Cambridge Health Alliance and Mount Auburn Hospital, Cambridge, Massachusetts.
Schistosomiasis is second only to malaria among diseases caused by human parasites, infecting 200 million people worldwide. Three species are known to infect humans. Only S. mansoni is found in the new world. It is rarely found in the US except in travelers and immigrants from endemic areas. Schistosomiasis has not been previously reported in association with pancreaticitis in humans.

A 38 year old previously healthy male, a recent immigrant from Brazil, presented with 3 days of constant epigastric pain. The patient denied any diarrhea or bloody stools. He was not on any medications but did report occasional alcohol use. His physical examination was remarkable for a fever of 102 F, epigastric tenderness, a normal liver span and a nonpalpable spleen.

Laboratory data on admission revealed a WBC of 16 TH/UL with 28 bands and no eosinophils; Lipase of 1555 U/L, Amylase of 347 U/L, AST 75 IU/L, ALT 22 IU/L, total bilirubin 1.1 and PT of 13 sec. Alcohol level was normal. Abdominal CT scan on admission showed focal inflammatory changes centered around the pancreas with indistinct margins. Abdominal ultrasound showed a normal gallbladder without stones or sludge and no biliary dilatation was noted.

On hospital day 6 the patient deteriorated clinically and was transferred to the ICU. A subsequent CT scan of the Abdomen showed increasing inflammation of the pancreas with diminished visualization of the tail. He required mechanical ventilation and was started on intravenous Vancomycin and Gentamycin.

One month into his hospitalization he underwent surgical debridement of necrotic pancreatic tissue involving the tail of the pancreas. Pathologic evaluation revealed necrotic debris, scattered remnants of vessels and the presence of Schistosoma mansoni eggs. Despite aggressive efforts, the patient eventually died due to complications of renal failure.

This case illustrates a potential causative association between schistosomiasis and pancreatitis. Local inflammation induced by schistosoma eggs has been well studied. Schistosoma typically invades the colon and migrates via the portal tract to the left lobe of the liver. There are isolated case reports of Schistosomiasis in muscle, adrenal glands and the CNS. Based on literature review, Schistosoma mansoni eggs in human pancreas is a new finding. The prevalence of shistosomiasis indicates that this may be more common than described.

**671**

**METASTATIC PROSTATE CANCER, AN UNUSUAL CAUSE OF LOWER GASTROINTESTINAL BLEEDING**

James S. Evans, M.D., Richard Prudencio, M.D., Manish Mehta, M.D., Saleem Desai, M.D., Manish Tandon, M.D., Julio C. Ayala, M.D.*. Mount Auburn Hospital and Cambridge Health Alliance, Harvard Medical School, Cambridge, Massachusetts.

Disseminated prostate cancer demonstrates a typical pattern of spread involving lymph nodes and bone in over 80% of cases; the latter most commonly involves the vertebral bodies, pelvic bones, sternum, ribs, and femurs. Other less common sites of metastasis include the spinal cord, leptomeninges, liver, parenchymal lung and brain. Although extensive abdominal or thoracic lymph nodes has been described, based on our Medline review of the literature, involvement of the small bowel causing lower-gastrointestinal bleeding has not been reported to date. We report a case of a 63 year-old male with prostatic cancer metastatizing to the small bowel and causing lower gastrointestinal bleeding.

Our patient had a history of prostate cancer treated with radical prostatectomy in 1991 and subsequently undergoing radiation therapy in 1992. He presented in April 2004 with melena and a palpable abdominal mass. He remained hemodynamically stable but was noted to have a large, firm, mobile, slightly tender mass located in the left upper quadrant. The rectal examination showed melanic stool and the initial hematocrit was 22%. His PSA had also risen from 3.0 in October 2003 to 25. CT scan of the abdomen, compared to a prior normal study performed in July 2001, revealed the presence of matted portocaval lymph nodes measuring up to 7 cm and large matted small bowel mesenteric lymph nodes measuring up to 14 cm. The liver was normal and no other mass lesions were seen. Upper and lower endoscopies did not show a bleeding source. However, barium study with small bowel follow-through showed a mid-ileum filling defect.

CT-guided percutaneous biopsy of the mesenteric mass showed poorly differentiated carcinoma consistent with prostatic origin, including immunostains which were positive for PSA and negative for CK7, CK20, and chromogranin. Exploratory laparotomy found a mass extending from the root of the small bowel mesentery to the transverse mesocolon and lesser sac. There was a small amount of blood in the lumen of one of the loops. There was involvement of the superior mesenteric artery and porta hepatis extending up the hepatic artery. Small bowel bypass was not an option because of transverse colon and jejunal involvement.

This case is therefore an unusual presentation of prostatic cancer presenting with small bowel metastatic disease which has not been previously described.

**672**

**SPLENIC LYMPHOMA WITH VILLOUS LYMPHOCYTES AND CELIAC DISEASE: COINCIDENCE OR CONSEQUENCE?**

Alastair D. Smith, M.B., Ch.B.*, Richard J. Grace, M.B., Ch.B. Eastbourne District General Hospital, Eastbourne, East Sussex, United Kingdom.

Splenic lymphoma with villous lymphocytes (SLVL) is an uncommon B-cell lymphoproliferative disorder. Its hallmarks are splenomegaly, and clonal expansion of B cells with villous projections in the peripheral blood. Celiac disease (CD) is characterized by gluten intolerance, is associated with DR3 and/or DQ2 haplotypes, and may be complicated by enteropathy associated T-cell lymphoma. Reports of B cell lymphoma in association with CD are rare, and do not, to our knowledge, include any patient with SLVL. A 60 year-old white man was evaluated for slightly low hemoglobin (Hb), elevated MCV and splenomegaly. Other than anorexia and 14-pound weight loss, he had no symptoms. His appearance was consistent with recent weight loss. There was no lymphadenopathy, but the spleen could be palpated 2cm beyond the umbilicus. Hb was 11.8 g % (normal 11.5 -16), and white cell count 10.6 × 10⁹/L (normal 4–11), lymphocytes predominating. Serum levels of B12 (43ng/L: normal 145–914) and ferritin (10.5 ng/mL: normal 24–307) were reduced, but the folate concentration was normal. Peripheral blood cell marker studies were consistent with SLVL. His bone marrow was infiltrated with lymphoma, but revealed adequate hematopoietic reserve. Computed tomography demonstrated massive splenomegaly, widespread pancreatic lymphadenopathy, and possible mediastinal lymphadenopathy also. The patient underwent splenectomy, and made an uncomplicated recovery. However, mild iron deficiency anemia persisted (Hb: 11.8 g %, and ferritin 18.9 ng/mL), so he underwent both upper and lower GI tract endoscopic appraisal. Immediately before the procedures, he admitted to some non-specific abdominal bloating, and loose stools. Mucosal folds in the second duodenal part appeared normal, but biopsies thereof demonstrated features wholly consistent with CD. No lymphoma was evident. Other than diverticula, his large bowel was normal. Dietetic assessment was recommended, but in follow-up it became clear that he continued to consume modest amounts of gluten-containing foods. Despite this, his symptoms did not worsen; both weight and Hb remained stable.

This case is notable for the fact that B cell lymphoma was diagnosed prior to CD, and did not appear to involve the luminal GI tract. B cell lymphoma has been reported complicating CD, where it carries a poor outcome. It is difficult be certain whether these processes were a consequence of one another.

**673**

**AN ACTH SECRETING PANCREATIC TUMOR PRESENTING WITH CUSHING’S SYNDROME DIAGNOSED BY ENDOSCOPIC ULTRASOUND GUIDED FINE NEEDLE ASPIRATION**

Dia T. Simmons, M.D., Naresh T. Gunaratnam, M.D.*, Thomas M. Shehah, M.D., Michelle A. Anderson, M.D. Mayo Clinic, Rochester, Minnesota; St Joseph Mercy Hosital and University of Michigan, Ann Arbor, Michigan.
There is a growing body of evidence demonstrating the efficacy of endoscopic ultrasound in the diagnosis of pancreatic neuroendocrine tumors. We report a case of a 49 year old man presenting with Cushing’s syndrome due to ectopic adrenocorticotropic hormone production. Endoscopic ultrasound was used to localize and diagnose an adrenocorticotropic hormone secreting pancreatic neuroendocrine tumor. This rare tumor is implicated in less than one percent of Cushing’s syndrome cases. This is the first report of a primary pancreatic adrenocorticotropic hormone secreting tumor diagnosed by endoscopic ultrasound guided fine needle aspiration.

674

POST TRANSPLANT INFLAMMATORY BOWEL DISEASE

Introduction: Inflammatory Bowel Disease (IBD), can develop after a solid organ transplantation in a patient with Primary Sclerosing Cholangitis (PSC), despite immunosuppression which is usually the treatment for this disorder. It is an uncommon phenomenon as immunosuppression is the mainstay of treatment for both conditions.

Case: A 16 year old male with a history of Primary Sclerosing Cholangitis (PSC) who was status post liver transplantation in 1999, and had a post-operative course complicated by biliary leakage, presented in September 2003 for a chief complaint of abdominal pain, bloody diarrhea, bloating and flatulence. He also experienced mild weight loss, subjective fevers and painful oral ulcers. Physical exam showed oral ulcers in mouth, mild abdominal tenderness, and bloody stools. Flexible sigmoidoscopy revealed erythema and biopsy showed chronic colitis. Colonoscopy revealed moderate active colitis. Histological examination of the biopsy specimen was suspicious for Crohn’s disease as there were no amoebic organisms and one granuloma.

Discussion: 70% of PSC patients present in the setting of IBD. The usual scenario is that a patient with IBD develops PSC first. Normally IBD improves post transplant secondarily to the immunosuppression. However, 30–50% patients can have an exacerbation and the best treatment is ultimately transplantation. In both conditions, immunosuppression is the mainstay of therapy. The fact that one can develop IBD despite treatment with immunotherapy is a unique and uncommon process. It may occur in any solid organ transplant, and it usually occurs up to one year post transplant. The course is generally considered more aggressive than in pre-transplant patients. A patient need not have PSC prior to transplantation for this to occur.

675

UNUSUAL CASE OF DIEULAFOY’S LESION IN JEJUNUM DIAGNOSED BY CAPSULE ENDOSCOPY
Robert M. Holbrook, M.D., Verapan Vongthavaravat, M.D.*. University of Oklahoma, Oklahoma City, Oklahoma.

A Dieulafoy’s lesion is a dilated aberrant submucosal vessel, which erodes the overlying epithelium in absence of primary ulcer. The lesion is a common unrecognized cause of obscure, massive GI hemorrhage. These lesions are commonly found in the stomach and are rarely reported in the small intestine. The diagnosis can be missed by conventional methods including upper and lower endoscopy, tagged RBC scan, angiogram, and laparotomy. The use of capsule endoscopy (CE) may have some role in the diagnosis of this lesion. We report an unusual case of jejunal Dieulafoy’s lesion diagnosed by CE.

Case: A 23 year old male referred from an outlying hospital for massive hematochezia and required multiple blood transfusions. At that facility, the patient had an upper and lower endoscopy, tagged RBC scan, and intraoperative push enteroscopy with exploratory laparotomy, all of which were negative. During admission at our hospital, the patient continued to have GI bleeding. Repeated upper and lower endoscopy, push enteroscope, small bowel follow through, tagged RBC scan, and Meckel’s scan at our hospital also yielded negative results. We elected to perform a CE before intraoperative push enteroscopy in hopes of confirming a source of bleeding prior to surgery. The CE revealed fresh blood in the mid-jejunum with an associated blood clot. The patient underwent exploratory laparotomy with intraoperative push enteroscopy. A pedunculated mass was identified in the mid-jejunum, which correlated with the CE findings. Resection of this bowel segment was successful and sent for pathology. Histology was consistent with a Dieulafoy’s lesion. The patient did well post-operatively and had no further bleeding at follow up.

Conclusion: Capsule endoscopy provides a non-invasive means of detecting obscure GI hemorrhage from Dieulafoy’s lesions that have had negative conventional workup.

676

ENDOSCOPIC BIOPSY NEGATIVE ESOPHAGEAL METASTASIS – DIAGNOSIS BY ENDOSCOPIC ULTRASOUND
Promila Banerjee, M.D., Yamin Maddala, M.D., Agrawal Rad, M.D.*, Dhawan Manish, M.D. Allegheny General Hospital, Drexel University, Pittsburgh, Pennsylvania.

Metastatic cancer to esophagus is a rare occurrence and difficult diagnosis because the site of spread is often submucosal, sparing the mucosa and thus delaying the diagnosis.

Case: 76 y.o. African American woman with h/o hypertension, diabetes, mastectomy for left breast cancer ten years ago, presented with progressive dysphagia to solids associated with weight loss and new onset back pain. She underwent 2 EGDs with dilation of 5cm long mid-esophageal stricture. Two consecutive endoscopic biopsies were negative except for candida esophagitis. Chest CT: anterior esophageal mass with a 1.5 cm mediastinal lymph node. EUS demonstrated a hypoechoic area of hemicircumferential thickening involving the muscularis propria with an intact submucosa and mucosa underneath. Multiple mediastinal LN with malignant features were seen. FNA of the esophageal lesion confirmed well differentiated metastatic adenocarcinoma. Mammogram was negative a year ago. Repeat Mammogram revealed a nodular density in the medial lower aspect of right breast. US guided core biopsy confirmed breast cancer. Bone scan showed widely disseminated skeletal metastases. Currently she is undergoing chemoradation therapy.

Conclusions: Borst detected only one clinically evident esophageal metastasis in 2246 women with ductal breast carcinoma over an 18 year follow up (0.04%). Holyoke reported only 10 such cases with dysphagia secondary to esophageal metastasis in a series of 2502 patients with advanced breast cancer. Our case is not only unique in its presentation with dysphagia as its only symptom during recurrence 10 years since original diagnosis but also due to two consecutively negative endoscopic biopsies. Four out of 18 reports so far have been biopsy negative on endoscopy and were diagnosed by EUS or at autopsy. Unlike previous cases, the unique EUS feature in our case is esophageal metastasis involving the muscularis propria, sparing the submucosa and mucosa.

In biopsy negative cases of malignant esophageal strictures metastases from distant primary tumors should be considered. EUS should be the procedure of choice in establishing the diagnosis as EGD will often show normal overlying mucosa.

677

ENDOSCOPIC RESECTION OF AN AMPULLARY CARCINOID PRESENTING WITH UGI BLEEDING; A CASE REPORT AND REVIEW OF THE LITERATURE
Nooman Gilani, M.D.*, Shahina Hakim, M.D. Carl T Hayden VAMC, Phoenix, Arizona.

Background: Ampullary carcinoid is a rare tumor that can present with GI bleeding, obstructive jaundice or pancreatitis. Some of these tumors are associated with Von Recklinghausen disease. The usual surgical options are
a biliary-enteric anastomosis, Whipple and rarely local excision. In one study
mean survival after pancreaticoduodenectomy vs local excision was similar
(Cancer-feb-1993; 71(3) 686–90).
We report a case of a non metastatic ampullary carcinoid causing GI bleeding
which was managed by endoscopic ampullectomy.
Case: A 71 years old man was referred for an endoscopy. Three weeks
prior to this he experienced abd. pain, melena and drop in HCT. A recent
colonoscopy was normal.
An EGD with a forward viewing scope was unremarkable except a prominent
ampullary area. An ERCP scope showed a 1.5 cm ampullary mass with a
small healed ulcer.Biopsies confirmed this to be a carcinoid tumor. Pts LFTs
were normal. An EUS showed tumor free PD/CBD. CT was normal. After
meeting with the surgical team pt declined surgical options. At this point
pt was presented with the options of either being followed clinically or
undergoing an endoscopic ampullectomy with modest risk of complications
and the possibility of an incomplete resection. He opted for the latter.
Pt was kept NPO overnight, surgical backup was arranged. A 5 F, 3 cm
pancreatic stent was placed prophylactically. After saline lift a snare assisted
cautery using mixed current (150, 30 watts with ERBE) instead of a pure
cut was used to decrease the risk of bleeding and submucosal ulceration of the
tumor. The procedure was uneventful except mild oozing which promptly
stopped with local infiltration of 4 cc 1/10,000 epinephrine. Pt remained
stable overnight except asymptomatic transient elevation of transaminases.
PD stent was removed two weeks later. One piece of the tumor showed
extension into the cut margins and muscularis propria. Tumor was positive for
chromogranin, synaptophysin and somatostatin and negative for gastrin,
insulin, glucagon and human pancreatic peptide.
A year after ampullectomy pt has no further GI bleeding. A subsequent CT
scan, EUS and three EGDs with multiple biopsies of the area are negative
for chromogranin, synaptophysin and somatostatin and negative for gastrin,
insulin, glucagon and human pancreatic peptide.
Conclusions: In carefully selected patients with non-metastatic ampullary
carcinoids without pancreatico-biliary invasion, endoscopic ampullectomy
is a viable option especially if pt is not a good surgical candidate. Questions
of a complete excision and longterm prognosis still need to be answered.

679 OCCUPATIONAL EXPOSURE TO WHEAT PRODUCTS TRIGGERS CELIAC DISEASE EXACERBATION
Micha Rojany, M.D., Joseph Leung, M.D.*. UC Davis Medical Center;
Sacramento, California.
Strict adherence to a gluten free diet is the recommended treatment for celiac
disease. We report an unusual case where an occupational exposure to wheat
flour reactivated gluten sensitive enteropathy. In 1999, a 56 year-old Caucasian male presented with iron deficiency anemia,
fatigue, and weight loss. The patient reported a change in bowel habits from constipation to occasional loose stools 1–2 times a week, associated
with fat intolerance. He was referred to a gastroenterologist for evaluation of
anemia and possible malabsorption. His medical history is significant for
Type II Diabetes Mellitus and a family history of stomach cancer. In
addition, the patient takes Naprosyn for low back pain and arthralgias. Physical
examination was significant for a weight of 152 pounds (ideal body
weight of 172 lbs.) CBC revealed a Hematocrit of 27.6 with an MCV
of 72.
An initial colonoscopy was unremarkable. An EGD revealed nonerosive
gastritis and a scalloped appearance of the duodenum. Duodenal biopsies
confirmed celiac disease with moderate villous blunting and chronic inflam-
ination. Anti-gliadin antibody IgA was positive. The patient was started on
a gluten-free diet and his diarrhea and anemia improved. He managed to
regain considerable weight and had 1–2 formed bowel movements a day.
Repeat endoscopy five months later showed mild villous blunting without
significant inflammation. A repeat Hematocrit was 41.5.
In 2001, the patient began working at a bakery performing maintenance.
Since starting work, he developed episodes of diarrhea once a week with ex-
plosive loose stools, fatigue, and malaise. His symptoms typically worsened
towards the end of the workweek despite adherence to a strict gluten-free
diet. He also developed vesicular-bullous lesions on his shoulders and but-
tocks. Upper endoscopy and duodenal biopsies were repeated and revealed
moderate chronic inflammation and mild villous blunting. It was believed
that the patient’s occupational exposure to wheat flour (gluten) contributed
to his worsening symptoms.
The patient was advised to wear an N-95 particulate respiratory mask to
decrease exposure to wheat while at work. He was also started on dapsone
for Dermatitis Herpetiformis. After wearing the mask at work, the patient
noted improvement of his diarrhea and skin lesions. A repeat EGD and biopsy
showed considerable improvement in the villous atrophy and a decrease in
the number of intraepithelial lymphocytes.

680 AN APPENDICEAL ADENOMA
Samuel A. Giday, M.D., Joseph Nidiry, M.D.*. Howard University
Hospital, Washington, District of Columbia.
A 64 years old African American Male presented after being referred for
colorectal screening. Colonoscopy showed the presence of a pedunculated
appendiceal and a transverse colon polyp. Biopsy of the appendiceal polyp
was performed in addition to polypectomy of the transverse colon polyp.
Histological evaluation showed a Tubular adenoma of the appendix. Repeat
colonoscopy and snare polypectomy was performed without any complica-
tion.
The presence of adenomatous polyp of the appendix is an uncommon entity.
The reported incidence of appendiceal neoplasms in the available literature
is 0.1%. Adenomatous polyps behave in the same manner when it comes to
progression to adenocarcinoma as their counterparts in different parts of
the colon (1, 2). The majority of adenocarcinomas cause symptoms and
signs of appendicitis (3). Other presentations of appendiceal polyps include
intussusceptions and spontaneous inversion (4).
Treatment of an appendiceal polyp can be a challenge since an inverted
diverticulae can have a similar picture and cause peritonitis if polypectomy
is performed. Colonoscopy with polypectomy is an option for the treatment of
appendiceal polyps. If the lesion is inaccessible, laparoscopic appendectomy
can be performed.

681 EPIDEMIC KLEBSIELLA LIVER ABSCESSES IN EMIGRANT ASIANS: RESPONSE TO CARBEPENEMS
Rayjeet Chatalamadugu, M.D., Kapil Dhawan, M.D., Conrad Fischer,
M.D., Scott Tenner, M.D., M.P.H.*. Downstate Medical Center, Brooklyn.
Hepatic abscesses usually arise from local peritoneal or systemic hematoge-
nous seeding of the liver. Mixed facultative and anaerobic species are the
most common pathogens. Recently, a new causal agent of primary hepatic
abscess, Klebsiella pneumoniae, has been described in patients from Taiwan.
We report four cases of monomicrobial Klebsiella pneumoniae admitted to
our institution over the past year, treated successfully with carbepenems.
The four patients were male, age 37 -62. Two of the patients were Korean,
one Chinese, and one Taiwanese. All four patients presented with abdominal
pain and/or sepsis. Computed tomography (CT) of the abdomen revealed a
solitary abscess, range 3–6 cm, in the right lobe of the liver in all four pa-
tients. The biliary tree, colon, spleen, and genitourinary tract were normal.
The diagnosis was made by percutaneous sampling of the abscess. All four
cultures grew Klebsiella pneumoniae resistant to ampicillin, and cefazolin.
Three of the four patients were treated with Imipenem and the other with
Ertapenem for four weeks duration. Clinical and radiological resolution was
demonstrated. No surgical or radiological placed drain was needed. All four
patients remain well. Monomicrobial Klebsiella liver abscess is rare. How-
ever, recent reports from Taiwan suggesting an increased incidence appear
justified. As this case demonstrates, Klebsiella abscess are increasing in fre-
quency in the United States. Carbepenems appear to be safe and effective
in the treatment of Klebsiella abscesses. Surgical drainage appears to be
avoided by early use of these antibiotics.
53 yo patient with history of iron deficiency anemia due to celiac disease presented with jaundice and abdominal pain radiating to the back. Upon examination patient was grossly jaundiced, had right upper quadrant tenderness but no palpable mass was felt. Laboratory values were total bilirubin was 11.2 mg/dl, direct bilirubin 7.8 mg/dl, ALT 143 mg/dl, AST 128 mg/dl, Alk. Phos 218 mg/dl, WBC 13.4K with no left shift. Abdominal CT and RUQ ultrasound revealed a subhepatic cystic mass and no gallstone or biliary dilation was noted. ERCP revealed complete obstruction of CBD by external compression 3cm proximal to the ampulla. A sphincterotomy was done and a guidewire was advanced beyond the distorted and obstructed CBD, during advancement the guidewire curled in the choledochal cyst in the opposite direction of the gallbladder. As there was no evidence of perforation diagnosis of type II choledochal cyst was made. A plastic stent positioned above the choledochal cyst. Placement of the stent relieved the external compression of the cyst. Drainage established and patient rapidly improved. Choledochal cyst excision and Roux-en-Y anastomosis was performed electively. There was no evidence of malignancy in the pathology specimen.

Discussion: A choledochal cyst is defined as an isolated or combined congenital dilation of the intrahepatic or extrahepatic biliary tree. Todani and colleagues proposed the five types of congenital cysts. Incidence of choledochal cysts is 1 in 13,000 to 15,000 in Western countries. Type II choledochal cyst, a diverticulum of common bile duct, is the rarest form. Classic presentation triad is obstructive jaundice, right upper quadrant abdominal pain and palpable abdominal mass. Celiac Disease is a genetically-determined chronic inflammatory intestinal disease induced by an environmental precipitant, gluten. Celiac Disease is very common effecting about one in 250 people. Celiac Disease is associated with many autoimmune diseases including IDDM, Autoimmune thyroiditis, ulcerative colitis, autoimmune hepatitis and malignancies especially lymphoma. Considering the rarity of choledochal cyst and frequency of Celiac Disease association is likely of a casual nature, however this is the first case report of type II choledochal cyst in a patient with celiac disease.

SUCCESSFUL RESOLUTION OF SUPERIOR MESENTERIC ARTERY SYNDROME WITH ANTIDEPRESSANTS AND TOTAL PARENTERAL NUTRITION (TPN). An abdominal ultrasonography assessed the angle between the aorta and the SMA to be 15°. Cachexia was found to be secondary to depression. Escitalopram and Bupropion resulted in marked improvement in mood within 7 days. He was too cachetic to be a good surgical patient. He received both TPN and oral diet. Over three weeks his albumin rose from 2.0 to 3.1 and his vomiting resolved. This case demonstrates the successful management of SMA Syndrome without surgery, using antidepressants and TPN.

Discussion: Patients with SMA Syndrome present with rapid weight loss along with epigastric pain, nausea, vomiting of bilious or partial digested food, early satiety and postprandial discomfort. Angiography, ultrasonography and CT to measure the aortomesenteric angle and distance can confirm the diagnosis of SMA syndrome. Normal values have been reported to be 25°–60° and 10–28 mm respectively. Treatment is initially conservative but a small percentage require surgical management. Duodenodejunosotomy is the most frequently used procedure with approximately 90% success rate.

CELIAC DISEASE CAN BE SEEN IN AFRICAN AMERICAN PATIENTS

In clinical practice celiac disease is seldom considered in patients of African-American descent. In this report, an African American patient diagnosed with celiac disease is presented and relevant literature is reviewed. 1. The patient: A middle age African American female was seen in consultation because of non-cardiac chest pain and anemia. The cardiac work up was considered normal. The patient had a history of a right hemicolectomy for a cancer of the colon and has recently undergone a colonoscopy and distal ileoscopy with negative findings. Associated symptoms included heartburn, abdominal bloating and flatulence. She was lactose intolerant. An upper GI endoscopy showed severe changes in the duodenum and proximal jejunum consistent with celiac sprue. Biopsies taken demonstrated changes seen in celiac disease and the serologic tests, antigliadin and antiendomysial antibodies, were markedly elevated. The patient was placed in a gluten free diet and her symptoms gradually improved. 2. Review of the literature. More accurate serologic tests have led to the recognition that celiac disease is quite frequent affecting 1 of every 120 to 300 persons in both Europe and North America. Celiac disease is mostly considered in individuals of European origin but also occurs in non-Caucasians. However, the diagnosis is infrequently entertained in African Americans despite recent literature that suggests that the estimated prevalence for African, Hispanic and Asian Americans is comparable to that seen in Caucasians. Celiac disease represents an immune-mediated disorder for which early accessible serologic and histo pathologic diagnosis and proper dietary treatment can prevent severe, sometimes life-threatening complications and improve the quality of life of a large number of persons. A high degree of awareness among health-care professionals and generous use of serologic celiac disease tests can help to identify many more patients. This report and supporting literature emphasizes the fact that celiac disease is not only higher in occurrence than previously thought in persons of European descent, but also in other ethnic groups. This includes African American patients and possibly their family members.

DIAGNOSIS OF MALIGNANT HEMANGIOENDOTHELIOMA OF THE SMALL INTESTINE WITH CAPSULE ENDOSCOPY

We present a case of a rare small bowel tumor, a malignant hemangioendothelioma (MH), diagnosed via capsule endoscopy in a patient with occult gastrointestinal bleeding.
J.M. is an 81 yo WF admitted to our facility after recurrent occult gastrointestinal bleeding resulting in a transfusion-requiring anemia, with an admission Hgb of less than 8 g/dl. The patient had undergone multiple upper and lower endoscopies, superior mesenteric angiography, and a bleeding scan all without localization of the source of the bleeding. Push enteroscopy was performed at our facility, also without yield. The patient then underwent capsule endoscopy, which noted active bleeding from multiple foci in the distal jejunum. Several non-bleeding erosions were also noted. The patient then underwent intraoperative endoscopy, which localized two lesions in the mid to distal jejunum. Upon surgical resection, these lesions were noted to be malignant hemangioendotheliomas. The patient recovered uneventfully from surgery, and imaging failed to detect any other foci of malignancy. Her bleeding has not recurred.

Malignant small bowel tumors are rare, accounting for 1–3% of GI malignancies. Malignant hemangioendothelioma is an uncommon tumor, accounting for 1–2% of soft tissue sarcomas, usually involving the skin, liver, spleen, lung, and deep soft tissues. Our review of the literature found only 12 cases of small intestine malignant hemangioendothelioma in the past 25 years. This represents the first reported case detected via the use of capsule endoscopy. Capsule endoscopy, combined with intraoperative endoscopy, helped localize the lesions for eventual surgical resection, diagnosis, and hopefully, curative treatment.

687

RECURRENT LOWER GASTROINTESTINAL (GI) BLEED IN AN ADOLESCENT WITH END-STAGE RENAL DISEASE (ESRD)
Rula Harb, M.D., Hillel Naon, M.D.*. Childrens Hospital LA, University of Southern California, Los Angeles, California.

GI bleeding is an uncommon occurrence in infants and children. Unlike adults, the incidence of upper and lower GI bleeding in children is comparable. Causes include bleeding from an ulcer, esophageal varices, Meckel’s diverticulum, vascular ectasia in the small or large bowel, and colitis. Occasionally, the cause is not identified. We present a case of an adolescent with ESRD and recurrent lower GI bleeding.

The patient is a 13 year-old male with nephrotic syndrome diagnosed at age 7 years. He developed ESRD and underwent bilateral nephrectomy and renal transplant. Due to transplant failure he is on peritoneal dialysis (PD). He presented to the emergency department with one-day history of painless hematochezia.

He had a similar episode 2 weeks prior to admission that resolved. On exam he was pale, awake and alert, well nourished and well developed. Vital signs were stable. His abdomen had multiple healed surgical scars and a PD catheter.

Lab data: Hemoglobin 6.4 g/dl, hematocrit 19.5%, and MCV 87 fl. Platelets, PT, PTT, liver panel, and metabolic panel were unremarkable except for a creatinine of 11.9 mg/dl. Stool culture was negative for salmonella, shigella, campylobacter, Escherichia coli O157 and acid-fast bacilli. Stool for ova and parasites, cryptosporidium, and yeast was negative. Upper endoscopy and colonoscopy revealed mild gastric erythema, and unremarkable duodenum and colon. No site of active bleeding was seen. Bleeding resolved and he was discharged.

For two months following the initial admission the patient had 5 episodes of rectal bleeding with drop in hemoglobin to 6 gm/dl, requiring multiple blood transfusions. Further workup included two nuclear radiology tagged RBC scans that were negative and a negative Meckel’s scan. Three separate arteriograms with cannulation of the celiac axis, the superior, and inferior mesenteric arteries were performed during active bleeding. They revealed hyperemia at the rectosigmoid colon with no extravasation of blood and no arteriogenous malformations. Repeat colonoscopy showed non-fresh blood in the colon, but no site of active bleeding was identified. Wireless Capsule Endoscopy did not disclose a site of bleeding in the small bowel. He was taken to the operating room for exploratory laparotomy and was found to have a fistula between the jejunum and the transplant renal artery stump in the retroperitoneum. The fistula was resected and the patient has not had recurrence of bleeding for 3 months following surgery.

688

TRACHEOESOPHAGEAL FISTULA SECONDARY TO METASTATIC MEDIASTINAL LYMPH NODE FROM PROSTATE CANCER

Tracheoesophageal (TE) fistula is most commonly associated with a primary thoracic malignancy such as esophageal cancer. It has also been associated with radiation esophagitis, and there are reports of TE fistula secondary to heterotopic gastric mucosa, invasive aspergillosis, infectious esophagitis, Wegener’s granulomatosis, and Hodgkin’s lymphoma. No reported cases of TE fistula secondary to metastatic prostate cancer could be found through PubMed search.

Case Report: An 85 y/o African American man presented with progressive cough and choking with swallowing liquids but not solids for 3 months. He had a history of prostate cancer (Gleason stage 9) diagnosed 8 years ago, treated with orchietomy and antiandrogen agents. He had evidence of metastatic disease to the sacral area, bladder outlet obstruction and a progressively increasing PSA (from 2 to 44 ng/ml) over the preceding year, but no other known distant metastatic disease. His other medical problems were CVA, HTN, PVD, and GERD. He had no history of smoking or alcohol use.
Upper GI x-ray done 4 yrs prior to the current presentation following CVA showed esophageal dysmotility, but an otherwise normal esophagus. Video fluoroscopic swallowing study done few weeks earlier was normal. Repeat barium swallow at this presentation revealed presence of a TE fistula in the mid esophagus. An enlarged mediastinal lymph node were noted at level of TE fistula on CT scan. Bronchoscopy revealed two fistulous tracts with surrounding friable mucosa but no mass. Biopsies done from the friable areas on bronchoscopy showed respiratory mucosa with squamous metaplasia. Upper endoscopy revealed a diverticulum at 27 cm from the incisors without evidence of an esophageal mass. Patient underwent right thoracotomy which confirmed the presence of the fistula between the bronchus intermedius and the esophageal diverticulum. The tract was separated and an enlarged lymph node showed presence of metastatic adenocarcinoma of prostate primary, chronic lymphadenitis and focal calcification. Unfortunately, the patient succumbed 2 weeks after surgery.

**Conclusion:** Metastatic prostate cancer should be considered in the differential diagnosis of a patient with history of prostate cancer presenting with TE fistula.

---

**OCCULT GASTROINTESTINAL BLEEDING SECONDARY TO METASTATIC NON-SMALL CELL CARCINOMA OF THE LUNG DIAGNOSED BY CAPSULE ENDOSCOPY**

Seth A. Gross, M.D., Ira J. Schmelkin, M.D.*, Sadiya Sarij, M.D., David Eskreis, M.D. North Shore University Hospital, Manhasset, New York.

**Introduction:** Small bowel metastasis from primary carcinoma of the lung is an uncommon presentation. Wireless capsule endoscopies have enabled physicians to evaluate and diagnose pathologies of the small bowel, especially occult gastrointestinal bleeding. We report a patient who initially presented with recurrent gastrointestinal bleeding and was later found to have metastatic non-small cell carcinoma of the lung with small bowel metastasis.

**Case:** A 78 year old male presents with several months of recurrent episodes of gastrointestinal bleeding with anemia. The hospital work-up included endoscopy, which revealed a non-bleeding ulcer. A colonoscopy demonstrated diverticulosis and a bleeding scan was negative. The patient was treated for shadowing on his chest x-ray, which was thought to be pneumonia. Past medical history is significant for coronary artery disease, myocardial infarction, hypercholesterolemia, benign prostatic hypertrophy and aortic insufficiency. His medications include atenolol, nitroglycerin transdermal, pantoprazole, atorvastatin, niacin, iron, and enalapril. His physical exam was unremarkable. Laboratory results demonstrated anemia. A wireless capsule endoscopy was performed and demonstrated an ulcerated mass in the distal duodenum, proximal jejunum and red heme. A push enteroscopy was done and the biopsy of the lesion was consistent with metastatic poorly differentiated non-small cell carcinoma. Simultaneously, repeat chest x-ray was done for shortness of breath and a pleural effusion was noted. A thoracotomy was done and the cytology was positive for a similar morphology.

**Discussion:** All types of lung cancer can metastasize to the small bowel, but the large cell type is the most common. Intestinal lesions are usually found in the jejunum. Clinical manifestations may include perforation, obstruction or hemorrhage. Prior to this report there have been 15 cases of gastrointestinal hemorrhage secondary to small bowel metastasis from primary lung cancer. The capsule endoscopy is proving a useful diagnostic tool for evaluating pathologies of the small bowel.

---

**ENDOSCOPIC ULTRASOUND (EUS) MAY BE SUPERIOR TO SOMATOSTATIN RECEPTOR SCINTIGRAM (OCTREOSCAN) IN THE EVALUATION OF GASTRINOMA**


Hypergastrinemia which is commonly associated with either atrophic gastritis or the use of acid-suppressive therapy in the community setting, could also be rarely due to gastrinoma. Elevated levels of gastrin of more than 200-fold should trigger further evaluation for gastrinoma. Such evaluations typically involve octreoscan, computed tomography (CT scan) and magnetic resonance imaging (MRI) in the community setting. In this clinical vignette, we present a case of a 55 year old gentleman who had a negative CT scan and octreoscan in the evaluation of gastrinoma. Patient had previously presented with weight loss, abdominal pain and elevated serum levels of amylase and lipase suggestive of clinical pancreatitis. His other pertinent symptoms included minimal gastroesophageal reflux symptoms, diarrhea and weakness. Subsequent upper endoscopy showed esophagitis and antral ulcer. Fasting serum gastrin level done was over 2200 pg/mL. Initial work-up to evaluate for gastrinoma included negative abdominal CT scan, MRI and octreoscan. EUS with fine needle aspiration (FNA) showed a peripancreatic mass. Specimen from the FNA done with appropriate immunohistochemical stains revealed gastrinoma. Subsequent exploratory laparotomy and intraoperative ultrasound showed metastatic gastrinoma confirmed by positive tumor cells in the lymph nodes. During the above work-up, treatment with proton pump inhibitor resulted in improvement of his symptoms. In this presentation, the use of EUS with FNA enabled the appropriate diagnosis to be made prior to surgery. Further studies may be necessary to confirm the superiority of EUS over octreoscan in the evaluation of gastrinoma.
and in the presence of post-OLT immunosuppression. Prospective controlled trials are needed to further define the efficacy of antiviral therapy in achieving SVR, and identify clinical variables which may predict likelihood of response.

692

VIDEO CAPSULE ENDOSCOPY RETENTION IN STOMACH FOR THREE MONTHS
Victor Fishman, M.D.*, Vishal Jain, M.D., Richard Tolin, M.D. The Lankenau Hospital, Wynnewood and Paoli Hospital, Paoli, Pennsylvania.

Video Capsule Endoscopy is a novel approach to endoscopic assessment of the entire length of the small bowel. In approximately 25% of patients the capsule does not make it to the cecum, secondary to both delayed gastric emptying and/or slow small bowel transit or it cannot traverse a stricture. In the latter situation, capsules can remain in the bowel for >1 yr without adverse consequences. There have been no reports of prolonged gastric capsule retention.

The patient is a 37 year old female who as an infant was diagnosed with a neuroblastoma which required surgery and radiation. In 1996, she developed recurrent SBO, which required a partial small bowel resection. She has not complained of any obstructive symptoms, early satiety or dyspepsia. A GI evaluated the patient at the age 34 for iron deficiency anemia. Workup at that time including EGD, colonoscopy and celiac Ads. All were negative. Small bowel series was negative except for evidence of previous small bowel resection and right cecotomy. Barium was seen throughout the colon at 5 hours. The patient responded to iron repletion.

She was seen again in late 2003 with severe anemia that required blood transfusions. A repeat colonoscopy was negative except for a tight anastomosis site. The patient was referred for a capsule endoscopy.

One day prior to capsule ingestion, she was allowed only clear liquids. No prokinetics were administered. On 2/9/04, she swallowed the GIVEN Capsule® without any difficulty. On reading the study, the capsule remained in the stomach. Exactly four hours after ingestion, lunch was seen entering the stomach. At eight hours, the capsule was still in the stomach. The patient did not follow up immediately with her primary gastroenterologist. She saw a surgeon for elective repair of incisional hernia. A routine CT scan was ordered which showed the Capsule was still present in the stomach. On May 7th, three months after the ingestion of the Capsule, it was identified by upper endoscopy and removed with polypectomy snare. The Capsule was still intact and no evidence of mucosal damage was seen.

We describe the first case of capsule retention in the stomach for as long as 3 months. This was remarkable in that there was no gastric outlet obstruction or history of gastroparesis. More importantly, the Capsule did not disintegrate in the acidic milieu of the stomach for 3 months nor did it cause any untoward effects.

Aseptic meningitis following administration of conscious sedation for endoscopic procedure
Mabel Zevallos, M.D., Sridhar Chilimuri, M.D., Alan Bloom, M.D.*. Bronx-Lebanon Hospital Center, Bronx, New York.

Case Report: A 40-year-old man was scheduled for outpatient ERCP for evaluation and treatment of choledocholithiasis. Past medical history included AIDS, CD4:190, and hepatitis C. He was taking lopinavir/ritonavir, trimethoprim-sulfamethoxazole, zidovudine, and methadone 110mg/day. ERCP was attempted. He received 100 mg of meperidine and 4 mg of midazolam for conscious sedation. A stone was noted in the CBD. The patient became agitated and procedure was aborted. Eight hours after ERCP, he developed severe headache, nausea, vomiting and fever. Symptoms lasted for 24 hours and resolved spontaneously.

During his second ERCP he received 125 mg of meperidine and 4 mg of midazolam. He again pulled out the endoscope after CBD cannulation. Few hours after the procedure he was drowsy and complained of headache, vomiting and low-grade fever. Physical exam revealed nuchal rigidity, positive Brudzinski and Kernig signs. CSF showed WBC 137, PMN:43%; lymph:7%; and eosinophils:2%; glucose:51 mg/dL; TP:159 mg/dL. GS, culture, cryptococcal antigen and AFB were negative. Head CT scan was unremarkable. The patient’s symptoms completely resolved within 24 hours. All cultures remained negative; antibiotics were discontinued after 72 hours and he was discharged in stable condition few days later.

Discussion: This man presented with headache, fever, meningismus and altered mental status on two separate occasions, both after ERCP was performed using meperidine and midazolam. His clinical presentation could have been explained by infectious meningitis, especially considering his immunosuppressed status. However, all cultures were negative. Further, the rapid resolution of the symptoms and signs favors the diagnosis of aseptic meningitis.

The CSF of patients with DIAM typically shows pleocytosis of hundreds to thousand cells per cubic millimeter, normal-to-low glucose values, and increased protein values. Our patient had a discrete elevation of WBC in CSF. The level of glucose and protein in this patient were also characteristic of DIAM.

Meperidine and midazolam are drugs routinely used for conscious sedation in endoscopic procedures. No case of DIAM has been reported with use of any of them.

In conclusion, the possibility of DIAM should be considered in patients with neutrophilic meningitis and negative CSF culture, especially after developing similar neurologic symptoms and signs upon rechallenge of a specific drug. Therefore, midazolam and meperidine should be considered possible etiological agents of DIAM.

Outcomes Research

694

Does capsule endoscopy make a difference in the management of patients with occult GI bleeding?
Lorrie Henson, M.D., Luis R. Pena, M.D., F.A.C.G.*. University of Kentucky Medical Center, Lexington, Kentucky.

Purpose: Capsule endoscopy (C.E.) has been introduced as a new imaging technology to evaluate the small bowel. This has achieved widespread use in the assessment of occult GI bleeding. Emerging data suggest that the yield of C.E. to find small bowel lesions is superior to other current technologies. However, there are limited data regarding the usefulness of this technology in the daily management of patients with obscure GI bleeding.

Aims: 1) To determine how C.E. results impact management of obscure GI bleed. 2) To evaluate patient tolerance and care impact as perceived by the patient.

Methods: Designed as a retrospective pilot study. All consecutive patients that underwent C.E. from August 1999 until July 2002 were considered for inclusion. Two questionnaires were developed to assess impact and acceptance of C.E., one for patients and one for referring physicians. Patients were contacted by phone to obtain consent to participate in the study, to complete the patient questionnaire, and to obtain permission to contact their physicians to administer the physician questionnaire.

Results: 38 of 41 patients eligible for study were contacted and agreed to participate. 97% of patients would be willing to repeat the procedure if required. 42% reported changes in their medical therapy based on C.E. results and 78% felt that C.E. made a difference in their care. 90% of these patients reported that capsule results limited or stopped further testing. 10.5% had definitive therapy (surgical, endoscopic or radiologic treatments) of the identified bleeding cause. From the physician perspective, 78% felt that C.E. results were of use in patient care. One physician referred a patient for surgical intervention and 4 others had plans to do so in the event of recurrent bleeding. 28% changed their management based on C.E. results and 86% limited the extent of further testing performed.
Conclusions: Capsule endoscopy appears to be a well tolerated and beneficial study modality in the assessment of occult GI bleeding. Patient satisfaction appears to be high and physician treatment plans fairly responsive to the findings reported by capsule endoscopy. While these results are limited by the retrospective nature of this study capsule endoscopy seems to contribute positively to the management of patients with occult GI bleeding.

AZASAN®- BRANDED GENERIC AZATHIOPRINE: SUBSTANTIAL COST-SAVINGS POTENTIAL IN IBD

Purpose: Nearly 1/3 of Americans report difficulties in paying for prescription medications (AP 2/25/04). Generic azathioprine-substitution occurs for 88% of prescriptions for branded Imuran® 9/03, and switches between various generic manufacturers constantly occurs, despite evidence of difference in bioavailability between the various products. Azasan® is a new “branded generic” azathioprine available as a scored 75mg or 100mg tablet, vs. an un-scored 50mg pill for other brands of azathioprine or Imuran. These unique qualities could potentially decrease pill costs and counts, while providing consistency in product.

Methods: The potential annual cost-savings and pill counts resulting from substituting Azasan for other generic azathioprine or Imuran were calculated in IBD patients reflecting either “Real-Life” Dosing (that actually used in 77 random IBD patients referred to or from the U of Chicago) or “Standard-Dosing” (2.0mg/kg/day). Pill prices (reported as AWP in Redbook® 9/03) and utilization databases (SourceM™ Prescription Audit, Prescriptions Drug and Diagnosis Audit: Verispan 10/03) were extrapolated to the national IBD patient population currently receiving generic azathioprine (n = 96,440) and brand-name Imuran (10,560). Statistical comparisons by t-test (paired and unpaired).

Results: “Real-Life” Dosing: Mean daily utilization and dose (65% female, 58% Crohn’s) for azathioprine or Imuran were 2.29 pills; 114.61 ± 50.71mg (1.53 ± 0.66 mg/kg). Conversion to Azasan would result in 1.17 fewer pills daily (409 fewer annually), and lower costs ($2.73/day) compared to Imuran ($5.73), or azathioprine ($3.00), p < 0.0001 all comparisons. “Standard-Dosing” (2.0 mg/kg/day): Conversion to Azasan would result in 1.49 fewer pills daily (546 fewer annually), and lower costs ($3.74/day) compared to Imuran ($7.86), or azathioprine ($4.12), p < 0.0001 all comparisons.

Predicted savings with Azasan are shown in the table.

<table>
<thead>
<tr>
<th></th>
<th>“Real-Life Dosing”</th>
<th>“Standard-Dosing”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1.53 mg/kg/day)</td>
<td>(2.0 mg/kg/day)</td>
</tr>
<tr>
<td>Generic Azathioprine</td>
<td>$9.7 million</td>
<td>$13.4 million</td>
</tr>
<tr>
<td>Imuran®</td>
<td>$11.6 million</td>
<td>$15.9 million</td>
</tr>
<tr>
<td>Total</td>
<td>$21.3 million</td>
<td>$29.3 million</td>
</tr>
</tbody>
</table>

Conclusions: Azasan's unique dosage forms and low cost offer substantial decreases in medication costs and pill counts than generic azathioprine or Imuran while maintaining product consistency. These findings support the use of Azasan as the first-choice in IBD patients initiating therapy with azathioprine or Imuran, as well as substituting Azasan in patients already dosed on these agents. Funded by Salix,Inc.

696
ARE RESEARCH PRESENTATIONS AT NATIONAL GASTROENTEROLOGY CONVENTIONS USEFUL TO THE PRESENTER?

Purpose: Residency and fellowship programs send trainees to national meetings to present clinical and basic science research in oral and poster presentation formats. To date, no studies have evaluated the magnitude of scholarly interchange that occurs at these presentations. Our aim was to examine feedback trainees received following presentations at a large national gastroenterology convention, and to evaluate the impact of the interactions.

Methods: All gastroenterology fellows and internal medicine residents from Mayo Clinic Rochester who had scientific presentations in oral or poster format at a large national gastroenterology convention in 2002 or 2003 were asked to complete a survey following the meeting. Oral presenters were solicited as to the number of people who asked questions while at the podium or immediately thereafter, whether those questions would impact further experimental design, data analysis or write-up of results, and whether feedback was helpful overall. Poster presenters were asked to record the total number of visitors to their posters, the number offering constructive comments, and degree to which these comments were helpful.

Results: A total of 136 surveys were sent (95 poster and 41 oral presenters), with 59 (62%) poster presenters and 28 (68%) oral presenters responding. Oral presentation venues had a median audience size of 101–200 observers. Oral presenters reported a median of 5–7 questions or comments with approximately 50% of these impacting future study design, analysis or manuscript preparation. Overall, oral presenters felt they received educational benefit from feedback generated by their presentation. Poster presentations were spread over 4 days, with 15% of respondents presenting on day 1, 1.37% on day 2, 20% on day 3, and 28% on day 4. Trainees spent a median of 2 hours at their posters, with a median range of 11–15 visitors. Of these, a median of 3–4 asked questions or made comments, of which 50% were felt to impact future study design, analysis, or manuscript preparation. There was no statistical difference in responses based on day of presentation. Overall, poster presenters agreed that comments and questions received were helpful.

Conclusions: Trainees report that scholarly interchange does take place with both oral and poster presentations at large national gastroenterology conventions. This interchange is felt to be of educational benefit to the presenter and can lead to new insights that can aid in future study design, analysis or manuscript preparation.

Paul End, Sibylle Klosterhalfen, Wolfgang Krüs. University Hospitals, Tuebingen, Duesseldorfb und Evangelisches Krankenhaus, Koeln-Kalk, Germany.

Purpose: The placebo response is known to be high in functional bowel disorders, but the determinants of this effect are not known. We re-analysed data from a published placebo-controlled drug trial in irritable bowel syndrome (IBS) (Krusi et al., Digestion 34; 11986:196–201).

Methods: 120 patients with IBS were randomly assigned to three arms of the study to receive (double-blind) either a drug (mebeverin) (N = 40) or placebo (n = 40), or (in an open trial) dietary treatment (fibre) (N = 40) for up to 16 week. Treatment was conducted by 3 different doctors (A, B, C) with 44, 27, and 18 patients, resp. A fourth group (n = 31) was treated by different and varying physicians. Symptom assessment at 4, 8, 12, and 16 weeks recorded the degree of patient compliance and the number of drop-outs, the number of patients improved/not improved (in %), symptom severity (Krusi Score) at enrolment, and age and gender as covariates.

Results: 1) Drop-out rate was 30% for placebo, 30% for mebeverin, and 15% for the diet. For the patients remaining in the study, average compliance was 75% with placebo, but 89% for the drug and 92% for the diet. 2) Response rates were 39% for placebo, but 20% for the drug; response rate for the diet (open trial) was 43% across all doctors. Response rates were 32% for doctor A, but 19% for doctors B and C together, independent of the treatment mode. 3) Placebo responders were more often women (47%) than men (28.5%), while no gender differences were found for the drug and diet response. Age effects were only found with dietary treatment (responders were younger).
S226 Abstracts

PATIENTS (pts) WITH OBSCURE GASTROINTESTINAL BLEEDING (OGIB) 699

Amit Ahuja, M.D., James W. Smith, M.D.*, Xiaozhang Jiang, M.D. Ochsner Clinic Foundation, New Orleans, Louisiana.

Purpose: 1) to determine the diagnostic yield (DY) for CE in OGIB pts and 2) to determine if CE in pts with OGIB leads to effective endoscopic therapy and eliminates bleeding episodes, need for blood transfusions and hospital admissions during a 6-month follow-up period.

Methods: 63 pts referred for CE (M2A, Given Imaging) from December 2002 to October 2003 were included in this single-center retrospective study. Data was obtained by chart analysis and phone interview with a verbal consent script and questionnaire. DY was defined as the percentage of examinations in which a pathologic finding explained the bleeding or indication for CE. The OGIB pts were divided into overt and occult OGIB pts. Statistical analysis was performed with Chi-Square test.

Results: OGIB was the indication for CE in 54/63 pts (86%). The DY in the OGIB group was 46% (25/54). There was no significant difference in DY between the overt OGIB and occult OGIB pts (12/32, 38% vs. 13/22, 59%; p = 0.1179). Findings on CE included 33 normal, 20 small bowel (SB) arteriovenous malformations (AVM), 3 SB polyps, 2 gastric antral vascular ectasias, 1 SB ulcer and 1 gastric AVM. 12/32 pts (38%) in the overt OGIB group underwent enteroscopy following CE vs. 9/22 (41%) in the occult OGIB group (p = 0.8807). 8/32 pts (25%) in the overt OGIB group underwent endoscopic therapy vs. 6/22 (27%) in the occult OGIB group (p = 0.8515). 8/12 (67%) undergoing enteroscopy in the overt OGIB group received endoscopic treatment vs. 6/9 (67%) in the occult OGIB group. 4/8 (50%) of endoscopically treated pts vs. 8/24 (33%) of non-treated pts in the overt OGIB group remained free of further bleeding, transfusions, and hospital admits secondary to bleeding/anemia during the 6 months following CE (p = 0.3991). 3/6 (50%) of endoscopically treated pts vs. 9/16 (56%) of non-treated pts in the occult OGIB group remained free of further bleeding, transfusions, and admits during the 6 months following CE (p = 0.7932).

Conclusions: We report the first outcome study evaluating the impact of CE in OGIB pts with respect to further rectal bleeding, blood transfusions and hospital admits during the 6 months after CE. In both overt and occult OGIB pts, performing endoscopy after a positive CE finding leads to a 66% chance of detecting and treating a lesion. No significant difference was noted in outcome parameters when comparing the endoscopically treated OGIB pts vs. non-treated pts. DY in OGIB pts was 46% with no significant difference between the overt and occult groups.

SOCIOECONOMIC STATUS DIRECTLY AFFECTS THE PROBABILITY OF PERCUTANEOUS ENDOSCOPIC GASTROSTOMY PLACEMENT 698


Purpose: We hypothesize that the placement of PEG tubes increases as the socioeconomic strata decreases.

Methods: We compared the number of PEG tubes placed per total procedures in endoscopy departments in three hospitals in the year 2001, which reside in distinct socioeconomic areas (low, middle, and upper classes). The average adjusted gross median income (based on 2000 tax returns) was verified by the zip code of the hospital.

Results: The data reveals a higher percentage of PEG tubes placed as the socioeconomic area declines. There was a 4-fold greater use of PEG’s in the inner city hospital. (Table 1)

Conclusions: PEG tube placement is usually a family decision as the patient is often debilitated and not coherent. The decision to withhold such a procedure is equally important. There are several explanations for our observation of greater PEG placement in patient’s with lower socioeconomic status. First, lower socioeconomic patients may avoid routine health care and present with more advanced medical conditions. Second, lower economic patients may have estranged or distant family members who elect more rather than less medical intervention when contacted by health professionals. Third, lower socioeconomic status families may rely more heavily on physician guidance regarding medical procedures and be less likely to intervene to stop such procedures. Fourth, lower socioeconomic patients have a lower percentage of advance directives and or medical power of attorney in place. Alternatively, higher socioeconomic patients may have more involved family members who understand the patient’s wishes to limit medical procedures or may be less hesitant to address alternatives with the health professionals. Finally, there is a tendency towards increased nursing home placement for patients in lower economic areas as their families do not have the financial ability to hire nursing or to personally care for high need patients. Nursing homes generally require PEG tube placement prior to admission for patients with poor oral intake.

Table 1.

<table>
<thead>
<tr>
<th>Socioeconomic Class</th>
<th>Median Income</th>
<th>Total Procedures</th>
<th>Total PEG’s</th>
<th>Percentage of PEG’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>$7,806</td>
<td>7,312</td>
<td>456</td>
<td>6.0%</td>
</tr>
<tr>
<td>Middle</td>
<td>$51,423</td>
<td>10,049</td>
<td>223</td>
<td>2.2%</td>
</tr>
<tr>
<td>Upper</td>
<td>$69,947</td>
<td>25,552</td>
<td>394</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

LONG-TERM IMPACT OF CAPSULE ENDOSCOPY (CE) IN PATIENTS (pts) WITH OBSCURE GASTROINTESTINAL BLEEDING (OGIB) 699


Purpose: Acetaminophen is the commonest mode of self-poisoning in the UK, and an important cause of fulminant hepatic failure worldwide. N-acetyl cysteine (NAC) is an antidote of proven benefit, and protocols for initial management are well established. However, recent reports and anecdotal evidence suggest that significant delay in NAC administration exists for some patients, especially those presenting more than 12 hours after ingestion. We sought to define the extent and severity of acetaminophen poisoning in an urban, non-university hospital; to identify whether significant delay in NAC administration existed, and whether such delays influenced patient outcome.

Methods: All patients aged 16 or over whose hospital episode was coded to NAC administration, and outcome were recorded. Data were gathered retrospectively (January 2000–April 2002), and prospectively (May 2002–March 2003).

Results: (a): 152 patients were identified (71 women; median age 34 years [range 16–86]). (b): The median dose of acetaminophen ingested was 20gm (range 4–64). 126 patients ingested 10gm or more acetaminophen. 31 patients had risk factors (therapy, alcohol) for more severe liver injury. (c):
Patients who ingested 10 gm or more acetaminophen had a median delay to NAC administration of 175 minutes (range 35–4160). Their median peak aspartate aminotransferase (AST) concentration was 360 U/L (normal range <170), and prothrombin time (PT) 15.2s (NR < 14.5) (range 11.4–79.4). 28 patients who presented more than 720 minutes after acetaminophen ingestion experienced a median delay to NAC administra-
tion of 100 minutes (range 39–317). Their median peak AST concentration was 30 U/L (range 19–16170), and PT 14.7s (range 11–100). None of this latter group died. Two patients died, one at this hospital, and the other at a liver transplant center. Three patients needed hemofiltration.

Conclusions: Most patients ingested sufficient acetaminophen to place them at risk of developing significant liver injury. Measurable delay existed in time to NAC administration, not least for patients presenting 12 hours after ingestion. This delay, although concerning, was not followed by widespread severe acute liver injury, or increased mortality.

701

ADULTS WITH CHRONIC CONSTIPATION HAVE SIGNIFICANT HEALTH CARE RESOURCE UTILIZATION AND COSTS OF CARE
Gurkirpal Singh, M.D., Kristijan Kahler, Ph.D., Vijaya Bharathi, Ph.D., Alka Mithal, M.D., Mohamed Omar, Ph.D., George Triadafilopoulos, M.D., F.A.C.G.*. Stanford University School of Medicine, Palo Alto, California; Novartis Pharmaceuticals Corporation, East Hanover, New Jersey and Institute of Clinical Outcomes Research and Education, Palo Alto, California.

Purpose: Chronic constipation is often considered a common and benign condition of minimal clinical and fiscal impact. Yet, patients with chronic constipation may have significantly compromised quality of life and seek medical advice and utilize health care resources, to a largely unknown degree. We assessed health care resource utilization in patients with chronic constipation in a large state Medicaid program.

Methods: We identified 105,130 patients over age 18 (range: 18–106, mean age 48.5 years, 65% women) with at least one physician visit for constipation enrolled in the California Medicaid program (Medi-Cal). From this group, we studied health care resource utilization and costs (reimbursed by Medi-Cal) in 76,854 individuals without supplementary insurance. In order to capture resource utilization around the first diagnosis of constipation, the time period of analysis was 3 months before the first physician visit for constipation to 12 months after (total 15 months).

Results: During the 15 months of observation (115,281 patient years), there were 106,555 physician visits for constipation (1.4 visits per patient). These physician visits cost MediCal $3,016,017 ($39.24 per patient). Total GI-related procedures and laboratory tests cost $14,052,503 or $182.85 per patient. There were a total of 67,088 instances of over-the-counter drug use (mean cost $4.62), and 3,328 prescriptions (mean cost $23.73, total medical cost $388,700). Nearly 0.6% of patients were hospitalized for constipation (mean stay = 3.2 days) resulting in a total cost of $1,433,708 or $2,993 per hospitalization. Total healthcare costs for patients with constipation in the Medical system for a 15-month period amounted to $18,891,007. Within 12 months after the first physician visit for constipation, 5.4% of 105,130 patients had hemorrhoids, and 2.2% had intestinal impaction or obstruction. Rectal neoplasia, a significant condition associated with constipation in adults, was noted in 0.6% of these patients.

Conclusions: Adults with chronic constipation consume significant and costly health care resources. The clinical and fiscal burden of chronic constipation in US adults cannot be disregarded or trivialized.

702

ENDOSCOPIC AND RADIOGRAPHIC CORRELATION OF THE GASTROJEJUNAL ANASTOMOSIS AFTER ROUX-EN-Y BARIATRIC SURGERY
Kristoff Naberezy, M.D., Rodolfo Blandon, M.D., Raul Rosenthal, M.D., Sammy Szomstein, M.D., Marcia Cruz-Corra, M.D., Ph.D.*. Cleveland Clinic Florida, Weston, Florida.

Purpose: Bariatric surgery has become an effective long-term treatment for obesity. A small number of patients presents with post-op symptoms suggestive of gastrojejunal anastomosis (GJA) obstruction. These patients usually undergo a costly workup consisting of gastrographin upper gastrointestinal series (UGIS) and/or upper endoscopy. The purpose of this study was to determine whether there was a correlation between gastrographin UGIS and upper endoscopy in determination of GJA strictures after Roux-en-Y bariatric surgery. Such information may result in changes in the current diagnostic algorithm.

Methods: Between July 2001 and October 2003, 535 patients underwent Roux-en-Y surgery at our institution. 52 of them presented with symptoms suggestive of gastrointestinal obstruction and underwent upper endoscopies, gastrographin UGIS, or both. UGIS consisted of antero-posterior or left posterior obliques. A radiologist masked to the endoscopy results selected and measured a single projection, which best-represented anastomotic diameter. In addition, all 52 patients underwent 1 to 6 upper endoscopies per patient by four endoscopists. Anastomotic diameters were approximated comparing anastomosis to the diameter of Pentax EG endoscope (9 mm). Pearson’s correlation coefficient and linear regression were used to evaluate the relationship between endoscopic and radiographic findings.

Results: Fifty-two (26 women and 16 men) of 535 (9.7%) bariatric patients underwent endoscopic and radiographic investigations secondary to their obstructive symptoms. Mean age 44.5 years (SD 10.21), mean number of endoscopies 2.67 (SD 1.34). Mean diameter on endoscopy was 5.97 mm (SD 2.51) and x-ray 6.83 mm (SD 3.43). There was good correlation between the radiographic and endoscopic findings by both Pearson’s correlation coefficient (0.44, p = 0.02) and single linear regression using endoscopic diameter as the outcome and x-ray findings as the predictor (Beta Coeff. 0.27, p = 0.025, 95% CI 0.30–0.49).

Conclusions: Gastrographin UGIS significantly correlated with endoscopic GJA findings in Roux-en-Y bariatric patients. UGIS is a less invasive alternative for evaluating bariatric patients who present with obstructive symptoms, and may help to guide treatment without the use of endoscopy in this sick population.
changed their lifestyle to cope. In the previous 3 months, 13.2% of sufferers missed work/school, on average 5.0 times, 28.8% were less productive at school/work, on average 8.9 occasions. 80.9% had consulted a doctor for their 5x: on average 2.2 doctors. Of the 63.8% respondents currently taking Tx most were using non-Rx Tx. The highest satisfaction rating for any Tx was the 24.4% of users completely satisfied with alternative Tx for constipation. The lowest satisfaction for any Tx was the 52.4% dissatisfied with Rx Tx for constipation. Lack of efficacy was the most common reason for stopping Tx.

Conclusions: Recurrent abdominal pain/discomfort, bloating and constipation are frequent Sx in the Canadian population and pose a high burden on individuals and society. Satisfaction with traditional Tx is low, especially for constipation.

704

UTILIZATION, RE-TREATMENT RATES AND COSTS OF 7-DAY, 10-DAY, AND 14-DAY HELICOBACTER PYLORI (H. PYLORI) TREATMENT REGIMENS: DATA FROM U.S. PUBLIC AND PRIVATE PAYER CLAIMS DATABASES


Purpose: To evaluate the utilization and costs of indicated H. pylori treatment regimens in U.S. public and private payer claims databases.

Methods: Retrospective analyses of pharmacy claims between Jan. 1, 2000 and Dec. 31, 2002 in the MarketScan Commercial and Medicare Supplemental databases. Patients were selected with at least one claim for each indicated H. pylori therapy, including a proton pump inhibitor (PPI) (rabeprazole, omeprazole, lansoprazole, esomeprazole) along with an indicated antibiotic combination: amoxicillin/clarithromycin (AC) or metronidazole/tetracycline (MT). A cost-model was developed to estimate re-treatment rates and average annual expenditure by indicated regimens.

Results: The selection criteria identified 4,246 treated patients in the two databases. The average patient age was slightly older than 50 years and a majority was female. A 14-day regimen of a PPI and AC was the dominant triple therapy combination for H. pylori treatments (94%). Subsequent to their index treatment, 24% of patients received testing to confirm eradication. Gastrointestinal biopsy was the most common diagnostic test (56%). Re-treatment rates for patients were low (5.4%), with an average time to re-treatment at 118 days. There were no statistically significant differences in re-treatment rates across PPIs or by duration of treatment regimens. The average annual expenditure per patient for H. pylori treatment was estimated to be $392.40, with the initial treatment choice accounting for 76% of these costs (Table 1.).

Table 1. Average annual expenditures per H. pylori patient

<table>
<thead>
<tr>
<th>Component of Treatment</th>
<th>Costs (USD$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial treatment</td>
<td>$298.15</td>
</tr>
<tr>
<td>Testing for H. pylori</td>
<td>$77.60</td>
</tr>
<tr>
<td>Re-treatment</td>
<td>$166.5</td>
</tr>
<tr>
<td><strong>Total Cost per H. pylori patient</strong></td>
<td><strong>$392.40</strong></td>
</tr>
</tbody>
</table>

Costs of initial treatment regimens varied widely; average cost of an initial 14-day triple therapy (PREVPAC®) was $311.85 compared to $151.46 for an initial 7-day triple therapy (rabeprazole).

Conclusions: Triple therapy for 14-days with AC and PPI is the predominant regimen for H. pylori eradication in this large U.S. public and private claims database. Nearly one-quarter of patients were tested to confirm eradication, but re-treatment during the first year was infrequent. Total costs of H. pylori treatment are driven by the initial regimen chosen. PREVPAC® trademark TAP Pharmaceutical Products Inc.

705

EVIDENCE OF INFlixIMAB DOSE STABILITY IN CROHN’S DISEASE


Purpose: Controversy exists whether patients diagnosed with Crohn’s disease require increasing doses of infliximab over time. We studied the impact of multiple parameters on infliximab dosing derived from a large reimbursement database.

Methods: Infusion data based on 28,932 Crohn’s cases, entered into a nationwide reimbursement database between 2002–2003, were analyzed. A multivariate regression model evaluated the dose of infliximab by patient weight, age, gender, site of infusion (in-office vs. non), infusion status (initial vs. subsequent), payer status (commercial vs. non), and year of administration. Nonlinearities inherent in the data were extracted and potential issues of multicollinearity among the regressors, specifically age and payer status, were investigated. For purposes of the model, the intended dose was assumed to be the dose subsequently administered.

Results: Among the 28,932 cases, 10,942 were initial infliximab infusions and 17,990 subsequent infusions. The mean dose per initial infusion versus subsequent infusion was 5.56 mg/kg (SD = 0.93) and 5.71 mg/kg (SD = 1.13), respectively, with the median number of vials 4 (IQR = 3–5) and 4 (IQR = 4–5). Across all cases, the average amount of infliximab administered was 423.81 mg, resulting in an annual, average cost of maintenance therapy of $16,194.

The regression model estimated the average dose to be 2.71% higher for a subsequent-infusion versus initial-infusion and 1.15% higher for those patients infused in 2003 versus 2002. The average dose for females was 0.9% less than males, while infusions in an office based setting were 1.99% higher than those in other settings. An increase in age by 1 year resulted in a dose decrease of 0.03%. Payer status did not have a statistically significant effect on dosing. All other regressors were found to be highly significant at a 99% confidence level.

Conclusions: Infliximab dose only marginally increases with duration of therapy, and varies little by site of infusion or insurer status. Dosing patterns for infliximab remain stable and predictable over time.

706

FACTORS PREDICTING INITIAL CAREER CHOICES IN GASTROENTEROLOGY FELLOWS: DIFFERENCES IN THE TRAINEE versus THE TRAINING?


Purpose: Academic gastroenterology (GI) fellowship programs gear trainee recruitment to those portraying potential for academic careers, but the ability to predict a career path is not known. The aim of our study was to determine if specific demographic factors, including personal traits, pre-fellowship experiences or unique fellowship exposures, ultimately influence GI fellows to pursue academia versus private practice.

Methods: Educational file review was conducted on all GI fellows from Mayo Clinic Rochester from 1990 through 2003. Demographics extracted included age, sex, race, marital status, degrees, hometown size, fellowship training tract, research mentor factors (rank, funding and years of seniority), type of research, and advanced fellowships. The outcome of interest was whether the first job after fellowship was in academics versus private practice. Chi-square analysis was used to correlate the demographics with the outcome of interest.

Results: Charts of 92 GI fellows were reviewed. Mean age at fellowship entrance was 30 years, with 85% males, 52% Caucasians, 77% married, and 56% U.S. medical school graduates. Of the 92 fellows, 60 accepted academic
OUTCOMES OF ACUTE GASTROINTESTINAL HEMORRHAGE IN BLOODBLESS CARE POPULATION—A SINGLE CENTER EXPERIENCE

Irfan Nawaz, Rabi Kundu, George Ahtaridis, Susan Gordon*. Graduate Hospital, Philadelphia, Pennsylvania.

Purpose: Acute Gastrointestinal Hemorrhage in bloodless care is a challenge to manage. Our hospital is an established center to manage patients who refuse blood transfusion for religious or other beliefs. No published outcomes data of acute gastrointestinal hemorrhage in this population is available.

Methods: Retrospective chart review of acute gastrointestinal hemorrhage from Jan 2002 and Dec 2003. Study population was defined as admissions with acute GI hemorrhage in bloodless care patients who were compared with controls who received standard care. Inclusion criteria were: hemoglobin drop of more than 2gms or hypovolemic shock. Parameters reviewed included demographics, initial presentation, NSAIDS, admission diagnoses and hemodynamic parameters at presentation, time to endoscopy and surgery, duration of ICU and hospital stay, iron and erythropoietin use. Rebleeding rate and mortality rate were also reviewed.

Results: 26 patients in the study group and 49 control patients satisfied inclusion criteria. There was no significant difference in patient demographics, initial presentation (hematemesis, melena, hematochezia), hemocrit, use of NSAIDS and antiplatelet agents. The mean time to endoscopy in the study group was 21.17 hours (7-144) (p < 0.01). The mean ICU stay for the study group was 2.4 days as compared to controls 1.2 days (p < 0.05). There was no significant difference in the duration of hospital stay between the two groups. Mean 7.6 days (1-22) in the study group vs 7.0 days (1-19) days in controls. 19% (5/26) had surgery in the study group as compared to 6% (3/49) in controls. 11% (3/26) rebled in the study group as compared to 10% (5/49) in controls. There was no significant difference in mortality. All patients in the study group were treated with iron and 73% (19/26) received erythropoietin (mean dose 472U/kg).

Conclusions: The outcomes of bloodless care patients were comparable to standard care group with early endoscopy, close monitoring in ICU and support with iron and high dose of erythropoietin.
colonoscopy for colorectal carcinoma (CRC) screening. Although numerous studies have evaluated the clinical validity of CTC performance, no study has analyzed the potential economic impact of CTC implementation on the healthcare system.

Methods: A mathematical model using estimates from the published literature was created to project the impact of CTC on colonoscopy utilization and the resulting financial consequences for society, hospitals (facilities) and endoscopists (physicians). Published reports, current practice recommendations and Medicare reimbursement data were used to estimate the potential economic impact if CTC becomes the primary screening test for CRC.

Results: If CTC becomes the primary modality for CRC screening, 4.85 million (M) patients are projected to undergo CRC screening annually. The total societal cost of a CTC screening program is estimated to be $3.74/3 billion (B) annually, consisting of $3.06B in facility/hospital fees and $0.68B in physician fees. The total cost for CRC screening using CTC will be partially offset by a decrease in colonoscopy expenditures. The projected net decrease in colonoscopy utilization is highly dependent on the polyt size threshold used to define a positive CTC study; screening colonoscopies will be replaced by CTC, but this loss will be partially offset by colonoscopies generated for the follow-up of positive CTC studies. A 6 mm polyt size cut-off will lead to 0.57M fewer colonoscopies being performed, resulting in a $382M decrease in colonoscopy expenditures and a net $3.36B in societal screening costs. A 10 mm polyt size cut-off will lead to 1.44M fewer colonoscopies, resulting in a $965M decrease in colonoscopy expenditures and a net $2.78B in total societal screening costs. Revenue to endoscopists will decrease by $128M with the 6 mm cut-off, while the 10 mm cut-off will result in a $324M decrease.

Conclusions: If implemented as the primary modality for CTC screening, CTC will likely lead to a net decrease in colonoscopy utilization. Under the current reimbursement system, the majority of health care expenditures for CRC would go towards facility fees, with endoscopists likely to experience a decline in their revenues.

710

TEMPORAL TRENDS IN PHARMACEUTICAL USE FOR THE TREATMENT OF ULCERATIVE COLITIS
Gary R. Lichtenstein, M.D.*, Seymour Katz, M.D., Jeffery L. Lange, Ph.D. University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania; New York University School of Medicine, New York, New York and Proctor & Gamble Pharmaceuticals, Mason, Ohio.

Purpose: To assess the occurrence of health outcomes among patients with ulcerative colitis (UC) by age and sex, rates of medical encounters were compared between UC patients and a comparable population without any inflammatory bowel disease.

Methods: The data source was medical claims of a health plan, which has over 7 million members within 25 states (Ingenix Lab/Rx Database™). Among members with at least two continuous years in the health plan, UC patients were identified by a medical claim with a diagnosis code of ICD-9-CM 556 in at least two ambulatory visits or one hospitalization. The control cohort, matched 1:1 on sex and year of birth, had no diagnoses of inflammatory bowel disease (ICD-9-CM 555.0 - 555.9). Three outcome measures were rates of ambulatory visits, hospitalizations, and hospitalizations for a surgical operation on the digestive system.

Results: During 3.5 years of observation there were 12,061 UC patients, corresponding to a prevalence of 236 per 100,000 persons within the plan. The demographic profile of the UC population was 53% males and 47% females; 24% less than 35 years of age, 64% ages 35–64, and 12% age 65 and over. Among the UC population, an individual averaged 15 ambulatory visits per year. Of every 1,000 UC patients during a one year period, there were 202 hospitalizations, of which 57 included a gastrointestinal surgery. Among the non-UC population, an individual averaged 7 ambulatory visits per year. Of every 1,000 non-UC patients during a one year period, there were 63 hospitalizations, of which 7 included a gastrointestinal surgery. The rate ratios of medical outcomes between UC and non-UC patients were the most pronounced among younger males (< 35 years old) as shown in the table below.

Conclusions: The substantial increase in hospitalizations and subsequent surgeries of younger men with UC is a new finding. It presents a unique challenge to raising both disease awareness and treatment adoption in these patients and warrants further study.

Rate ratios for occurrence of selected medical events between population with ulcerative colitis and population without IBD, by age and sex

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Hospitalizations</th>
<th>Hospitalizations for GI Surgery</th>
<th>Ambulatory Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Females</td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>&lt;35</td>
<td>2.7</td>
<td>9.0</td>
<td>12.5</td>
</tr>
<tr>
<td>3–64</td>
<td>3.2</td>
<td>3.8</td>
<td>6.9</td>
</tr>
<tr>
<td>+65</td>
<td>2.7</td>
<td>2.2</td>
<td>6.8</td>
</tr>
</tbody>
</table>

712

NATIONAL ADHERENCE TO ACG GUIDELINES FOR THE SAFE PRESCRIPTION OF NSAID
Neena S. Abraham, M.D., M.Sc. (EPH)*, Hashem B. El-Serag, M.D., M.P.H., Michael L. Johnson, Ph.D., Peter Richardson, Ph.D., Wayne A. Ray, Ph.D., Walter Smalley, M.D., M.P.H. Baylor College of Medicine, Houston, Texas and Vanderbilt University, Nashville, Tennessee.
Purpose: The ACG has published guidelines for the safe prescription of NSAID; however, adherence to these guidelines remains poorly defined. Our aim was to assess the national adherence to ACG guidelines and to identify those patients at highest risk of NSAID-related adverse events due to failure to prescribe an appropriate adherent strategy.

Methods: A cross-sectional study among VA users with an index prescription for an NSAID between 01/01/01–12/31/02 was performed in which patient prescription data were linked to inpatient and outpatient medical records, and death files of the Department of Veterans Affairs. The study population was characterized as high or low risk for UGI events based on the presence of risk factors as outlined in the ACG guidelines. We calculated the proportion of adherence with ACG guidelines in high-risk users defined as the prescription of a traditional NSAID with gastroprotection or a coxib. Univariate and multivariate analyses were used to assess the potential predictors of adherence using logistic regression analysis.

Results: Of 724,270 patients with NSAID prescriptions, 314,706 were considered at high-risk for an NSAID-related upper GI event. Most (95%) were male, 46% Caucasian, 54% were non-Caucasian. Age 65 years or older constituted the largest high-risk subset (87%). Other risk factors were concurrent use of anticoagulants (4.3%), or steroids (3.1%), and a past history of PUD or UGI bleed, anticoagulant use, rheumatologic disease, high overall adherence was only 52.7%. Strong predictors of adherence included: history of PUD or UGI bleed, anticoagulant use, rheumatologic disease, high Deyo co-morbidity index score, use of low-dose ASA and recurrent NSAID prescription. Significant predictors of non-adherence were non-Caucasian race, and high average daily dose of NSAID.

Conclusions: Adherence to ACG guidelines among high-risk NSAID users in the Department of Veterans Affairs is low, even in the presence of multiple risk factors. The likelihood of adherence is further decreased among patients who were non-white, older than 65, or those prescribed high dose NSAID. This subset of the VA population may represent those at greatest risk of NSAID-related adverse events.

713 UTILIZATION, RE-TREATMENT RATES AND COSTS OF 7-DAY, 10-DAY, AND 14-DAY HELICOBACTER PYLORI (H. PYLORI) TREATMENT REGIMENS: INSIGHTS FROM A MEDICAID ANALYSIS


Purpose: To evaluate the utilization and costs of indicated H. pylori treatment regimens in a Medicaid population.

Methods: Retrospective analyses of pharmacy and medical claims between Jan. 1, 1999 and Dec. 31, 2001 in the MarketScan Medicaid database. Patients were selected with at least one claim for each indicated H. pylori therapy, including a proton pump inhibitor (PPI) (lansoprazole, omeprazole, rabeprazole) along with an indicated antibiotic combination: amoxicillin/clarithromycin (AC) or metronidazole/tetracycline (MT). A cost-model was developed to estimate the re-treatment rates and average annual expenditure by indicated regimen.

Results: The selection criteria identified 5,957 treated patients. The average patient age was 53 years old and 67.4% were female. In this population, a PPI + AC was the preferred combination (93%). This preferred combination slightly decreased for patients experiencing retreatment (88%). Subsequent to their index treatment, only 7% of patients received testing to confirm eradication, of which an H. pylori antibody test was the most common diagnostic test (53%). Re-treatment rates were 15.2% and differed slightly by selection of PPI (Table 1).

Re-treatment rates were 12.2, 13.4, and 17.8% for 7-, 10-, and 14-day duration, respectively. The average annual expenditure per patient for H. pylori treatment is estimated to be $312.00; 84% of which is the cost of a initial treatment regimen. Costs vary widely, according to choice of treatment regimen.

Table 1. Re-Treatment Rates for Indicated H. pylori Treatment Regimens

<table>
<thead>
<tr>
<th>Index PPI ± any antibiotic combination</th>
<th>Retreatment Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lansoprazole</td>
<td>16.0%</td>
</tr>
<tr>
<td>Lansoprazole (PREVPAC)</td>
<td>18.0%</td>
</tr>
<tr>
<td>Omeprazole</td>
<td>14.2%</td>
</tr>
<tr>
<td>Rabeprazole</td>
<td>13.2%</td>
</tr>
</tbody>
</table>

714 RATE OF ACUTE PANCREATITIS AND MEDICAL COSTS FOLLOWING ERCP

Elise M. Pelletier, M.S., Michael J. Lacey, M.S., Erin M. Sullivan, Ph.D., David A. Johnson, M.D.*. Boston Scientific Corporation, Natick, Massachusetts and Eastern Virginia School of Medicine, Norfolk, Virginia.

Purpose: To evaluate the rate of acute pancreatitis following ERCP. Methods: All patients undergoing an endoscopic retrograde cholangiopancreatography (ERCP) procedure (CPT 43260–43272) between April 1 and September 30, 2002 were identified from a nationally representative managed care database (HCIS, Waltham, MA). Patients with a pancreatitis diagnosis (ICD-9 577.x) within 90 days prior to the ERCP procedure were removed from the analysis. Patients were followed for 90 days to determine the rate of acute pancreatitis (principal ICD-9 577.0) after ERCP. Mean overall hospital costs during the 90-day follow-up were significantly higher among patients who developed acute pancreatitis versus those with no acute pancreatitis ($18,137 vs. $10,006; p < 0.001). In addition, significantly higher medical costs were observed among patients who developed acute pancreatitis ($8,297 vs. $7,581; p < 0.01).

Conclusions: Among 1,587 patients undergoing ERCP, approximately 14% developed acute pancreatitis within 90 days of follow-up. Inpatient and outpatient facility, professional, and ancillary costs were significantly higher among patients with a diagnosis of acute pancreatitis during the 90-day follow-up period versus those without a diagnosis. The rate of acute pancreatitis among patients undergoing ERCP may be higher than previously reported estimates in the literature. Further exploration of these findings is warranted and the incidence and time horizons for ERCP-related pancreatitis should be reevaluated.

715 SIMULTANEOUS DEVELOPMENT OF THE PEDIATRIC GERD CAREGIVER IMPACT QUESTIONNAIRE IN AMERICAN ENGLISH AND AMERICAN SPANISH

Jennifer Kim, PharmD, Dorothy L. Reininger, M.S., Sarah Becker, Joseph A. Crawley, M.S.*, AstraZeneca LP Wilmington, Delaware and Mapi Values, Boston, Massachusetts.
Purpose: Information on the impact that pediatric gastroesophageal reflux disease (GERD) has on the primary caregiver’s life is limited. The objective of this study was to develop a new questionnaire, the Pediatric GERD Caregiver Impact Questionnaire (PGCIQ), in both American English and American Spanish, to quantify the effects of caring for a child with GERD.

Methods: Four focus group discussions were conducted, 2 in English and 2 in Spanish, to develop a conceptual model relevant to both cultural groups. Focus group participants were the primary caregivers of children (0–12 years of age) with a diagnosis of pediatric GERD. Participants’ responses were analyzed qualitatively to identify differences in caregiver perspectives by the caregiver’s language, socioeconomic status, and demographic profile and the child’s age and severity of disease. The English and Spanish versions of the PGCIQ were finalized after reviewing the results of 10 interviews in each language to test content validity and conducting an in-depth translatability assessment.

Results: Analysis of comments from 27 focus-group participants resulted in the development of a first-draft questionnaire consisting of 58 questions in 10 domains. After evaluating the question set for content validity and translatability, the wording of 37 questions was modified, 14 questions were deleted, and a 5-question domain was created. The final version of the PGCIQ contains 49 questions assessing 10 domains: “Taking Care of Your Child,” “Your Daily Activities,” “Your Emotional Well-Being,” “Your Household Expenses,” “Your Physical Health,” “Your Social Life,” “Your Relationship with Your Partner,” “Your Relationship with Your Family Members,” “Your Employment Prior to Caring for Your Child with GERD,” “Your Current Employment.” Feedback from the interviews testing content validity indicated that the instrument is clear, comprehensive, and conceptually relevant in both English and Spanish, and easy to complete within 10 min.

Conclusions: The PGCIQ is the first questionnaire to document the multidimensional impact of caring for an infant or young child with GERD. It was developed using a methodology that generated questions simultaneously in English and Spanish, thus ensuring conceptually equivalent wording of the questions in both languages. This novel method of instrument development results in a culturally “robust” questionnaire that can be adapted readily into other languages.

716 RETROSPECTIVE COST ANALYSES OF SWITCHING FROM A TWICE-DAILY PROTON PUMP INHIBITOR TO ONCE-DAILY ESOMEPRAZOLE

Joseph A. Crawley, M.S., Richard Brook, M.B.A., James Smedding, M.B.A.*. AstraZeneca LP, Wilmington, Delaware; The JeSTARS Group,纣fddfield, New Jersey and University of Texas at Austin, Austin, Texas.

Purpose: The purpose of this retrospective analysis was to determine if patients with gastroesophageal reflux disease (GERD) taking a twice-daily proton pump inhibitor (PPI) received more economical and successful management of their disease when switched to once-daily esomeprazole.

Methods: Data were obtained from Integrated Healthcare Information Services (IHICIS). Adult patients (>18 years) with ≥1 ICD-9 diagnosis code for esophagitis, esophageal reflux, or heartburn were eligible for the analysis if they received a prescription for once-daily esomeprazole after receiving ≥3 months of prescriptions for a twice-daily PPI. Patients with a diagnosis indicating a hypersecretory condition or who received prior treatment with twice-daily esomeprazole oromeprazole 10 mg twice daily were excluded. Total costs for medical, inpatient, and pharmacy claims were included. The difference in total costs 6 months before and after conversion to once-daily esomeprazole were calculated and compared using Wilcoxon rank sum, Wilcoxon signed rank tests, and paired t-tests. A successful conversion was defined as one for which the patient remained on esomeprazole once daily without a dosage increase or a switch to another PPI.

Results: Of 492,633 patients available from the IHICIS database, 595 met study criteria. Mean age was 50.3 ± 11.0 years; 60% were women; most common diagnoses were esophageal reflux (77%) or reflux esophagitis (53%); and patients were most commonly switched to once-daily esomeprazole from twice-daily lansoprazole 30 mg (36%) or omeprazole 20 mg (49%). Median per member per month (PMPM) savings were $36.72 for total costs (P = .0507) and $39.91 for pharmacy costs (P < .0001). Of the 595 patients, 430 (72%) achieved a “successful” conversion from a twice-daily PPI to once-daily esomeprazole. Median PMPM savings for successful conversions were $57.75 for total costs (P = .0254) and $54.73 for pharmacy costs (P < .0001). For failed conversions, the median PMPM additional costs were $42.42 (P = .4650) and $13.33 (P < .0001) for total and pharmacy costs, respectively.

Conclusions: Switching from a twice-daily PPI to once-daily esomeprazole had a high success rate and resulted in cost savings for payers. These findings demonstrate an effective means to manage GERD in patients who would otherwise incur higher costs while seeking an acceptable level of acid suppression.

717 TEGASEROD IMPROVES QUALITY OF LIFE OF PATIENTS WITH NON-DIARRHEA IRRITABLE BOWEL SYNDROME: OUTCOMES OF THE TENOR (TEugaseroD in NORdic countries) STUDY

Henry Nyhlin, M.D.*. Andrea Bracco, M.Sc., Amy Wagner, M.D. Ersta Hospital, Stockholm, Sweden and Novartis Pharma AG, Basel, Switzerland.

Purpose: Irritable bowel syndrome (IBS) is a chronic and episodic disorder with a significant impact on the quality of life (QoL) of sufferers. Tegaserod, a 5-HT4 receptor partial agonist, is effective, safe, and well tolerated in the treatment of patients with IBS with constipation (IBS-C), as well as those with IBS whose primary bowel habit is not diarrhea (non-D-IBS).

Methods: This study assessed the impact of tegaserod on QoL in non-D-IBS patients. Patients (meeting Rome II criteria) enrolled in a clinical trial1 were randomized to receive tegaserod (T) 6 mg b.i.d. or placebo (P) for 12 weeks. QoL data were collected at baseline, Week 4, and Week 12 using the EuroQol EQ-5D questionnaire, a generic, well-validated questionnaire with five items related to mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Changes in health state were assessed by analysis of patients’ scores at baseline, Week 4 and Week 12. Due to an imbalance at baseline between T and P group, EQ-5D utility scores were adjusted using an ANCOVA model.

Results: QoL data were collected for 247 and 238 patients in the T and P groups, respectively. The adjusted baseline utility scores were 0.726 for both the T and P groups. At Week 4, the mean utility scores for the T and P groups increased to 0.794 and 0.766, respectively. The change in baseline utility score was significantly (p < 0.05) greater with T 0.062, than with P 0.020. The incremental gain in quality adjusted life years (QALY’s), calculated as the difference in the area under the curve between T and P was equal to 0.0077. As a point of reference, a QALY gained equal to 0.00081 was estimated for alosetron, a treatment for IBS with diarrhea, compared to usual care.

Conclusions: This is the first study to use the EQ-5D questionnaire to assess QoL in patients with IBS treated with tegaserod. In addition to providing global relief of the multiple symptoms of IBS, tegaserod significantly improved patients’ QoL compared with placebo as early as 4 weeks after treatment initiation, and were confirmed at the end of the 12-week study.


718 IMPACT OF IRRITABLE BOWEL SYNDROME (IBS) ON WORK PRODUCTIVITY AND DAILY ACTIVITIES

Conclusions: Activity productivity loss were comparable for the three sub-types of IBS. Significant work productivity loss and impairment in performing daily activities were reported by 72% of patients (27% reduction in activity level). Over all work productivity loss due to IBS was estimated to be the equivalent of 14 hours per 40- hour workweek. Compared to patients with diarrhea IBS and alternating IBS, patients with constipation IBS, had a longer time since diagnosis (16.9 years vs. 11.3–13.9 years) and were more likely to rate symptoms as moderate or severe (86.1% vs. 66.7–67.3%). Work and activity productivity loss were comparable for the three sub-types of IBS patients.

Conclusions: IBS patients seeking care from gastroenterologists experience significant work productivity loss and impairment in performing daily activities. These outcomes should be a key consideration for assessing treatment effectiveness in clinical practice.

719

Burdens of Chronic Constipation Must Include Estimates of Work Productivity and Activity Impairment in Addition to Traditional Healthcare Utilization

Andrea Bracco, M.Sc.*. Krijstian Kahler, S.M. Novartis Pharmaceuticals Corp. East Hanover, New Jersey.

Purpose: Chronic constipation (CC) is a common gastrointestinal disorder characterized by one or more of the following symptoms: straining, hard/lumpy stools, feeling of incomplete evacuation and a decreased frequency of bowel movements. The objective of our study was to assess healthcare utilization and productivity loss in patients with CC.

Methods: Individuals from a US nationally representative panel from the Knowledge Networks’ panel were screened by email to participate in a cross sectional survey to collect information on CC. Subjects were qualified for the study if they provided consent, were aged ≥18 years, met the Rome II diagnostic criteria for CC, were not currently pregnant, sought care from a physician for their CC in the past year, and were not diagnosed with IBS. Eligible respondents completed a self-reported questionnaire regarding symptom burden, economic impact of CC (healthcare utilization and work and activity impairment) and treatment patterns.

Results: Of the 24,090 subjects screened, 557 qualified for the study; 52% were female and 72% were Caucasian. 43% were employed and the average age was 48 years. Having 1 or more physician office visits related to CC in the previous 6 months was reported by 76% of patients; mean number of visits per patient was 1.7 per 6 months. General practitioners, family practitioners, gastroenterologists and internists were consulted by 44%, 43%, 26% respectively. Current use of monotherapy to address CC symptoms was reported by 49% of patients: fiber (56%), over-the-counter medications (32%) and prescription medications (12%). Combination therapy was reported by 23% of patients and 26% stated that they were not currently using any treatment. Of the employed patients, 12% reported missing days from work or school during the previous month (mean 2.4 days per month), whereas 60% reported impairment while at work (21% reduction in productivity) equivalent to more than 8 hours in a 40-hour work week of reduced productivity. Moreover, impairment in performing daily activities was reported by 72% of patients (27% reduction in activity level).

Conclusions: Patients with CC consume many healthcare resources in terms of physician visits and medications, but this study clearly demonstrates that the full extent of the burden of CC cannot ignore the substantial work productivity and activity impairment imposed by the condition.

720

ESOMEPRAZOLE REDUCES THE COSTS OF REDUCED WORK PRODUCTIVITY DUE TO GERD-RELATED SLEEP DISTURBANCES

David Johnson, M.D., F.A.C.G., William Orr, Ph.D., F.A.C.G., Joseph Cravley, M.S., Assunta Cuccia, Barry Traxler, Kurt Brown, M.D., F.A.C.G., Thomas Roth, Ph.D.*. Eastern Virginia School of Medicine, Norfolk, Virginia; Lynn Health Science Institute, Oklahoma City, Oklahoma; AstraZeneca LP, Wilmington, Delaware and Henry Ford Hospital, Detroit, Michigan.

Purpose: Patients with symptomatic gastroesophageal reflux disease (GERD) experience nighttime heartburn (NHB), a frequently reported cause of sleep disturbance, which can impair work productivity. We evaluated the effect of once daily esomeprazole 40 mg or 20 mg versus placebo on work hours lost and its associated costs in patients with GERD-related sleep disturbance and moderate to severe nighttime heartburn.

Methods: Patients eligible for this trial (D961AC00001/Study 319) had symptomatic GERD, a history of sleep disturbance for ≥1 month, moderate to severe NHB, and sleep disturbance associated with GERD on ≥3 of the last 7 days during a run-in period of up to 14 days. Patients with conditions other than GERD known to disturb sleep were excluded. Sleep medication was allowed if the dose was stable for ≥3 months before study entry and for the duration of the study. Patients were randomized to treatment with esomeprazole 40 mg, esomeprazole 20 mg, or placebo. At baseline and after 4 weeks of treatment, patients completed the Work Productivity and Activity Impairment Questionnaire, which was modified for GERD-related sleep disturbance, to assess hours absent from work and the amount that productivity was reduced at work during the previous week. The changes from baseline were converted into monetary values using an average hourly wage of $24.59 obtained from the US Bureau of Labor Statistics and analyzed using analysis of variance.

Results: A total of 350 patients were employed and included in the analysis. The table shows the hours saved due to reduced absenteeism and increased productivity versus baseline and the cost of those hours. The average difference in savings between esomeprazole and placebo was $141.

Conclusions: Compared with placebo, esomeprazole treatment reduces the loss of work productivity due to GERD-associated sleep disturbances and its associated costs. Medication costs of effective GERD therapy with PPIs may be more than offset by commensurate increases in work productivity.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Hours saved vs baseline</th>
<th>Cost of hours saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esomeprazole 20 mg (n = 117)</td>
<td>12.25*</td>
<td>$301*</td>
</tr>
<tr>
<td>Esomeprazole 40 mg (n = 114)</td>
<td>11.65*</td>
<td>$286*</td>
</tr>
<tr>
<td>Placebo (n = 119)</td>
<td>6.21</td>
<td>$153</td>
</tr>
</tbody>
</table>

*P < .001 versus placebo.
DO GASTROENTEROLOGISTS WITH SELF-REPORTED GERD FOLLOW CURRENT TREATMENT GUIDELINES? A POPULATION-BASED STUDY AT TWO GASTROENTEROLOGY CONFERENCES

Thomas Haddad, M.D., Aaron Burrows, M.D., Nicholas Gualtieri, M.D.∗, Prem Chattoo, D.O., Darlene Negbenebor, M.D., James Robilotti, M.D. Saint Vincent’s Hospital, New York, New York.

Purpose: Gastroesophageal reflux disease (GERD) is a common complaint among the general population with a prevalence of approximately 60% in a mailed survey of Olmstead County, Minnesota residents. The currently accepted treatment recommendation is to implement lifestyle modifications as initial treatment for GERD. We conducted a study of practicing gastroenterologists and GI fellows at the 2003 ACG and 2004 DDW conferences to evaluate the prevalence and initial treatment of GERD in this population.

Methods: A self-reporting questionnaire was distributed randomly to 224 physicians at ACG and DDW. Physicians were stratified by time in practice (Fellow, Attending < 10 years, Attending ≥ 10 years), if they had GERD (yes or no) and by first treatment (lifestyle vs. medical therapy). A subset of 50 physicians was given a more comprehensive questionnaire evaluating symptom frequency and severity.

Results: 46% (102 of 224) of conference members interviewed stated they had GERD. The distribution of responders with GERD was approximately 22% fellows, 37% physicians practicing < 10 years and 41% physicians practicing ≥ 10 years. Of these responders, only 1.9% (2 of 102) stated they had tried lifestyle modifications prior to medical therapy. The majority of respondents used standing proton pump inhibitors (PPI) as their initial therapy (39%). The next most common treatment modalities were PRN PPI therapy (25%) and PRN H2-receptor antagonist therapy in 20% of respondents used lifestyle modifications as initial GERD therapy even for mild symptoms. There was also a predominance of PPI use in our study despite a high prevalence of mild disease. PRN usage of PPI therapy, though not routinely prescribed to patients, was commonly used by gastroenterologists in our hospital setting. A subset of 50 physicians was given a more comprehensive questionnaire evaluating symptom frequency and severity.

Results: 46% (102 of 224) of conference members interviewed stated they had GERD. The distribution of responders with GERD was approximately 22% fellows, 37% physicians practicing < 10 years and 41% physicians practicing ≥ 10 years. Of these responders, only 1.9% (2 of 102) stated they had tried lifestyle modifications prior to medical therapy. The majority of respondents used standing proton pump inhibitors (PPI) as their initial therapy (39%). The next most common treatment modalities were PRN PPI therapy (25%) and PRN H2-receptor antagonist therapy in 20% of respondents used lifestyle modifications as initial GERD therapy even for mild symptoms. There was also a predominance of PPI use in our study despite a high prevalence of mild disease. PRN usage of PPI therapy, though not routinely prescribed to patients, was commonly used by gastroenterologists in our study. Why these discrepancies exist between the recommended guidelines and reported use by gastroenterologists remains unclear.

EFFECT OF A LACTOBACILLUS ACIDOPHILUS AND CASEI-ENRICHED YOGHURT IN THE PRIMARY PREVENTION OF ANTIBIOTIC-ASSOCIATED DIARRHEA (LACTIC TRIAL): A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL

Mélanie Beausoleil, B. Pharm, Nadia A. Fortier, B. Pharm, Stéphanie Guénette, B. Pharm, Amélie L. Écuyer, B. Pharm, Michel Savoie, B.Pharm, M.Sc., Karl Weiss, M.D.∗, Jean Lachaine, Ph.D, Martin Franco, B.Pharm, M.Sc. Maisonneuve-Rosemont Hospital and University of Montreal, Montreal, Quebec, Canada.

Purpose: Antibiotic-associated diarrhea (AAD) is an important problem in hospitalized patients. This randomized, double-blind, placebo-controlled trial assesses the efficacy of a lactobacilli-enriched yoghurt in the primary prevention of AAD.

Methods: After the initiation of an antibiotic treatment, 89 adult hospitalized patients receiving antibiotics were randomly assigned to receive a lactobacilli-enriched yoghurt (50 × 10^9 Lactobacillus acidophilus and L. casei) or a placebo (lactoserum devoid of any microorganism), daily. Prophylaxis was given as to cover the entire antibiotic treatment. Follow up was planned to end 21 days after the end of the antibiotic course.

The primary end point for efficacy was the occurrence of AAD, as documented by at least three liquid stools in a 24-hour time period. The occurrence of Clostridium difficile-associated diarrhea (CDAD), duration of hospitalization and tolerance to the preparation were also evaluated. Clinical data on individual patients and data on stool frequency and consistency were obtained on a regular basis from hospital medical and pharmacy records. For patients discharged from hospital before the end of follow-up, data was gathered using a standardized questionnaire.

Results: AAD developed in 17.1% of patients in the lactobacilli group and in 37.2% of patients in the placebo group (P = 0.039). Fewer patients in the lactobacilli group developed a CDAD from that observed in the placebo group (P = 0.028). Median duration of hospitalization was 8 days in the treatment group, compared to 10 days in the placebo group (P = 0.048). Overall, the prophylaxis was well tolerated, proportion of patients presenting side-effects (for the most part gastrointestinal) being similar between groups (P > 0.99).

Conclusions: A prophylaxis consisting in the daily administration of a yoghurt containing 50 × 10^9 lactobacilli (Lactobacillus acidophilus and L. casei) was effective in reducing the occurrence of AAD and CDAD in this sample of 89 adult patients taking antibiotics initially administered in the hospital setting.
Purpose: This survey assessed perceptions of primary care physicians (PCPs) of the severity and bother of constipation as a medical condition and the impact of constipation on patients’ lives, as well as physicians’ impressions of current therapy.

Methods: A telephone survey of 8000 PCPs randomly selected from an American Medical Association database was conducted in April 2004. Physicians had to be board-certified or board-eligible in family practice or internal medicine, in practice for 2–40 years, treating ≥5 patients/week for constipation, and spending ≥75% of their time in clinical practice. Eligible physicians completed a 37-question survey.

Results: Of 461 PCPs who agreed to be screened, 311 met the survey criteria. When asked how severe constipation is as a medical condition, 83% of PCPs reported that constipation is at least somewhat severe. When asked how bothersome constipation is for their patients, 98% reported that it was at least somewhat bothersome, with 95% describing constipation as having some impact on patients’ quality of life. Altered consistency of stools (64%), abdominal discomfort (64%), and infrequent bowel movements (60%) were ranked as the 3 most severe symptoms. Abdominal discomfort, abdominal pain, strain, and bloating were reported as the most bothersome symptoms for patients. PCPs cited worsening of symptoms (74%), lack of symptom control (73%), and frustration with current treatment (71%) as the top 3 reasons that patients first discuss constipation with a doctor. More than half (60%) of PCPs agreed that they do not have adequate products to treat patients with constipation, and 91% wished that better treatment options were available.

Conclusions: PCPs perceive constipation as a severe and bothersome medical condition that negatively impacts patients’ lives. Physician awareness is high regarding unmet patient needs, including frustration with increased symptom severity, lack of symptom control, and inadequate treatment options.

726

ENDOTHELIN-1 PRODUCTION IN RATS FED DIETS OF VARYING PROTEIN CONCENTRATION
Thusha Nathan, M.D., Donald Wesson, M.D.* Jan Simoni, Ph.D. Texas Tech Health Sciences Center, Lubback, Texas.

Purpose: Endothelin-1 (ET-1) is a member of an amino acid peptide group that is produced ubiquitously in the body and exerts potent vasoconstrictive effects.

In the kidney, endogenous endothelins mediate increased renal acidification induced by dietary acid.

Multiple previous studies have shown that high protein concentration diets fed to rats increases urinary ET-1 production by their effect on acid-base status.

This study thus tests the converse of that hypothesis: that low protein, or base-producing concentrations of dietary protein in the form of soy fed to rats, decreases renal ET-1 production through its effect on acid-base status.

This information is vital in understanding the potential negative metabolic effects of high protein diets and the potential benefit of low protein diets as correlated to their ET-1 production. The potent vasoconstrictive effects of ET-1, mediated by diet could have long-term deleterious outcomes in the body and contribute to diseases including hypertension and renal failure.

Methods: Institutional animal protocols were strictly followed.

12 rats were studied for a total of four weeks. During week 0–1, the rats were fed a standard diet which was known to not have any significant effect on acid-base status.

At week 1, the rats were fed varying concentrations of soy protein as their experimental diet source. Rats 1–4, 5–8, and 9–12 were fed concentrations of soy protein at [(4.2%), [20%], [50%], respectively].

This was continued for a total of 4 weeks.

Rats were weighed and urine samples collected, at baseline and after each subsequent week.

Urine was analyzed using chromatography, and ET-1 was measured using the ELIZA method. Results were expressed as (ng/g Cr). Student’s t-test was performed on the collected data.

Results: The soy meal diet at [4.2%] and [20%] did not significantly affect the concentration of ET-1 between 0–4 weeks.

However, at the soy protein concentration of 50% in week 1 and 2 there was a significant drop in ET-1 production by 21.7% (P < .01). This supports our hypothesis that a low-protein diet induces urinary acid-base changes in rats, and subsequently decrease the production of urinary ET-1.

Conclusions: Our study showed that a low protein diet in the form of soy, induced acid-base changes that significantly decreased renal ET-1 production in rats. This implies that nutrition and dietary modifications in the form of protein, may avoid or potentiate the potent vasoconstrictive and deleterious effects that ET-1 exerts in disease states.

727

GASTROINTESTINAL BLEEDING (GIB) IN PATIENTS ON LONG-TERM ANTICOAGULATION (AC): YIELD OF ENDOSCOPIC EVALUATION, REBLEEDING, AND OUTCOME
David McElreath, M.D., Farah Toyserkani, M.D., D. Keith Williams, Ph.D., Dhiraj Yadav, M.D.* Univ of Arkansas for Medical Sciences & Central Arkansas Veterans Healthcare System, Little Rock, Arkansas.

Purpose: Long-term AC increases risk of GIB. There is relative paucity of data on natural history of GIB in these patients. Our aim was i) to assess yield of endoscopic evaluation of GIB in long-term AC patients ii) to follow their natural history with regards to episodes of subsequent bleeding and overall outcome.

Purpose: This survey assessed perceptions of primary care physicians (PCPs) of the severity and bother of constipation as a medical condition and the impact of constipation on patients’ lives, as well as physicians’ impressions of current therapy.

Methods: A telephone survey of 8000 PCPs randomly selected from an American Medical Association database was conducted in April 2004. Physicians had to be board-certified or board-eligible in family practice or internal medicine, in practice for 2–40 years, treating ≥5 patients/week for constipation, and spending ≥75% of their time in clinical practice. Eligible physicians completed a 37-question survey.

Results: Of 461 PCPs who agreed to be screened, 311 met the survey criteria. When asked how severe constipation is as a medical condition, 83% of PCPs reported that constipation is at least somewhat severe. When asked how bothersome constipation is for their patients, 98% reported that it was at least somewhat bothersome, with 95% describing constipation as having some impact on patients’ quality of life. Altered consistency of stools (64%), abdominal discomfort (64%), and infrequent bowel movements (60%) were ranked as the 3 most severe symptoms. Abdominal discomfort, abdominal pain, strain, and bloating were reported as the most bothersome symptoms for patients. PCPs cited worsening of symptoms (74%), lack of symptom control (73%), and frustration with current treatment (71%) as the top 3 reasons that patients first discuss constipation with a doctor. More than half (60%) of PCPs agreed that they do not have adequate products to treat patients with constipation, and 91% wished that better treatment options were available.

Conclusions: PCPs perceive constipation as a severe and bothersome medical condition that negatively impacts patients’ lives. Physician awareness is high regarding unmet patient needs, including frustration with increased symptom severity, lack of symptom control, and inadequate treatment options.
Methods: Retrospective chart review of all patients admitted to our VA hospital between Oct.98-Dec.2003 with GIB who were on long-term AC. Data was collected on demographics, indication for AC, presentation, length of stay (LOS), ICU stay, labs, need for blood products, endoscopy, bleeding on follow up (till April 2004) and outcome.

Results: 81 patients (Index bleeders) on longterm AC had 114 episodes of GIB during study period needing hospitalization (81 episodes of index GIB and 33 episodes of subsequent GIB in 27 of Index bleeders on follow up). Main indications for AC were prosthetic heart valves, A fib, DVT or a combination. Most patients were elderly. Of 81 Index bleeders (mean age 69 ± 11.5 yrs, males 96%), 15 (18.5%) had prior history of GIB. Source of GIB was identified in 65/81 cases (80%), while 16/81 (20%) had obscure source.

Mean duration between Index and subsequent GIB was 5.25 ± 5.3 months. In cases who underwent work up for subsequent GIB, source was same as index episode in 62%. In logistic regression model, restarting AC was the only variable that predicted subsequent bleeding (OR 8.39, CI 1.8 – 39, p < 0.001). Main reasons to terminate AC use after GIB were A fib and DVT. AC was terminated in all cases with prosthetic heart valves. In 28 of 32 cases who died on f/u (mean 23 ± 15.8 months), cause was unrelated to GIB.

Conclusions: Although routine endoscopic evaluation fails to identify source of GIB in significant number of patients on long-term AC, the risk of subsequent bleeding is low if AC is not resumed. Decision to continue or stop AC after GIB needs individualization based on indication of AC and patient’s clinical history.

<table>
<thead>
<tr>
<th>Bleeding source identified (n = 65)</th>
<th>Bleeding source obscure (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Upper GI 41, colon 22, both 2)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td></td>
<td>69.5 ± 11</td>
</tr>
<tr>
<td>ICU stay (yes)</td>
<td>46%</td>
</tr>
<tr>
<td>Total LOS (days)</td>
<td>8.5 ± 9.8</td>
</tr>
<tr>
<td>Follow-up (months)</td>
<td>24 ± 16.7</td>
</tr>
<tr>
<td>AC restarted: Yes: No</td>
<td>48 : 17</td>
</tr>
<tr>
<td>Subsequent bleeding (yes)</td>
<td>45.8% : 11.8%</td>
</tr>
<tr>
<td>Death on f/u (all causes)</td>
<td>38%</td>
</tr>
<tr>
<td>Death from GIB/surgery</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

Values: mean ± SD; all comparisons: NS

728

INTERNET USE BY A REFERRAL GASTROENTEROLOGY CLINIC POPULATION AND THEIR MEDICAL INFORMATION PREFERENCES

Delnaz Roshandel, M.D., Mohammadreza Rezailashkajani, M.D., Shuhin Ansari, M.D., Mohammad Reza Zali, M.D., F.A.C.G.*. Research Center for Gastroenterology and Liver Disease, Tehran, Islamic Republic of Iran.

Purpose: To determine health information sources/preferences, rate of Internet access and Internet use habits of gastroenterology patients in Iran.

Methods: A bipartite questionnaire was filled for a convenience sample of 401 consecutive outpatients (mean age: 43.7) by meticulous interviews performed by two physicians in the waiting room of a referral gastroenterology outpatient clinic located in a central district of Tehran from 19 March to 19 February, 2004.

Results: Of all literate patients (92%), 64% had received medical information about their disease from sources other than their physician; the most common sources were media (62%) and printed material (58%). Ninety-three percent of literate individuals wished to know more about their disease; printed material (57%) and media (35%) were the most preferred means of receiving health information while the cause (65%), treatment (56%) and course (31%) of disease were the most favorite knowledge topics. Of all literates, 31% (28% of all) had access to Internet (mean age: 34.5 years). Males, more educated and younger subjects were more likely to use Internet. Of the Internet users, 37% had already performed at least one search for medical information. 96% were willing to receive medical information by email and 93% strongly agreed to a web-based patient education system managed by their physician.

Conclusions: Considering the decent proportion of gastroenterology patients using Internet, the increasing trend of its popularity, and its multidimensional advantages in developing countries; Iranian physicians should be encouraged to develop their own practice websites, using the web as a patient education tool, and helping patients identify reliable health information.

729

KNOWLEDGE, ATTITUDES AND PRACTICES OF GI AND ENDOSCOPY NURSES IN IRAN: HOW MUCH DOES NURSES KNOW ABOUT MODES OF TRANSMISSION AND PREVENTION OF HIV/AIDS?


Purpose: To assess how much nursing staff know about and practice in regard to HIV/AIDS, and to determine health service factors that influence knowledge, attitudes and practices (KAP).

Methods: Qualitative and Comparative designs were used among 58 nurses working in gastroenterology and endoscopy wards of 3 university teaching hospitals, Tehran, Iran. Likert scale questionnaires (adapted and retested for Farsi speakers) were used to assess subjects’ knowledge and attitude, and a checklist for their practice.

Results: Overall, in gastroenterology and endoscopy wards, 82.5% and 82.3% of respondents scored moderate in the knowledge questionnaire, 52.1% and 50% scored uncertain in attitude questionnaire, and 73.9% and 58.3% scored poor in practice questionnaire, respectively. The only significant correlation was found between the attitude and practice scores; staff having an uncertain attitude towards persons with HIV/AIDS had a poorer practice score compared with those having a positive attitude (r = 0.36, P < 0.03). There was no significant relationships between knowledge and attitude on one hand and practice scores on the other hand.

Conclusions: The results of this study show the importance of providing educational interventions for improving knowledge, attitude and the practice intentions of nurses concerning the care of patients with HIV/AIDS. It is important that education about HIV/AIDS should be incorporated with current undergraduate and service programs.

730

PANTOPRAZOLE (40 MG) ACHIEVES SYMPTOM RELIEF SIGNIFICANTLY FASTER THAN OMEPRAZOLE (20 MG) IN PATIENTS WITH GERD

Anton Gillessen, Dr.*, Schoeffel Liane, Dr., Naumburger Andreas, Dr., Grass Ulrich, Dr. Herz-Jesu-Hospital, Muenster; Private Practice, Berlin and Altana Pharma Germany, Konstanz, Germany.

Purpose: To investigate the efficacy of pantoprazole 40 mg qd (PANTO) versus omeprazole 20 mg qd (OME), with regard to first time to reach a normal symptom range in patients with symptomatic erosive gastroesophageal reflux disease (GERD).

Methods: 915 patients were enrolled in this multicenter, double-blind, random­imized parallel group study conducted in Germany and Lithuania. Patients with symptomatic erosive GERD (Los Angeles classification grades B-D) received either PANTO (n = 464, ITT) or OME (n = 451, ITT) for 42 days. Symptom scores were assessed using ReQuest™, a validated, self-assessed symptom scale, consisting of two subscores, ReQuest™-GI (acid complaints, upper abdominal/stomach complaints, lower abdominal/digestive complaints, nausea) and ReQuest™-WSO (general well-being, sleep disturbances, other complaints). The primary outcome variable was the first time to reach normal symptoms as assessed by ReQuest™-GI. Symptom load sum score of the gastro complaints was assessed by adding the daily
symptom load to the previous accumulated symptom loads (Table 1). Differences between treatment groups were compared using the two-sided Wilcoxon rank-sum test (5% level). The 95% confidence intervals (95% CI) were calculated separately.

Results: First time to reach normal symptoms was achieved significantly faster (2 days, \( P = 0.0298 \)) in patients treated with PANTO compared with those receiving OME. At the end of the treatment period, relief from GI symptoms was experienced by 93.7% (95% CI [91.0%; 95.8%]) of patients in the PANTO group and in 91.8% (95% CI [88.8%; 94.2%]) of patients in the OME group. Furthermore, a significantly lower symptom load sum score of gastro complaints was observed from day 2 onwards in the PANTO group compared with the OME group (Table 1). No significant differences were observed between treatment groups with regard to the frequency of adverse events.

Conclusions: Pantoprazole 40 mg qd was statistically superior to omeprazole 20 mg qd with regard to first time to reach normal symptoms. Both drugs were well tolerated and safe.

### Table 1. Symptom load sum score, gastro complaints (n = 915, ITT)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Baseline</th>
<th>Week 1</th>
<th>Week 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pantoprazole 40 mg</td>
<td>15.1</td>
<td>20.4*</td>
<td>24.9*</td>
</tr>
<tr>
<td>Omeprazole 20 mg</td>
<td>16.1</td>
<td>22.2</td>
<td>27.4</td>
</tr>
</tbody>
</table>

\( * P < 0.05 \)

731

**SUPERIORITY OF PANTOPRAZOLE 40 MG VERSUS OMEPRAZOLE 20 MG IN RELIEVING GERD-ASSOCIATED SLEEP DISORDERS**

Schoeffel Liane, Dr., Naumberg Andreas, Dr., Gillessen Anton, Dr.*.
Private Practice, Berlin and Herz-Jessu-Hospital, Muenster; Germany.

**Purpose:** To compare the efficacy of pantoprazole and omeprazole in the relief of gastroesophageal reflux disease (GERD)-associated sleep disturbances.

**Methods:** A total of 915 patients with symptomatic erosive GERD (Los Angeles classification grades B-D) were randomized in this study conducted in Germany and Lithuania. Following a 3-day pre-treatment phase, patients received either pantoprazole 40 mg qd (n = 464, ITT) or omeprazole 20 mg qd (n = 451, ITT) for 6 weeks. Patients recorded GERD-related symptoms using ReQuest™, a validated, highly sensitive GERD questionnaire. Symptoms were recorded daily during the pre-treatment phase and the first 2 weeks of treatment, and weekly during the last 4 weeks. ReQuest™ can be divided into two subscales: ReQuest™-GI (acid complaints, upper abdominal/stomach complaints, lower abdominal/digestive complaints, nausea) and ReQuest™-WOSO (general well-being, sleep disturbances and other complaints). Only patients who stated that they had difficulties falling asleep and experienced interrupted sleep/waking at night were included in this analysis; patients who reported nightmares were excluded. The median scores of the sleep dimension of ReQuest™-WOSO and the median sum scores of ReQuest™-GI were calculated for the first two weeks of treatment. Differences between treatment groups were compared using the one-sided Wilcoxon rank sum test (5% level).

**Results:** At baseline, sleep disturbances were recorded by 154 and 139 patients treated with pantoprazole and omeprazole, respectively, and no significant differences in the median scores of the sleep dimension and in the median sum scores of ReQuest™-GI were observed between treatment groups.

After 1–2 weeks of treatment, pantoprazole was significantly more effective in reducing the incidence of GI symptoms and sleep disturbances than omeprazole (Table 1). In addition, the median sum scores of the GI-dimension were significantly lower following treatment with pantoprazole.

**Conclusions:** Pantoprazole 40 mg qd is an effective treatment regimen for patients with GERD-associated sleep disturbances and offers superior GI-symptom resolution compared to omeprazole 20 mg qd.

### Table 1. Median scores sleep dimension/median sum scores ReQuest™-GI

<table>
<thead>
<tr>
<th></th>
<th>Sleep</th>
<th>ReQuest™-GI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Week 1</td>
</tr>
<tr>
<td>Pantoprazole 40 mg</td>
<td>1.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Omeprazole 20 mg</td>
<td>1.5</td>
<td>0.8</td>
</tr>
<tr>
<td>( P )-value</td>
<td>0.4259</td>
<td>0.0171</td>
</tr>
</tbody>
</table>

732

**DIARRHEA-PREDOMINANT IRritable BOWEL SYNDROME: HEALTH OUTCOMES ASSOCIATED WITH LOPERAMIDE OR BISMUTH SUBSALICYLATE THERAPY**


**Purpose:** To describe health outcomes, including quality of life and satisfaction with medication, in patients with diarrhea-predominant irritable bowel syndrome (DP-IBS) treated with loperamide or bismuth subsalicylate.

**Methods:** Cross-sectional data from Consumer Health Sciences June 2003 National Health and Wellness Survey, a nationally representative sample of a noninstitutionalized, U.S. civilian population. Patients were currently taking either loperamide (n = 176) or bismuth subsalicylate (n = 192) to treat DP-IBS. Quality of life in the past month was assessed using the Medical Outcomes Study (MOS) 8-item Short-Form Health Survey (SF-8). Patient satisfaction with the studied medication (PSM) was measured using a 5-point scale from 1 to 5, with 1 = not at all satisfied and 5 = extremely satisfied. Satisfaction rates were computed as the percentage of patients reporting a 4 or 5 on the PSM scale.

**Results:** Mean age of patients was 51 years and 77% were female. Quality of life reports were comparable between treatment groups for both the mental and physical component summary scores of the SF-8. Significantly more patients reported that they were satisfied with loperamide (82%; 144/176) versus bismuth subsalicylate (50%; 96/192; \( p < 0.001 \)), with an odds ratio of 4.50 (95% CI: 2.80, 7.24).

**Conclusions:** Patients taking loperamide or bismuth subsalicylate for DP-IBS reported similar quality of life. However, patients treated with loperamide were 4.5 times more likely to be satisfied with their medication than patients treated with bismuth subsalicylate. These factors may prove important for physicians when considering DP-IBS therapy.

733

**VALIDITY OF SELF-REPORTED ENDOSCOPIC SURVEILLANCE HISTORY IN PATIENTS WITH BARRETT’S ESOPHAGUS**

Shahnaz Sultan, M.D., Rami Badreddine, M.D., Nicholas J. Shaheen, M.D., F.A.C.G., Dawn Provenzale, M.D., F.A.C.G.*. Durham Veterans Affairs Medical Center, Durham and University of North Carolina School of Medicine, Chapel Hill, North Carolina.

**Purpose:** We previously demonstrated that patients with Barrett’s esophagus overestimate their perceived cancer risk. Using self-reported data from a validated questionnaire, we found that individuals with high-perceived risk were more likely to undergo rigorous surveillance. However, self-reported data is dependent upon a patient’s ability to accurately recall past behaviors and, therefore, is potentially subject to bias. The purpose of this study was to evaluate the validity of self-reported data regarding endoscopic surveillance in patients with Barrett’s esophagus.

**Methods:** Twenty-two consecutive patients with Barrett’s esophagus undergoing surveillance endoscopy at the Durham VA Medical Center were administered a validated questionnaire that specifically asked about the number of upper endoscopies performed for surveillance. Chart abstraction was then performed and prior upper endoscopies were reviewed. Responses from
the questionnaires were compared with information obtained from medical records.

Results: The mean age was 66.5 years; all patients were male. Sensitivity of self-reported data was 90%, calculated as the percentage of patients who reported having had upper endoscopy divided by the number of patients who had the test according to their medical record. The Spearman correlation coefficient for self-reported and medical chart data was 0.622, indicating excellent agreement not likely to occur by chance (p = 0.002).

Conclusions: Patients with Barrett’s esophagus were able to accurately recall the number of surveillance endoscopies that had been performed. These results support the utilization of self-reported information with regards to surveillance for Barrett’s esophagus for clinical decision-making, monitoring surveillance activities, and clinical research at an individual and population level.

734

ASPIRIN USE IN PATIENTS TAKING SELECTIVE COX-2 INHIBITORS OR NON-SELECTIVE NSAID THERAPY IN A MANAGED CARE SETTING


Purpose: Guidelines suggest aspirin use for patients with a history of cardiovascular disease (CHD) or diabetes mellitus (DM). Aspirin taken with selective (COX-2) and non-selective NSAIDs may lead to increased risk of gastrointestinal (GI) adverse events. This study measured aspirin use and evaluated its association with GI risk factors and gastroprotective medication use in patients with CHD or DM who were chronically using COX-2 or NSAID therapy.

Methods: This analysis employed a survey of patients identified from administrative claims data from two large managed care plans in the Southeastern and Western US. The study included patients with prior diagnosis of CHD or DM who were chronic users of NSAID/COX-2 (minimum of two prescriptions during most recent 6 months) and continuously eligible in the health plan from 2/1/2002 to 1/31/2004. Trained interviewers obtained the patient reported information including use of aspirin and over the counter medications during a telephone survey. Patient characteristics between aspirin users and non-users were compared using bivariate statistics.

Results: In all, 1,067 patients (response rate: 20%) were surveyed. Of the survey respondents, 48% took aspirin. Among aspirin users, 61% took a gastroprotective medication, with 41% taking a proton pump inhibitor. Additionally, 92% of patients had at least one GI risk factor. Differences in GI risk factors across patients with and without aspirin are given in the table below. Aspirin users were more likely to be older than 65 years [OR:1.28; CI:1.00 – 1.64], more likely to be smokers [OR:1.36; CI:1.06 – 1.75], and more likely to be males [OR:1.71; CI:1.33 – 2.17]. However, gastroprotective medication use was equal across aspirin users and non-users [OR:1.10; CI 0.85 – 1.41].

Conclusions: In the surveyed patient population, less than 50% of patients with CHD or DM reported aspirin use. Additionally, in patients using aspirin and NSAID/COX-2s with GI risk factors, appropriate use of gastroprotective medications may be sub-optimal.

<table>
<thead>
<tr>
<th></th>
<th>Aspirin Users (N = 508)</th>
<th>Aspirin Non-users (N = 559)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Mean ± SD)*</td>
<td>65 ± 11</td>
<td>63 ± 13</td>
</tr>
<tr>
<td>Gastroprotective medication use (N; %)</td>
<td>312 (61%)</td>
<td>331 (59%)</td>
</tr>
<tr>
<td>Age &gt; 65 (N; %)*</td>
<td>235 (46%)</td>
<td>225 (40%)</td>
</tr>
<tr>
<td>Female (N; %)*</td>
<td>271 (53%)</td>
<td>370 (66%)</td>
</tr>
<tr>
<td>Smokers (N; %)*</td>
<td>262 (52%)</td>
<td>245 (44%)</td>
</tr>
<tr>
<td>Prior GI events (N; %)</td>
<td>279 (55%)</td>
<td>325 (58%)</td>
</tr>
<tr>
<td>Corticosteroid use (N; %)</td>
<td>199 (39%)</td>
<td>217 (39%)</td>
</tr>
</tbody>
</table>

*Significant below P = 0.05

735

CHARACTERIZATION OF TEGASEROD-TREATED PATIENTS IN A MANAGED CARE POPULATION


Purpose: Irritable bowel syndrome with constipation is characterized by abdominal pain (A), bloating (B) and constipation (C). Tegaserod maleate, a highly selective serotonin (5-HT4) receptor agonist, is approved for women with IBS with constipation. This study describes the diagnostic characteristics, comorbidities and concomitant medications associated with tegaserod utilization in a managed care setting.

Methods: A retrospective, longitudinal comparative study of tegaserod users was conducted utilizing medical and pharmacy administrative claims data from a large, geographically diverse managed care organization. Continuously enrolled, benefit-eligible members “new” to tegaserod therapy were identified between 8/1/02 - 6/30/03 and characterized as having at least 1 IBS-related medical claim for A, B, C or IBS (IBS group) or other GI-related claims (GI group). Descriptive statistics, including demographics, comorbidities and GI-related medication use during the 6 month period prior to the first tegaserod prescription, were reported for both groups.

Results: Of 3,365 new tegaserod users, 2,770 (82%) had at least 1 medical claim consistent with IBS, A, B or C: 48% had claims for IBS, 40% A, 11% B, and 38% C. Overall, compared to the GI group, the IBS group was more female (93% vs. 88%) and younger (46 ± 14 vs. 49 ± 15). In terms of comorbidities, the IBS group had significantly higher rates of psychiatric disorders (20% vs. 10%), back pain (17% vs. 11%), and migraines/headaches (11% vs. 5%) than the GI group. Prior GI-related drug utilization was different between the two groups: the IBS group used significantly more laxatives (23% vs. 11%), antispasmodics (22% vs. 12%) and antidepressants/SSRIs (38% vs. 34%) than the GI group; the GI group used significantly more promotility agents (12% vs. 8%) than the IBS group. On average, the IBS group had more prescriptions (standardized to 30 days) of tegaserod than the GI group (2.32 ± 1.63 vs. 2.00 ± 1.44).

Conclusions: In this study population, 82% of patients prescribed tegaserod had diagnostic claims consistent with IBS, A, B or C. Associated comorbidities and concomitant drug utilization in the IBS group appeared comparable to other studies. These data suggest that tegaserod utilization is associated with a clinically appropriate population.

736

OFFICE BASED RESOURCE UTILIZATION AND ENDOSCOPIC RESOURCE UTILIZATION IN THE CARE OF HEPATITIS C PATIENTS IN A PRIVATE PRACTICE GASTROENTEROLOGY GROUP


Purpose: The majority of subspecialty care for Hepatitis C (Hep C) is performed by gastroenterologists. Caring for these patients is time and resource intensive. Minimal research has been done to assess the impact of caring for Hep C patients in private practice settings.

Methods: Retrospective chart review was utilized to assess patient’ demographics, office based resource utilization (staff time, office visits, phone calls) and endoscopic resource utilization in caring for Hep C patients during a 5 year period (1997–2002).

Results: 670 patients were seen in consultation for Hep C between Jan 1997 and Dec 2001. Demographics: 59% male, mean age 47 +/- 10 yrs, 80% Caucasian, 15% African-American. 99% had health insurance. The number of patients referred for Hep C increased 8–10% annually. The proportion of outpatient visits (consultation or follow up visits) attributable to Hep C increased from 3% in 1997 to 8% in 2002. Patients averaged 4 visits during the study period (SD = 4.1; range = 1–21). 204 patients were seen for a single visit; 187 were scheduled for a second
visit but did not return. Patients treated with Interferon based therapy had significantly more office visits than those not undergoing treatment (8.9 vs 2.8 visits, p < 0.001).

The average patient accounted for a mean of 7.8 phone calls (incoming or outgoing) during the study period (SD = 6.6, range 0–28). Hep C therapy patients accounted for a mean of 13.0 phone calls vs 5.3 calls for non-treated patients (p < 0.0003).

140/670 (21%) patients referred for Hep C underwent endoscopy during the study period. The 140 patients underwent 184 endoscopies; 66 colonscopes, 69 upper endoscopies, 7 ERCPs and 42 sigmoidoscopies. 196 patients were older than 50 yr old; 69 (35%) had a colonoscopy during the study period of which only 18 were done as a screening test.

Conclusions: The care of Hep C patients is an increasing part of the practice of gastroenterology. Patients who receive Hep C therapy and those with advanced liver disease utilize significant physician/staff time. While the care of these patients may have an impact on physician and office productivity, this cohort also utilizes a moderate amount of endoscopy services. The endoscopic care of this population must be considered when determining the overall financial impact of treating Hep C patients.

Future research should assess the most cost and time efficient manner to care for this growing population of patients in the private practice gastroenterology setting.

737

WORKUP FOR FIRST TIME CONSULTANTS COSTS LESS THAN CONTINUING CARE FOR IBS


Purpose: Previous studies of the cost of care for IBS have not separated the cost of the diagnostic workup from the cost of continuing care. Diagnostic assessment is thought to be the most costly part of care. The aim of this study was to compare cost of care for first time consultants (NEW) to costs for established IBS patients (OLD).

Methods: Prospectively identified patients with clinical diagnoses of IBS, abdominal pain, constipation, and diarrhea at a clinic visit (index visit) were prospectively identified and invited to participate. The Rome II modular diagnostic questionnaire was used to identify IBS patients. Responders to the first survey were sent a second survey 6 months later which assessed satisfactory relief of bowel symptoms. Cost and utilization data for the two 6-month periods preceding the index visit (Period -2 and Period -1) and for the two 6-month periods following the index visit (Period +1, Period +2) were obtained from the automated medical records of Group Health Cooperative. The data were log-transformed to correct for skew and were analyzed by the GLM repeated measures program.

<table>
<thead>
<tr>
<th></th>
<th>Period -2</th>
<th>Period -1</th>
<th>Period +1</th>
<th>Period +2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Costs OLD</td>
<td>$1280</td>
<td>$1401</td>
<td>$2038</td>
<td>$1569</td>
</tr>
<tr>
<td>Total Costs NEW</td>
<td><strong>$990</strong></td>
<td><strong>$1094</strong></td>
<td><strong>$1611</strong></td>
<td><strong>$1129</strong></td>
</tr>
<tr>
<td>GI Costs OLD</td>
<td>$49</td>
<td>$96</td>
<td>$266</td>
<td>$64</td>
</tr>
<tr>
<td>GI Costs NEW</td>
<td><strong>$7</strong></td>
<td><strong>$18</strong></td>
<td><strong>$203</strong></td>
<td><strong>$15</strong></td>
</tr>
</tbody>
</table>

*p < .05 NEW vs OLD; **p < .01 NEW vs OLD; Table shows median values.

Results: 822 Rome II positive patients (78.1% female, 87.9% Caucasian, average age 51.9 years) met inclusion criteria, including 263 NEW patients. Both NEW and OLD patients showed a significant increase in health care costs in Period +1 following the index visit (Table). The incremental cost was more than could be accounted for by the index visit and may reflect patient reactions to completing detailed questionnaires about their health care. These costs returned to pre-index values for both groups in Period +2. GI-related health care costs were significantly lower in patients who reported satisfactory relief of bowel problems for all time periods except Period +1, but total health care costs were not significantly different.

Conclusions: Patients who report satisfactory relief of bowel symptoms incur lower GI-related health care costs compared to patients who are unsatisfied with bowel symptom relief. [Supported by RO1 DK31369 and Novartis Corporation.]

738

RELATIONSHIP BETWEEN SATISFACTION WITH TREATMENT OUTCOME AND COST IN IBS PATIENTS


Purpose: Previous studies of the cost of care for Irritable Bowel Syndrome (IBS) have not assessed the impact of patient satisfaction with treatment. This study compared Satisfied and Unsatisfied patients with respect to all health care costs and GI-related costs.

Methods: Patients receiving clinical diagnoses of IBS, abdominal pain, constipation, and diarrhea at a clinic visit (index visit) were prospectively identified and invited to participate. The Rome II modular diagnostic questionnaire was used to identify IBS patients. Responders to the first survey were sent a second survey 6 months later which assessed satisfactory relief of bowel symptoms. Cost and utilization data for the two 6-month periods preceding the index visit (Period -2 and Period -1) and for the two 6-month periods following the index visit (Period +1, Period +2) were obtained from the automated medical records of Group Health Cooperative. Data were log-transformed to correct for skew and analyzed by the GLM repeated measures program.

Results: 622 patients (78.6% female, 89.2% Caucasian, average age 52.6 years) met inclusion criteria (Rome II) and completed follow-up evaluation, including 366 who reported satisfactory relief. Both Satisfied and Unsatisfied patients showed a significant increase in health care costs in the first 6 months after the index visit (Period +1, Table). This incremental cost was greater than could be explained by the index clinic visit and may reflect patient reactions to completing detailed questionnaires about their health care. These costs returned to pre-index values for both groups in Period +2. GI-related health care costs were significantly lower in patients who reported satisfactory relief of bowel problems for all time periods except Period +1, but total health care costs were not significantly different.

Conclusions: Patients who report satisfactory relief of bowel symptoms incur lower GI-related health care costs compared to patients who are unsatisfied with bowel symptom relief. [Supported by RO1 DK31369 and Novartis Corporation.]

739

TEGASEROD THERAPY REDuces GI-RELATED RESOURCE UTILIZATION

Purpose: Irritable bowel syndrome (IBS) is characterized by abdominal pain/discomfort and altered bowel habits. Tegaserod, a highly selective serotonin (5-HT4) receptor agonist, is approved for women with IBS with constipation. This study investigated the impact of tegaserod therapy on GI-related resource utilization.

Methods: A retrospective, longitudinal study of tegaserod users and matched (age, gender, index diagnosis, pre/post time periods) controls was conducted. The study utilized medical and pharmacy claims from a large, geographically diverse managed care organization. Continuously enrolled, benefit-eligible patients “new” to tegaserod therapy (Index Rx) were identified between 8/1/02 – 6/30/03 and categorized (using ICD-9CM codes) as having IBS or a GI-related disorder (e.g., gastroesophageal reflux disease). GI-related resource utilization (office visits, hospitalizations, emergency room visits, diagnostic procedures and GI medications) was determined for 6 month periods prior to and following Index Rx date for tegaserod users and controls. Within cohort pre/post differences were tested using the Wilcoxon Signed Ranks Test.

Results: The 3,365 tegaserod cases and 3,364 matched controls had a mean age of 47 ± 15 years and 92% were female; 47% had an index diagnosis of IBS and 53% an other GI-related disorder. Comparing post utilization to pre utilization, all GI-related resource categories showed a significant decrease (p < 0.01) for tegaserod cases that was not consistently observed for controls (Table 1).

Conclusions: Tegaserod appears to be associated with consistent decreases in GI-related resource utilization after 6 months of therapy; similar consistent reductions were not observed in controls. These early findings suggest that tegaserod may have important clinical and economic benefits.

Table 1. Absolute and Relative Change in GI-Related Resource Utilization

<table>
<thead>
<tr>
<th>Utilization Category</th>
<th>Tegaserod Absolute Change</th>
<th>Tegaserod Relative Change</th>
<th>Control Absolute Change</th>
<th>Control Relative Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Visits</td>
<td>−0.42*</td>
<td>−22%</td>
<td>−0.08*</td>
<td>−8%</td>
</tr>
<tr>
<td>Hospitizations</td>
<td>−0.02*</td>
<td>−33%</td>
<td>0.00</td>
<td>0%</td>
</tr>
<tr>
<td>ER Visits</td>
<td>−0.04*</td>
<td>−40%</td>
<td>−0.01*</td>
<td>−25%</td>
</tr>
<tr>
<td>Endoscopic Procedures</td>
<td>−0.12*</td>
<td>−26%</td>
<td>0.02</td>
<td>20%</td>
</tr>
<tr>
<td>Non-Endoscopic Procedures</td>
<td>−0.26*</td>
<td>−33%</td>
<td>0.00</td>
<td>0%</td>
</tr>
<tr>
<td># of GI Drugs</td>
<td>−0.11*</td>
<td>−8%</td>
<td>0.05</td>
<td>7%</td>
</tr>
</tbody>
</table>

* p < 0.01

Results: Of the 371 patients that received an IV PPI, 231 (62%) were classified as appropriately indicated and 140 (38%) inappropriately indicated. The appropriate indications were GIB (13%) and SUP with concomitant (a) GI disease [pancreatitis, esophagitis, gastroenteritis] (28%), (b) other non-GI disease [MI, sepsis, pneumonia, CVA, ARF] (47%) and (c) a post-operative state (12%). However, for SUP there was almost uniform derivation from the optimal dosing regimen.

Conclusions: 1. Inappropriate utilization occurs in greater than one-third of patients and increases hospital costs even with expanding the appropriate indications to include SUP and prevention of recurrent GIB.
2. The most common utilization of IV PPIs are not the FDA-labeled indications, but common off-label uses, namely SUP and GIB.
3. This is in agreement with retrospective analysis that shows adherence to published indications of use and dosing of IV PPIs is poor, and corresponds to excessive costs. Indiscriminate use of IV PPIs may lead to adverse events and an unnecessary cost burden.[1]


741

DIAGNOSIS AND ENDOSCOPIC MANAGEMENT OF GASTRIC OUTLET OBSTRUCTION FOLLOWING ROUX-EN-Y GASTRIC BYPASS

Irena Maier, M.D., Michael S. Butensky, M.D.*, Carlos Barba, M.D., Carolyn H. Burke-Martindale, M.SN, APRN, ACNP, BC, Manuel Lorenzo, M.D., Robert Newman, M.D. University of CT, Farmington and St Francis Hospital, Hartford, Connecticut.

Purpose: Stomal stenosis of the gastrojejunostomy (SS) and marginal ulcers, potentially causing gastric outlet obstruction (GOO), are complications of the Roux Y Gastric Bypass (RYGB). The aims of the study are to describe the endoscopic findings in patients with symptoms of GOO after RYGBP and to determine the outcome of endoscopic balloon dilation (EBD) when SS was present.

Methods: Retrospective chart review of 382 patients that underwent RYGBP between 1/01 and 10/03. 86 patients (22.51%) underwent endoscopy for gastric outlet obstructive symptoms.

Results: The number of endoscopies (EGD) performed was 126. The distribution was: 46 patients - 1 EGD, 27 patients - 2 EGD, 9 patients - 3 EGD, 3 patients - 4 EGD and 1 patient - 8 EGD. The mean time from surgery to the 1st (EGD) was 2.8 months (1 week - 15months). First endoscopy findings were: normal post-surgical anatomy 3, SS 72, including 7 with concomitant marginal ulcer and 2 with esophagitis, marginal ulcer without SS 7, staple line dehiscence 1, esophagitis 1, GE junction ulcer 1, and esophageal stricture 1. In regard to SS, the 9mm endoscope was not able to pass through anastomosis initially in 38 of the 72 patients (53%). EBD was performed in 72/86 of the patients. CRE balloon diameters ranged from 6 to 20 mm. If EBD was started at 6mm (10pts), we dilated to 12 mm (2 cases to 15 mm). Otherwise the initial dilation was carried out to 15mm. If symptoms recurred after 15 mm dilation, the dilation was extended to 18–20 mm. 51 pts (70.8%) had complete resolution of symptoms after a single dilation, 18 pts - 2 dilations, 1 pt - 3 dilations, 1 pt - 4 dilations, and 1 pt - 7 dilations. Dilations were not done if a marginal ulcer and stricture were present. The patients were placed on PPI for 4 weeks and scheduled for endoscopy if symptoms persisted (3 of 14). All strictures were ultimately successfully managed with dilation without complications.

Conclusions: SS and ulcers are the most common findings when patients present with GOO symptoms after RYGBP. EBD is a safe and effective method for treating the strictures. The dilation goal should be 15mm, but dilations up to 20mm can be performed. More than 1 EBD may be required. If the SS are associated with ulcers, EBD should not be done and the patient placed on PPI therapy followed by repeat EGD if symptoms persist.
ECONOMIC BENEFITS OF EARLIER DIAGNOSIS OF CELIAC DISEASE

Purpose: To determine the incidence and prevalence of celiac disease (CD) and evaluate economic benefits and costs savings with earlier diagnosis of CD over time.

Methods: Using CIGNA HealthCare claims and encounter data (1999 to 2003) and a retrospective cohort study design, a difference-in-difference analysis was performed to compare direct medical costs and utilization of health care services in a cohort of patients newly diagnosed with CD with three comparative cohorts who exhibited symptoms associated with CD and had not received a diagnosis of CD during the 4-year study period.

Results: Age-sex adjusted incidence and prevalence of CD increased >two-fold over the 4-year period. Age-sex adjusted incidence increased from 89.05 per million per year in 2000 to 201.14 in 2003. Age-sex adjusted point prevalence increased from 133.43 per million members in 2000 to 360.74 in 2003. The CD cohort had a significant trend reduction in direct medical costs (medical charges and standardized R VU-based medical costs), relative to the three comparative cohorts over time. Based on the estimates derived from all available members, medical charges in the CD cohort were 23.8% (p < 0.1), 29.5% (p < 0.1), and 27.4% (p < 0.1) lower than cohort 1, 29.6% (p < 0.01), 36.1% (p < 0.01), and 27.3% (p < 0.01) lower than cohort 2, and 42% (p < 0.0001), 30.4% (p < 0.05), and 32.4% (p < 0.1) lower than cohort 3 for the 12-month, 24-month and 36-month post-diagnosis period, respectively. RVU-based medical costs in the CD cohort were 21.4%, 33%, and 27.4% lower than cohort 1 (p < 0.05), 29.0%, 37.5%, and 24.8% lower than cohort 2 (p < 0.05), and 37.7%, 33%, and 31.9% (p < 0.01) lower than cohort 3 for the 12-month, 24-month and 36-month post-diagnosis period, respectively. The net present value of cumulative cost-savings in 2003 dollars in medical charges per member with CD over the three-year follow-up period ranged from $3,543 to $12,309 relative to three comparative cohorts with 1, 2, or 3 or more associated conditions. The decrease in medical costs can be attributed to decreasing trends in utilization of office, specialist and ER visits, lab and diagnostic testing, imaging procedures, and endoscopy relative to the pre-diagnosis period and the three comparative cohorts.

Conclusions: The earlier diagnosis of CD was associated with significant reduction in direct medical costs and utilization of health care services over time.

TEGASEROD SIGNIFICANTLY REDUCES WORK PRODUCTIVITY LOSS AND DAILY ACTIVITY IMPAIRMENT IN PATIENTS WITH IBS WITH CONSTIPATION

Purpose: Tegaserod (T) is a selective, serotonin type 4 (5-HT4) receptor agonist with proven efficacy and safety in patients with irritable bowel syndrome with constipation (IBS-C). The aim of this study was to assess the impact of T on work-related productivity and daily activity impairment in an employed population of patients (pts) with IBS-C.

Methods: Pts (women < 65 years old who met Rome II criteria for IBS-C) were assessed during a randomized, double-blind, placebo-controlled, multicenter study of T 6 mg bid or placebo, with a 2-week baseline period and 2 4-week double-blind treatment periods (P1 and P2), which were separated by a treatment-free period. Absteeencee, presenteeis, and overall work productivity loss (combined absenteeis+presenteeis) due to IBS symptoms during the past 7 days were measured with the validated Work Productivity and Activity Impairment Questionnaire for IBS (WPAI-IBS). Impact on daily activities (e.g., housework, shopping, childcare, exercising, studying) was also evaluated with the WPAI-IBS. Assessments were performed at baseline and Week 2 and 4 of P1 and P2. Results from P1 are presented here.

Results: 2650 women with IBS-C were randomized in P1 (T [n = 2450], placebo [n = 500]; 82% were Caucasian and 63% were pre-menopausal. Mean age was 42 years (range 17–66) and mean duration of IBS symptoms was 13 years. 63.8% in the T and 59.4% in the placebo group were employed. Compared with placebo, T significantly reduced work and daily activity impairment at all time points. At Week 2 and 4 (vs baseline), T significantly reduced absenteeis (p values < .03), presenteeis (p values < .004), overall work productivity loss (p values < .003), and daily activity impairment (p values < .0005) compared with placebo. At end of treatment (vs baseline) compared to placebo, T significantly reduced absenteeis by 2.6% (p < .004), presenteeis by 5.4% (p < .0001), overall work productivity loss by 6.3% (p < .0001), and daily activity impairment by 5.8% (p < .0001). Assuming a 40-hour workweek, T reduced work productivity loss by 2.5 hours.

Conclusions: T significantly reduced work productivity and daily activity impairment at 2 weeks, and maintained these benefits at 4 weeks. This is the first study to show that T has a significant positive impact on work productivity (both absenteeis and presenteeis), as well as daily activities.

SHORT METAL VERSUS PLASTIC STENTS FOR MALIGNANT OBSTRUCTIVE JAUNDICE PRIOR TO POSSIBLE WHIPPLE’S OPERATION: A COST-MINIMIZATION DECISION ANALYSIS
Victor K. Chen, M.D., Miguel R. Arquedas, M.D., M.P.H., Todd H. Baron, M.D.*, University of Alabama at Birmingham, Birmingham, Alabama and Mayo Clinic, Rochester, Minnesota.

Purpose: Relief of malignant obstructive jaundice can be endoscopically achieved with plastic or metal biliary stenting. Plastic stents are cheaper but have shorter patency. Short biliary Wallstents do not preclude subsequent Whipple. We analyzed costs and outcomes to better define the role of different stents in the management of obstructive jaundice from pancreatic cancer in patients in whom operative status is initially uncertain at the time of ERCP.

Methods: A Markov model was constructed to evaluate expected costs and outcomes associated with biliary stenting via ERCP in patients with malignant obstructive jaundice. Strategies evaluated were: 1) initial plastic stent followed by plastic stents for subsequent occlusions in non-operative candidates after staging (Plastic f/u Plastic), 2) initial plastic subsequent metal Wallstent (Plastic f/u Metal), 3) initial short metal subsequent plastic (Metal f/u Plastic) and 4) initial short metal stent subsequent metal Wallstent (Metal f/u Metal).

Stent occlusion rates, ERCP complication rates and outcomes, cholangitis rates and outcomes with stent occlusions, pancreatic cancer mortality rates and Whipple rates utilized in the model were derived from medical literature. Costs of associated outcomes were based on 2004 Medicare standard allowable charges. Costs and health outcomes were accrued until all the patients reached an absorbing health state (death or Whipple’s surgery that eliminates further need for palliative biliary stenting) or 24-cycles (months) ended.

Results: Monte Carlo simulation resulted in the following average costs in decreasing cost-minimizing optimality: 1)Metal f/u Metal $19,935, 2)Plastic f/u Metal $20,157, 3)Metal f/u Plastic $20,871 4)Plastic f/u Plastic $20,878. For initial plastic stents to be preferred over short metal stents, at least 70% of patients would need to be potentially resectable for Whipple operation. If a patient’s life expectancy is less than 5-months, subsequent plastic stents become preferred. Additional sensitivity analyses showed unchanged results over acceptable ranges.

Conclusions: This decision analysis identifies initial short metal stents via ERCP prior to definitive cancer staging as the preferred initial cost-minimizing strategy. If the patient is not a good operative candidate or has advanced disease, metal Wallstents to treat subsequent occlusions offer the lowest associated costs.
ENDOSCOPIC VERSUS MEDICAL THERAPY FOR BLEEDING PEPTIC ULCERS WITH ADHERENT CLOTS: A META-ANALYSIS

Charles J. Kahri, M.D., Dennis M. Jensen, M.D., Joseph J.Y. Sung, M.D., Brian L. Bleau, M.D., Hye Kyung Jung, M.D., Thomas F. Imperiale, M.D.*.
Indiana University Medical Center, Indianapolis, Indiana.

Purpose: The management of ulcers with adherent clots is controversial. We performed a meta-analysis to compare endoscopic (EndoRx) and medical therapy (MedRx) for patients with bleeding peptic ulcers containing adherent clots.

Methods: We used MEDLINE, Biosis, Embase, and the Cochrane Library to identify all randomized controlled trials comparing the two interventions. The primary authors of published articles were contacted and study databases combined for a patient-level analysis. Studies in abstract form were included in a traditional meta-analysis. Outcomes evaluated were recurrent bleeding, need for surgery, length of hospitalization, transfusion requirement, and mortality. A random effects model was used to calculate the pooled relative risks (RR) and the number needed to treat (NNT).

Results: Six studies were identified, representing 240 patients from the U.S., Hong Kong, South Korea, and Spain. Four studies (N = 146) were fully published and two were in abstract form. Eligibility criteria, interventions, and outcome definitions were similar. All patients received general supportive care and acid suppressive therapy. Patients in the EndoRx group also underwent endoscopic clot removal and treatment of the underlying lesion with thermal energy, electrocoagulation, and/or injection of sclerotheran. The two groups were similar in demographic characteristics, severity of bleeding, risk factors for ulcer disease, and comorbidities. Rebleeding occurred in 5 of 61 (8.2%) patients in the EndoRx group, compared to 21 of 85 (24.7%) in the MedRx group (p = 0.01). The pooled RR of rebleeding was 0.35 (95% CI, 0.14–0.83; NNT = 6.3) in favor of EndoRx. There was no difference between EndoRx and MedRx in length of hospital stay (mean 6.8 versus 5.6 days, p = 0.37), transfusions (mean 3.0 versus 2.8 units of packed red blood cells, p = 0.58), and mortality (9.8% versus 7%, p = 0.55). The results of the meta-analysis were concordant with the patient-level analysis, except for the need for surgery which favored endoscopic therapy (pooled RR 0.43; 95% CI, 0.19–0.98; NNT = 13.3); however, this outcome became non-significant when only peer-reviewed studies were considered.

Conclusions: Endoscopic therapy is superior to medical therapy for preventing recurrent hemorrhage in patients with bleeding peptic ulcers and adherent clot. The interventions are comparable with respect to the need for surgery, length of hospital stay, transfusion requirement, and mortality.

STATINS DO NOT REDUCE COLON CANCER RISK IN HUMANS: A CASE CONTROL STUDY IN HALF A MILLION VETERANS

Vikas Khurana, M.D., F.A.C.G.*, Sathyam Jaganmohan, M.D., Ramabahu Chalasani, M.D., Tejinder Singh, M.D., Praveen Roy, M.D., Gloria Caldito, Ph.D, Carlton Fort, M.D.
Overton Brooks VA Medical Center; LSU-HSC, Shreveport, Louisiana and VAMC, Albuquerque, New Mexico.

Purpose: To investigate the effect of HMG CoA Reductase inhibitors (Statins) in reducing the incidence of colon cancer in the veteran population.

Background: Statins are commonly used cholesterol-lowering agents that are noted to suppress cell growth in several animal models including inhibition of carcinogen-induced colon tumors in mice. Both simvastatin and lovastatin are shown to augment tumor necrosis factor related apoptosis-inducing ligand (TRAIL) in human tumor cells. However clinical data for a chemoprotective role of statins against colon cancer in humans is lacking. We studied the association of colon cancer and statins in our VA Medical Center to prove or disprove their value as chemopreventive agents.

Methods: A retrospective cross sectional case control study was conducted using data from the VISN 16 VA database from 1998 to 2004. We analyzed 534,273 patients from 4 states (LA, MS, TX, AK). The mean age was 61.1 (SD +/- 14.4) years and 92.1% were males. The primary variable of interest was colon cancer and the use of statins. Multivariate logistic regression analysis was done to adjust for covariates including aspirin and NSAID use, smoking, obesity, race, gender, age and alcohol use. The SAS statistical package was used to analyze data.

Results: Of the 534,273 in the study, 181,056 (33.9%) were on statins. Of these, 2453 (1.4%) had colon cancer. In the control group, 320,294 (66.1%) were not on statins. In this group 2886 (0.9%) had colon cancer. Statins did not decrease the incidence of colon cancer (Odds ratio 0.94, 95% CI 0.89 to 1.00).

Discussion: This study builds on our previous study with smaller sample size data. Our data should be evaluated with caution, given the limitations of the population, the database and this being a case control study. Dose, duration and particular statin used was not factored into the analysis. Some factors known to increase the risk of colon cancer like personal and family history of cancer, diet and inflammatory bowel disease were not incorporated in the study. However the large size of the database was felt to limit the effect of these factors.

Conclusions: Statins are not protective against the development of colon cancer after controlling for NSAID and aspirin use, smoking, alcohol use, age, race, gender, and obesity.
OFFICE C02 LASER HEMORRHOIDECTOMY AND OTHER PERIANAL DISORDERS OF 1,760 PATIENTS BY A GASTROENTEROLOGIST - A PIONEER AND COMPLETE APPROACH

Joseph B. Hollis, M.D., F.A.C.G.*. Portsmouth Gastroenterology Diagnostic Center, Portsmouth, Virginia.

Purpose: Previous methods have limited gastroenterologists treating only grade I and grade II symptomatic hemorrhoids. Other perianal disorders have been beyond their scope. The author undertook the task of treating symptomatic hemorrhoids of all grades and other perianal disorders with C02 laser therapy.

Methods: Patients with hemorrhoids and other perianal disorders were treated in the office with C02 laser using simple techniques. Mild conscious sedation was given to most patients. Local anesthesia with bupivacaine was given to patients requiring C02 excision.

Results: 1,760 patients were treated with C02 laser from 1993 to 2004. 1,112 patients had ablation with vaporization technique. 30% of the patients required second vaporization treatment. Vaporization alone did not require local anesthesia and produced minimal to no discomfort during or post treatment. The author's technique for laser excision was used on 460 patients with grade III and grade IV hemorrhoids, thrombosed hemorrhoids, or mucosal prolapse. C02 excision did produce postoperative pain, but was tolerated with sitz baths and analgesics. 198 patients were treated for other perianal conditions including anal fissure with lateral sphincterotomy and debridement, fistulotomy, incision and drainage of perianal abscess, anal tags, condyloma acuminata and anal strictures. Of the 2,034 treatments of 1,760 patients, 28 had minor bleeding requiring simple offfice treatment; (1.5% incidence). There were three infections requiring I & D (0.14% incidence). Two of the patients were not compliant to post operative care.

Conclusions: The C02 laser treatment is a versatile and safe instrument in treating all hemorrhoidal conditions including thrombosed and prolapsed hemorrhoids. Simple techniques used were proven safe and effective treating all hemorrhoidal conditions and other perianal disorders. Complication rates appear less than surgical hemorrhoidectomy. Cost savings are substantial, as there are no facility fees, only the physician fee.

749

LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS EFFECTIVELY IMPROVES COMORBIDITIES ASSOCIATED WITH MORBID OBESITY

Maria C. Crisanti, M.D., Jorge E. Urbandt, M.D., Pavlos K. Papasavas, M.D.*, Philip F. Caushaj, M.D., Daniel Gagne, M.D. The Western Pennsylvania Hospital, Pittsburgh, Pennsylvania.

Purpose: Previous methods have limited gastroenterologists treating only grade I and grade II symptomatic hemorrhoids. Other perianal disorders have been beyond their scope. The author undertook the task of treating symptomatic hemorrhoids of all grades and other perianal disorders with C02 laser therapy.

Methods: Patients with hemorrhoids and other perianal disorders were treated in the office with C02 laser using simple techniques. Mild conscious sedation was given to most patients. Local anesthesia with bupivacaine was given to patients requiring C02 excision.

Results: 1,760 patients were treated with C02 laser from 1993 to 2004. 1,112 patients had ablation with vaporization technique. 30% of the patients required second vaporization treatment. Vaporization alone did not require local anesthesia and produced minimal to no discomfort during or post treatment. The author's technique for laser excision was used on 460 patients with grade III and grade IV hemorrhoids, thrombosed hemorrhoids, or mucosal prolapse. C02 excision did produce postoperative pain, but was tolerated with sitz baths and analgesics. 198 patients were treated for other perianal conditions including anal fissure with lateral sphincterotomy and debridement, fistulotomy, incision and drainage of perianal abscess, anal tags, condyloma acuminata and anal strictures. Of the 2,034 treatments of 1,760 patients, 28 had minor bleeding requiring simple offfice treatment; (1.5% incidence). There were three infections requiring I & D (0.14% incidence). Two of the patients were not compliant to post operative care.

Conclusions: The C02 laser treatment is a versatile and safe instrument in treating all hemorrhoidal conditions including thrombosed and prolapsed hemorrhoids. Simple techniques used were proven safe and effective treating all hemorrhoidal conditions and other perianal disorders. Complication rates appear less than surgical hemorrhoidectomy. Cost savings are substantial, as there are no facility fees, only the physician fee.

750

OBESITY IS RELATED TO GASTROESOPHAGEAL REFLUX SYMPTOMS IN FEMALES WITHIN US VETERAN POPULATION

Vikas Khurana, M.D., F.A.C.G.*. Prasanna Isaac, M.D., Sathya Jaganmohan, M.D., Ritu Khurana, M.D., Sudhir Unni, Daniel Halberg, Ph.D., Charlton Fort, MHA. Overton Brooks VA Medical Center; Louisiana State University Health Sciences Center, Shreveport, Louisiana and AstraZeneca, Little Rock, Arkansas.

Purpose: Gastroesophageal reflux and obesity are both increasing in prevalence in United States. It is estimated that heartburn affects 25 million adults in the United States on a daily basis. The significant data documenting the relationship between obesity and gastro esophageal reflux symptoms has been relatively lacking from within the US, and the emerging literature is chiefly from outside the US. A difference between sexes concerning this relationship has been proposed. The objective of this study is to evaluate the relation between body mass index and gastroesophageal reflux symptoms and to determine the difference between sexes concerning this relationship.

Methods: Retrospective, cross sectional, case control study, conducted using the VISN 16 VA database from 1998 through 2004 from 4 states (AR, LA, TX and MS). We analyzed a total of 534,273 subjects (8% female). Of these, 429,998 records were valid. Mean age of subjects was 61 years and controls was 63.0 years. The patients were selected on the basis of ICD- 9 codes for reflux esophagitis (530.11) or reflux disease (530.81) or were currently documented as being on reflux medication. Controls were individuals who did not fit these criteria. The data was analyzed using multivariate logistic regression with reflux as the dependent variable and BMI, gender, smoking, and alcohol use as covariates. The SPSS statistical package was used to analyze the data and generate descriptive statistics.

Results: There was an association between increasing body mass index (BMI) and reflux in both sexes (P for trend < .001). However, this trend was stronger in women than in men. In women, compared with those with a BMI less than 25, the risk of reflux was increased among severely obese women (BMI > 35) (OR, 1.68; 95% CI, 1.56–1.83). Furthermore, reduction in BMI was associated with decreasing risk of reflux symptoms. The data should be evaluated with caution given the limitations of the population, database, and the fact that this is a case-control study.

Conclusions: There is a significant association between increasing body mass and symptoms of gastro esophageal reflux. This association was stronger in women than in the male veteran population.
Purpose: Outpatient facility fee makes up 75% to 85% of the cost of endoscopy and colonoscopy examinations. Hospital facility fees range from $1000 to $1500 for outpatient endoscopy and $1500 to $2500 for colonoscopy. To cut health care costs and for patient convenience and preference, office endoscopy was initiated in 1979, followed by colonoscopy in 1980.

Methods: Patient with significant pulmonary or cardiovascular diseases were excluded from office procedures. The patient is put on a pulse oximeter and EKG monitor. Conscious sedation is given with IV Demerol or Fentanyl and IV Versed or Valium. Nasal oxygen was available as needed.

Results: 9,460 patients had endoscopy with or without esophageal dilatation; 7,155 patients had colonoscopy with or without polypectomy. Average total yearly savings per 378 patients for office endoscopy was $567,000, compared to outpatient facility fees; Average total yearly savings per 298 patients for office colonoscopy was $596,000. Total yearly savings $1,163,000.00; Overhead cost of equipment and nursing personnel was $110.00 per procedure or $74,360.00 per year. The author was rated in the top 1% for cost efficiency in gastroenterology in Virginia.

Conclusions: There were 16,615 office procedures performed with no anesthesia complications, two colon perforations due to diverticula disease and electrocautery with no deaths. By avoiding outpatient facility fees, there was a savings of 29 million dollars over 25 years by insurance carriers. More third party payors should recognize these savings and encourage experienced gastroenterologists to do office procedures by paying overhead costs. Office gastroenterology procedures improve cost efficiency substantially without affecting quality care.

Efficacy and cost-analysis of colonoscopies in young patients presenting with hematochezia: A retrospective study of military patients

Michael E. Herman, DO∗, Chris B. Hyam, M.D., Karen L. Matthews, M.D., M.P.H. Naval Hospital Jacksonville, Jacksonville, Florida.

Numerous studies have shown the efficacy of colonoscopies for detecting advanced colorectal neoplasia. It is the study of choice when evaluating overt or occult rectal bleeding in patients over 40 years old. The yield of performing colonoscopies beyond the range of flexible sigmoidoscopy for nonacute rectal bleeding is very low in younger age groups. Health care costs and new capitation rules placed in effect at our military institution required us to focus on the most cost effective screening methods to best serve our young population. We did a retrospective pilot study to look at the efficacy and cost analysis of colonoscopies performed in young patients for the evaluation of rectal bleeding. Data for this pilot study was obtained from a computerized hospital database of colonoscopies performed on individuals for the evaluation of rectal bleeding during the year 2003. Exclusion criteria included patients over 40 years old or if the study indication was for abdominal pain, colorectal cancer screening, constipation, or diarrhea.

With a cohort of 40 patients, 94% of the studies demonstrated internal hemorrhoids and 6% were normal. None of the colonoscopies demonstrated any pathology that would not have been identified with a flexible sigmoidoscopy. Cost analysis savings using full CMAC 2003 rate (champus maximum allowable cost) totaled approximately $10,000 if a flexible sigmoidoscopy were used instead of a colonoscopy. Results from our study suggest that an initial flexible sigmoidoscopy is a reasonable and acceptable approach when evaluating carefully selected younger patients with nonacute rectal bleeding. A prospective database will be constructed for further evaluation.

Purpose: Constipation, which is one of the most common gastrointestinal complaints, significantly impacts inpatient healthcare utilization. The aim of this study was to estimate the total constipation-related inpatient hospital resource utilization in the US.

Methods: The 2001 National Hospital Discharge Survey (NHDS) was analyzed. The NHDS is a national probability survey of inpatients discharged from nonfederal short-stay hospitals in the US with visit weights that can be used to provide national estimates. Patients with a diagnosis of constipation (ICD-9-CM 564.0) were identified and stratified by those with a primary or secondary medical diagnosis of constipation.

Results: An estimated 282,161 (95%CI: 247,554 – 316,768) inpatient hospitalizations with a medical diagnosis of constipation occurred. Patients were 58% female, and 56% were 65 years of age or older; 42% were admitted through the emergency room, and nearly all (99%) were discharged alive (most [75%] to home). Of the constipation-related inpatient episodes, 38,361 (95%CI: 30,647 – 46,075) had a primary diagnosis of constipation with an average hospital stay of 2.9 days (95%CI: 0.1 – 5.7). For the remainder of patients, constipation was presumably a comorbidity or complication of the hospitalization and not the primary reason for the admission.

Conclusions: Constipation, which is predominantly treated in an outpatient setting, poses a significant burden to the inpatient setting as well. According to data from 2001, constipation is the primary diagnosis for over 38,000 annual inpatient hospitalizations in the US.

Purpose: Chronic constipation (CC) is a prevalent disorder that impacts approximately 15% of the US population and significantly impacts outpatient-related healthcare utilization. The aim of this study was to estimate constipation-related US ambulatory healthcare resource utilization occurring in physician offices, outpatient hospital clinics, and emergency rooms.

Methods: Two national probability surveys, the 2001 National Ambulatory Medical Care Survey (NAMCS) and the 2001 National Hospital Ambulatory Medical Care Survey (NHAMCS) were assessed. The NAMCS is a survey of sample visits to nonfederally employed office-based physicians who are primarily engaged in direct patient care, and the NHAMCS is a survey of ambulatory care services in hospital emergency and outpatient departments in the US. Both data sources have weights that can be used to provide national estimates. Patient visits with a medical diagnosis of constipation (ICD-9-CM = 564.0) or where constipation was the “reason for the visit” were identified and stratified according to setting.

Results: Greater than 5.7 million constipation-related visits occurred in the outpatient setting in 2001; 4,149,282 (95%CI: 2,955,697 – 5,342,866) occurred in physician offices; 586,861 (95%CI: 397,198 – 776,548) in hospital outpatient clinics; and 990,944 (95%CI: 893,360 – 1,088,527) in emergency rooms. Among those seen in physician offices, the average patient age was 43 years, 62% were female, 87% were white, and 38% were prescribed a laxative. Constipation was the primary reason for the visit or was the primary diagnosis in 1,838,493 (44%), 297,927 (51%), and 555,432 (56%) visits to physician offices, hospital outpatient clinics, and emergency rooms, respectively.
**Conclusions:** In the US, constipation poses a significant burden on outpatient resources. Over 2.4 million annual ambulatory visits in which constipation was the primary diagnosis or primary reason for the visit occurred in 2001.

**755**

**SHOULD WE FOLLOW BENIGN APPEARING GASTRIC ULCERS WITH REPEAT ENDOSCOPY? A COST-EFFECTIVENESS ANALYSIS**

Heiko Pohl, M.D., Douglas J. Robertson, M.D., Justin B. Dinick, M.D., Kirsten T. Weiser, M.D., Samuel R.G. Finlayson, M.D.*. VA Medical Center, White River Junction, Vermont.

**Purpose:** Benign appearing, biopsy negative gastric ulcers may harbor malignancy. The American Society of Gastrointestinal Endoscopy therefore recommends that such ulcers be followed by endoscopy until complete healing has occurred. Because malignancy in benign appearing gastric ulcers is rare and the sensitivity of initial endoscopy with biopsies is high, it is unclear whether the benefit of endoscopic follow-up is worth the small risks and the cost associated with it.

**Methods:** We developed a cost-effectiveness model to determine whether patients with a benign appearing, biopsy negative gastric ulcer should undergo repeat endoscopy. Using the published literature we determined the probabilities for the prevalence of malignancy in such ulcers, the sensitivity of repeat endoscopy with biopsies to detect cancer, the probability of finding a resectable cancer with and without repeat endoscopy, and the life expectancy associated with resectable and non-resectable gastric cancers. Average direct costs were based on published information (e.g. Medicare CPT codes) and included those associated with repeat upper endoscopy as well as costs related to the treatment of gastric cancer. Utility estimates for quality of life with cancer were also drawn from the literature.

**Results:** In our base-case analysis the strategy of repeat endoscopy cost $93,000 to save one quality adjusted life year (QALY). In sensitivity analysis, the cost-effectiveness ratio of repeat endoscopy falls below $50,000/QALY if the prevalence of malignancy in a benign-appearing, biopsy negative ulcer is more than 1.6% (baseline assumption 0.9%), if the life expectancy benefit associated with finding resectable (as opposed to non-resectable) cancer is more than 7 years (baseline assumption 4.6 years), or if only one follow-up endoscopy with a sensitivity of at least 0.9 (baseline assumption 0.4) is performed.

**Conclusions:** Our model does not support the performance of routine follow-up endoscopy for benign appearing, biopsy negative gastric ulcers when using the conventional cutoff of $50,000/QALY. Improved understanding of the true prevalence and stage of cancer in such lesions would be important to more accurately assess the value of repeat endoscopy.

**756**

**MISPERCEPTION OF DAIRY TOLERANCE REDUCES CALCIUM INTAKE IN AFRICAN AMERICANS INCREASING RISK FOR COLON CANCER AND OTHER CHRONIC DISEASES**

Jeanette N. Keith, M.D.*., Naser Khan, M.D., Omar Shamsi, M.D., Theodore Karrison, Ph.D., Kristen Kasza, M.S., Ellen Rosen, Ph.D., Monique Cauley, B.A. University of Chicago and Chicago State University, Chicago, Illinois.

**Purpose:** Identify misperceptions of lactose tolerance comparing subjective vs objective measures in African American based on the hypothesis: dairy intolerance in AA is less than reported when dairy foods are consumed in physiologic amounts.

**Methods:** By phone survey, 230 subjects were screened and 126 enrolled. 117 (77 self-described lactose intolerant and 40 lactose tolerant) completed the double-blind randomized placebo controlled trial. 9 LI subjects withdrew: 6-lost contact, 1-work, 2-symptoms. Each underwent four 3-hour breath hydrogen tests (Quintron, Milwaukee WI) using 2% chocolate or strawberry flavored lactose free milk with no lactose or added lactose powder of 6.25, 12.5 or 25 g equal to 4, 8 or 16-oz of cow’s milk, randomized order. A rise in breath hydrogen greater than 20 parts per million (ppm) defined a positive test. Survey of subjective tolerance obtained with each sample. 14 symptoms ranked 0–5 were totaled for score. Correlation between symptoms and H2 test was based on the Spearman Rank Correlation Coefficient.

**Results:** Mean peak rise in breath H2 in the LT:1.30 ppm at 0 g, 4.20 at 6.25 g, 5.85 at 12.5 g, and 23.68 at 25 g. In the LI, peak rise in breath H2: 0.97 ppm at 0 g, 4.66 at 6.25 g, 11.09 at 12.5 g, and 23.69 at 25 g. Therefore, the 25 g test was positive for malabsorption, regardless of tolerance. Mean symptom score for the LT:16.96 at 0 g, 16.95 at 6.25 g, 17.41 at 12.5 g, and 17.68 at 25 g vs 23.82 at 0 g, 24.57 at 6.25 g, 25.01 at 12.5 g, and 26.69 at 25 g in the LI. When compared, the LI group had higher symptom scores, regardless of dose, even when lactose was absent. No significant differences in symptoms found between 0, 6.25 and 12.5 g. The Spearman Rank Correlation Coefficient showed only weak correlation between symptoms and breath H2 at 25 hrs (r² = 0.22, p < 0.05).

**Conclusions:** African Americans have the lowest calcium intake of all groups and a high level of intolerance at 25g. This data found no difference in symptoms between 0 and 12.5 grams of lactose supporting increased dairy tolerance in minorities when milk is consumed in physiologic amounts. Misperceptions of tolerance decrease calcium intake and may increase risk for colon cancer and other chronic diseases that affect AA. (Grant Support: Dairy Management Inc.).
INCAPACITY FOR PHYSICAL ACTIVITY LIMITS WEIGHT LOSS AFTER ROUX-EN-Y GASTRIC BYPASS
Benjamin F. Merrifield, M.D., Christopher C. Thompson, M.D., Lee M. Kaplan, M.D.*. Brigham and Women’s Hospital, Boston, Massachusetts and Massachusetts General Hospital, Boston, Massachusetts.

Purpose: Despite wide recognition that Roux-en-Y gastric bypass (RYGB) is the most effective treatment for severe obesity, there remains a wide variation among patients in the degree of post-operative weight loss. Factors that account for this variation are currently unknown. Identification of variables that influence weight loss after RYGB could aid patient selection and contribute to our understanding of the mechanisms by which the surgery works.

Methods: Twelve Preoperative clinical characteristics for 226 consecutive patients undergoing RYGB were examined for correlation with the decrease in body mass index (BMI) one year after RYGB. Variables were compared using linear regression and two-tailed t-test. Potential predictors of decreased BMI loss included: age, sex, presence of diabetes, depression, bipolar disease, osteoarthritis or hypertension, insulin use, operating surgeon, surgical approach (open versus laparoscopic), and movement restriction. A typical movement restricted patient was defined as being unable to walk more than one block or climb a single flight of stairs, and demonstrated no capacity for therapeutic exercise. Variables were drawn from clinical data and patient response to a Paffenbarger Exercise Questionnaire administered before surgery.

Results: The mean decrease in BMI was 17+/−6 kg/m² and ranged from 3.8 to 38 kg/m². Of the clinical parameters examined, movement restriction was the strongest predictor of low weight loss (Table). There was also a modest but significant inverse correlation between age and post-operative weight loss ($r^2 = 0.265$, p < .0001). None of the other parameters examined correlated significantly with the degree of weight loss.

Conclusions: Physical restriction appears to be an important contributor to the variation in weight loss after RYGB. Restrictions on physical activity may limit the elevated energy expenditure, which has been shown to contribute significantly to the overall weight loss after RYGB. In patients with obesity-related comorbidities that may ultimately lead to decreased mobility, early intervention may improve surgical efficacy.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in BMI (1 Year)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No restricted movement</td>
<td>−17.6 +/- 5 kg/m²</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Restricted movement</td>
<td>−13.8 +/- 5 kg/m²</td>
<td></td>
</tr>
</tbody>
</table>

INFLAMMATORY BOWEL DISEASE

ENVIRONMENTAL FACTORS EFFECTING INFLAMMATORY BOWEL DISEASE ACTIVITY

Purpose: Inflammatory bowel disease (IBD) is a waxing and waning illness with many modulating environmental factors effecting disease activity. Many of these environmental factors are not well established and studies evaluating the effects of seasonal variation, menstrual cycle, NSAID ingestion, stress and dietary intake have yielded controversial results. The purpose of this study was to further examine the relationship of several of these factors, thought to influence disease activity, to patient's perceived disease activity.

Methods: This was a retrospective study involving 30 patients with IBD within the greater Chicago area (mean age = 51, 17 women, 13 men). Sixteen patients with Crohn's disease and 14 patients with Ulcerative Colitis were administered a telephone questionnaire designed to assess patient's perceived disease activity in correlation with variables such as season, stress, menstrual cycle, NSAID use, OCP use, and several dietary factors. Results were analyzed using one way chi-squared analysis.

Results: 73% of all patients reported increased symptoms with increased life stress (p = .01). 53% of all patients reported a perceived seasonal variation in their symptoms, with 50% of these reporting worse symptoms in winter, 25% in summer, 12.5% in spring and 12.5% in fall (p = .72). 36% of patients reported increased symptoms post dairy intake (p = .14). Among menstruating women, 40% reported increased symptoms during menstruation (p = .0.43). Of the patients who drank alcohol, 43% reported increased symptoms post EtOH ingestion (p = .51). Only 23% of patients reported worsening of symptoms with sugar intake and 27% of patients reported increased symptoms post NSAID use (p = .003 and p = .01 respectively, significant for not effecting perceived symptoms).

Conclusions: Our study found a significant association between life stress and perceived inflammatory bowel disease activity. Although trends were noted, our study reveals no significant association between perceived disease activity and season, dairy intake, menstruation, EtOH intake, sugar ingestion or NSAID use. Larger prospective studies focused on the influence of environmental factors and more specifically the role of stress and the therapeutic benefits of stress management on disease activity are warranted.

INFLIXIMAB USE DOES NOT INCREASE THE RISK FOR ABNORMAL PAP SMEARS IN WOMEN
Sunanda V. Kane, M.D.*, Deepa Reddy, M.D. University of Chicago, Chicago, Illinois.

Purpose: Patients receiving infliximab are at an increased risk for the development of infections as well potentially neoplasia. Since abnormal Pap smears are associated with both infections and progression to cancer, we were interested in assessing the incidence of abnormal Pap smears in those women receiving infliximab infusions.

Methods: Women with Crohn's disease and results for at least 2 consecutive Pap smears were studied. The outcome of interest was an abnormal Pap smear. Any cervical lesion, including dysplasia, atypical squamous cells, low grade squamous intraepithelial lesion, high grade squamous intraepithelial lesion, cervical cancer. The exposure of interest was infliximab use. Clinical data collected included age, gynecologic history, level of cytologic abnormality, dosage and duration of infliximab, use of concomitant immunomodulators, and other known risk factors of cervical neoplasia, including smoking, oral contraceptive usage and past history of cervical cancer.

Results: We studied 68 patients. There was no difference in smoking rate, oral contraceptive use or age at diagnosis of any cervical abnormalities between the group exposed to infliximab and those who were not. There were no cancers found. Women receiving infliximab did not have an increased risk for the development of an abnormal Pap than those women who did not receive infliximab (OR 1.63, 95% CI 0.59–4.48). Cases had received an average of 6 infusions prior to the diagnosis of cervical atypia. When analyzing by type of cytology (atypia, low grade dysplasia, high grade dysplasia), there were no differences between the two groups.

Conclusions: The incidence of abnormal Pap smears in women on infliximab is no higher than in women not receiving this agent. Further studies are necessary to determine what percentage of dysplasias seen may progress to malignancy.

METABOLITES TO IMMUNOMODULATORS ARE NOT DETECTED IN BREAST MILK
Sunanda V. Kane, M.D., M.S.P.H.*, Daniel H. Present, M.D. University of Chicago, Chicago, Illinois and Mt Sinai School of Medicine, New York, New York.
CROHN’S PATIENTS RESPOND POORLY TO PPD SKIN TESTING LIMITING ITS UTILITY FOR TUBERCULOSIS SCREENING PRIOR TO INFLIXIMAB
Corey A. Siegel, M.D., Steve P. Bensen, M.D., Douglas J. Robertson, M.D., C. Fordham von Reyn, M.D.*. Dartmouth-Hitchcock Medical Center, Lebanon, New Hampshire and Veterans Hospital, White River Junction, Vermont.

Purpose: To evaluate the purified protein derivative (PPD) response rate in Crohn’s disease patients compared to those with ulcerative colitis (UC), indeterminate colitis (IC) and a healthy control population.

Methods: As part of a study to evaluate the association between Mycobacterium avium complex and Crohn’s disease, we placed intradermal skin tests for PPD, candida and mumps on 47 patients with inflammatory bowel disease. Blinded readers assessed patients 48 hours later for the presence of a delayed type hypersensitivity (DTH) reaction. Results were compared to those from 500 healthy controls from the same geographic region. Significance testing was performed using a two tailed fisher exact test.

Results: Of the 47 patients with inflammatory bowel disease, 32 patients had Crohn’s disease and 15 patients had UC or IC. 20 patients in the Crohn’s group and 2 in the UC/IC group were on immunosuppressive medications (prednisone and/or azathioprine or 6MP). None of the 32 Crohn’s patients responded to PPD. While this absolute rate appears substantially lower than that in the UC/IC (13%) and control (10%) populations, the finding did not reach classical levels of statistical significance (p = 0.10). Response to candida/mumps was similar between Crohn’s patients and those with UC/IC (p = 0.41).

Conclusions: Crohn’s patients responded poorly to PPD skin tests. While we cannot definitively exclude chance as an explanation for our results, it seems more likely that the observed difference is real and that small sample size limited our ability to reach statistical significance. Most Crohn’s patients responded to candida/mumps, implying that there is selective anergy to PPD. The lower rate of response to PPD is due to either a true lower rate of exposure to tuberculosis, or more likely is disease or therapy induced. Since recrudescence of latent tuberculosis has been associated with the use of infliximab, tuberculin skin testing with PPD has been recommended prior to administration of the drug. However, these results suggest that PPD testing may be an inadequate modality to screen for latent tuberculosis in patients with Crohn’s disease.

<table>
<thead>
<tr>
<th>Serum 6-TGn</th>
<th>Milk 6-TGn</th>
<th>Serum 6-MMP</th>
<th>Milk 6-MMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>237 pmol/8x10 RBC</td>
<td>&lt;2.3 pmol/50 ul</td>
<td>2004 pmol/8x10 RBC</td>
</tr>
<tr>
<td>Patient 2</td>
<td>242 pmol/8x10 RBC</td>
<td>&lt;2.3 pmol/50 ul</td>
<td>undetected</td>
</tr>
<tr>
<td>Patient 3</td>
<td>227 pmol/8x10 RBC</td>
<td>&lt;2.3 pmol/50 ul</td>
<td>2345 pmol/8x10 RBC</td>
</tr>
<tr>
<td>Patient 4</td>
<td>251 pmol/8x10 RBC</td>
<td>&lt;2.3 pmol/50 ul</td>
<td>4500 pmol/8x10 RBC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N</th>
<th>PPD ≥ 5mm</th>
<th>Candida/Mumps ≥ 3mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crohn’s</td>
<td>32</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>UC/IC</td>
<td>15</td>
<td>2 (13%)</td>
</tr>
<tr>
<td>Controls</td>
<td>500</td>
<td>48 (10%)</td>
</tr>
</tbody>
</table>

PULMONARY VASCULITIS: A RARE EXTRAGASTROINTESTINAL COMPLICATION OF CHRONIC ULCERATIVE COLITIS
Prableen Chahal, M.D.*. David Midtbun, M.D. Mayo Clinic, Rochester, Minnesota.

Case: A 26year old Caucasian female, never smoker, presented to an outside medical facility with right-sided pleuritic chest pain. She denied any other systemic complaints. She was not taking any medications. Chest radiograph followed by CT identified multiple bilateral ill-defined pulmonary nodules...
and infiltrates. Her past medical history was remarkable for a biopsy proven diagnosis of UC almost a year prior to this presentation. It was treated with sulfasalazine for initial six months and was in remission. Apart from a high sedimentation rate of 42 mm/hr & C-reactive protein of 28.2 mg/dl, her laboratory evaluation was normal including urine analysis, CBC, hypersensitivity panel, p-ANCA, c-ANCA, infectious etiology workup including PPD, fungal & HIV serologies & serologies for connective tissue diseases. CT guided biopsy of a nodule was suspicious for non-small cell carcinoma. Her cancer screening including mammogram, Pap smear, colonoscopy, EGD & CT scan of abdomen and pelvis were unremarkable. Thorascopic lung biopsy was done and she was referred to us. Her physical examination was normal. Repeat tests revealed positive p-ANCA & antibody to proteinase 3 at 154.7 EU/ml (NL < 5) but negative antibody to myeloperoxidase & c-ANCA. Her initial colon biopsy was reviewed again at our institute and the diagnosis of UC was confirmed. Her pulmonary pathology showed necrotizing granulomatous vasculitis. She was started on tapering dose of corticosteroid. At three months follow-up, she remained asymptomatic and the pulmonary nodules had resolved on subsequent chest radiograph.

Discussion: Extraintestinal manifestations of UC are common, however, pulmonary complications of UC are very rare. The etiology of pulmonary vasculitis is unknown and it appears to be unrelated to the underlying UC activity. Most of the patients described in seven case reports so far, presented with cough, pleuritic chest pain and dyspnea on exertion with evidence of bilateral infiltrates or nodular densities on chest radiograph. The significance of ANCA in the pathogenesis of the IBD remains unclear. Lung biopsy is essential to make the diagnosis.

Conclusion: Pulmonary vasculitis is a rare complication of UC, but emphasizes the systemic nature of the disease. This case reiterates the fact that pulmonary manifestations of this entity can occur in the absence of overt bowel inflammation. Corticosteroid therapy appears to be the mainstay in the management of this condition.

LACK OF ASSOCIATION BETWEEN ISOTRETINOIN AND THE DEVELOPMENT OF IBD
Deepa Reddy, M.D., Sunanda V. Kane, M.D., M.S.P.H.*. University of Chicago, Chicago, Illinois.

Purpose: Isotretinoin (Accutane®) is a synthetic analogue (13-cis-retinoic acid) of Vitamin A that is widely used in multiple dermatological conditions related to acne. Since isotretinoin’s approval by FDA in the 80’s, there have been a few sporadic case reports suggesting a possible association between isotretinoin and the development of Inflammatory Bowel Disease (IBD). We examined adverse reports submitted to the U.S. Food and Drug Administration (FDA)’s Med Watch system for evidence of such an association.

Methods: We reviewed all the individual adverse drug reaction reports of cases received by the FDA between 1991–2003 involving isotretinoin and reported a diagnosis of IBD (i.e. ulcerative colitis, Crohn’s disease or indeterminate colitis) or symptoms of IBD (e.g. bloody diarrhea).

Results: Between 1991 and 2003, the FDA received 86 reports of confirmed IBD presenting after isotretinoin use (Table 1). An additional 49 reports were received with AE suggestive of IBD (e.g. bloody diarrhea, colitis) but a diagnosis of IBD was not confirmed at the time of the report. The median age of patients that were diagnosed with Crohn’s and UC were 19 years and 18.5 years, respectively. The median interval from first dose to onset of IBD symptoms was 61 days. In 39 patients, symptoms resolved with a decrease or cessation of medication; 11 of them in confirmed cases of IBD. There were 6 reported cases of IBD exacerbation with re-challenge.

Conclusions: This study and other case reports suggest that isotretinoin may induce the onset of IBD or cause a disease flare in patients with history of IBD. Re-challenge with isotretinoin induced symptoms similar to IBD in some cases, but in the majority symptoms abated with decreasing dosage or cessation of isotretinoin. Considering the underlying incidence of IBD, the fact that IBD occurs in the age range most common for acne to be problematic, and the large number of prescriptions each year written for this agent, there does not appear to be a strong causal relationship between isotretinoin and IBD.

RELAPSE OF INFLAMMATORY BOWEL DISEASE IN PATIENTS OF A MINORITY POPULATION, IS ‘PSEUDO RELAPSE’ COMMON?

Purpose: Inflammatory bowel disease (IBD) is increasingly recognized among African-American and Hispanic individuals. Gastroenterologists are often consulted to evaluate patients presenting as clinical relapse of IBD. In some patients, this clinical IBD relapse may be due to conditions other than IBD (pseudo relapse). We studied the frequency of conditions mimicking IBD relapse.

Methods: Retrospective review of records of 871 patients, 19 to 85 years old, diagnosed with relapse of IBD, over 12-year period. We excluded 180 patients (22 Caucasian, 12 Asian, and 146 diagnosed with IBD complications). Data related to diagnosis, laboratory, imaging studies and treatment were abstracted and analyzed.

Results: Among the 691 patients (401 African American and 290 Hispanic), 390 (56%) had ulcerative colitis (UC) and 301 (44%) had Crohns disease (CD). The common presenting symptoms were diarrhea (29%), abdominal pain (29%), fever (15%), rectal bleeding (13%), generalized weakness (10%) and loss of weight (10%). Diarrhea and abdominal pain were more frequent in CD patients compared to UC patients (p < 0.05). Symptoms in 223 patients (32%) were due to conditions other than IBD. These conditions were urinary tract infection (27%), lower gastrointestinal bleeding (23%), drug induced diarrhea (20%), infectious diarrhea (20%), upper respiratory tract infection (18%) and ischemic colitis (7%). These conditions were not statistically different by the type of IBD (p > 0.05). Of the 223 patients, 178 patients (80%) received appropriate treatment for the underlying conditions and 45 patients received treatment as true IBD relapse. Of the 178 patients who received appropriate treatment for the underlying conditions, 160 patients (90%) showed clinical improvement. Of the 45 patients who were treated as true IBD relapse, only five patients (11%) showed clinical improvement. The difference in clinical improvement among these two groups of patients was statistically significant (p < 0.05).

Conclusions: A significant number of African and Hispanic patients with clinical diagnosis of IBD relapse may be having pseudo relapse. Early recognition and treatment of the underlying condition may prevent unnecessary treatment for IBD and its complications among these patients.

IBD IN HISPANICS: CHARACTERIZATION OF RESPONSE TO INFliximab IN AN ETHNIC MINORITY WITH CROHN’S DISEASE
Jose M. Sanchez, M.D., Juan C. Maldonado, M.D., Esther A. Torres, M.D., F.A.C.G.*. University of Puerto Rico-School of Medicine, San Juan, Puerto Rico.

Purpose: The incidence and prevalence of Crohn’s disease (CD) varies geographically and with racial/ethnic background. The highest frequency of occurrence is in North America and Northern Europe. Incidence is highest among Caucasians, lower in black and Hispanics, and lowest in Asians. However in the mid-1980s and 1990s, the incidence and prevalence increased
in continental Europe, the Middle East, the Pacific Rim, Africa, and Latin America. An increase in the incidence of CD has been noted in Puerto Rico. A study in our population showed lower prevalence of ASCA and no NOD2 in our CD patients. Infliximab is effective in refractory inflammatory CD and in fistulizing disease. Since limited data exists regarding CD in Hispanics, the fastest growing minority group in the United States, we designed this retrospective study with patients treated with infliximab at our institution. We wanted to determine if the response to infliximab in genetically admitted Hispanics differed from that previously reported.

Methods: Baseline characteristics, infusion related information and clinical response was abstracted from medical records. Clinical response was classified as complete response, partial response, and non response.

Results: The study included 15 patients treated for refractory inflammatory disease, 9 for fistulizing disease, and 11 for both. The positive response rate was 83%(29/35) and the non response rate was 17%(6/35). Overall the patients with complete, partial, and no response were 13/35(37%), 16/35(46%), and 6/35(17%), respectively. Table 1 shows response by disease type. No statistically significant association was found between response and disease location. Significant association was found between response and fistula type (p = 0.02, table 2). Steroid withdrawal was possible in 21/31 patients (68%). In terms of safety, 9/35 patients (26%) suffered an adverse reaction, 4 patients required therapy discontinuation.

Conclusions: This study suggests that infliximab has similar global response, allowance of steroid withdrawal and safety in Hispanics as in other populations. Ethnicity does not seem to influence response rate to infliximab.

### Percent response by disease type

<table>
<thead>
<tr>
<th>Disease type</th>
<th>Response (%)</th>
<th>Partial response (%)</th>
<th>No response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fistulizing</td>
<td>44</td>
<td>44</td>
<td>11</td>
</tr>
<tr>
<td>Refractory</td>
<td>33</td>
<td>47</td>
<td>20</td>
</tr>
<tr>
<td>Both</td>
<td>36</td>
<td>45</td>
<td>18</td>
</tr>
</tbody>
</table>

### Percent response by fistula type

<table>
<thead>
<tr>
<th>Type of fistula</th>
<th>Number of fistulas</th>
<th>Complete response (%)</th>
<th>Partial response (%)</th>
<th>No response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perianal</td>
<td>30</td>
<td>67</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>Rectovaginal</td>
<td>3</td>
<td>0</td>
<td>67</td>
<td>33</td>
</tr>
<tr>
<td>Enterovesical</td>
<td>4</td>
<td>50</td>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>Colocutaneous</td>
<td>3</td>
<td>33</td>
<td>0</td>
<td>67</td>
</tr>
</tbody>
</table>

769

### META-ANALYSIS OF PATIENT-LEVEL CLINICAL TRIALS DATA

Lloyd R. Sutherland, M.D.*; Peter D. Faris, Ph.D., Mahnaz Youssefi, M.D., Deborah Hogerman, B.A., Christopher F. Martin, MSPH, Norman LaFrance, M.D. Calgary, Alberta, Canada; Rochester, New York and University of North Carolina at Chapel Hill, Chapel Hill, North Carolina.

Purpose: Patient-level meta-analysis combines data from individual patients, who participated in clinical trials, providing greater statistical power and precision compared to traditional meta-analysis. Knowledge of the patient treatment assignment could leave the analyst vulnerable to charges of bias. We provide an example of how to limit bias when conducting a patient-level meta-analysis.

Methods: We developed a protocol to explore the efficacy of olsalazine for the induction of remission in patients with ulcerative colitis. We contracted the University of North Carolina to re-code the data for each randomized placebo-controlled trial with a blinded treatment indicator A or B. Since the primary outcome variable was not consistent across the trials, a panel of three experts (Brian Feagan, Canada; Derek Jewell, UK; David Sachar, US) reviewed the variables that were common to all trials and recommended a new primary outcome variable defined as absence of rectal bleeding combined with endoscopic healing at the three or four week visit as well as additional secondary outcome variables. To ensure blinding, treatment arms were balanced by dropping patients at random as follows: 1) for trials with more than two active treatment arms, only data from the arm with the highest dose were included; and 2) for trials with arms of unequal size, patient data were randomly deleted from the larger arm until both arms were of equal size. The data set was then sent to the independent analyst (LRS), who had outlined a pre-specified and approved analysis using a generalized linear mixed-effects model with random treatment effects. The final analysis was then run on the new dataset and the results were circulated to the expert panel before the blind was broken.

Results: The analysis showed that olsalazine is effective for the induction of remission in patients with ulcerative colitis (OR = 2.2; 95% CI, 1.1 - 4.4). It is also superior to placebo for eliminating rectal bleeding (OR = 2.1; 95% CI, S style="text-line-through:double">[<S>/S]=1.4–3.2 <S style="text-line-through:double">[<S>/S]=1.4</S-

### MECHANISM OF ACTION OF GENISTEN ON CYTOKINE EXPRESSION IN COLONIC EPITHELIAL CELL LINE


Purpose: Proliferative cytokines play an important role in the pathophysiology of Inflammatory Bowel Disease (IBD). Immunomodulatory compounds can inhibit perpetuation of chronic inflammation and thus curb tissue injury. Many of the current immunosuppressive agents lack efficacy and appropriate safety profiles. Genistein is a natural isoflavone of soybean origin that demonstrates anti-tumor, anti-oxidant and immunosuppressive effects. Osteoporosis and cardiovascular diseases have been treated with genistein. Pharmacokinetic studies demonstrate minimum toxicity with genistein.

Methods: Human colonic adenocarcinoma cell line HCT-8 was used to determine the inhibitory effects of genistein on cytokine expression. The expression of human Cox-2, sICAM, IFN-γ, IL-8, IL-1α and IL-1β were assessed by ELISA and mRNA quantification in constitutive and TNF-α stimulated conditions. NF-κB transcription factor activity was studied using Transfactor assay and immunohistochemistry. Effect of genistein on IκB degradation was studied using Western-blot analysis and immunohistochemistry.
Purpose: The role of Aeromonas species in causing gastrointestinal disease is controversial; it is thought to cause both acute and chronic diarrheal illness. Its relationship to inflammatory bowel disease (IBD) is not clearly defined. The aim of this study was to determine if IBD is a risk factor for Aeromonas infection and if Aeromonas infection precedes a new diagnosis of IBD.

Methods: Subjects with positive Aeromonas, Salmonella, Shigella, and Campylobacter stool cultures from 2001–2003 were identified from records of the Clinical Microbiology Laboratory of the University of Pennsylvania Health System. A case-control study was completed. Cases were subjects with positive Aeromonas stool cultures. Control patients were subjects with positive Salmonella, Shigella, and Campylobacter stool cultures. Patient characteristics were assessed using descriptive analyses. Data was analyzed using two tailed Fisher’s exact test and logistic regression. Age, gender, ethnicity, season, use of oral steroids and antibiotics, and travel history were assessed as potential confounding variables.

Results: There were 154 subjects with positive stool cultures, 29 cases and 125 controls. The cohort of subjects had a mean age of 41 years, 51% were female, 55% Caucasian, and 35% African American. There was a significant difference in the number of Aeromonas cases in patients with established IBD compared to controls (P < 0.001). This difference also remained significant when comparing Aeromonas to the other three GI infections individually (P = 0.001 for Salmonella and Shigella, P = 0.022 for Campylobacter). The adjusted odds ratio was 11.52 (95% CI, 3.18–41.72) for the risk of developing Aeromonas if an established diagnosis of IBD was present. In addition, there were two new cases of IBD diagnosed after resolution of the acute infection with Aeromonas; this was not seen in the other three GI infection groups (P = 0.047).

Conclusions: The results of this study suggest that there is an association between IBD and Aeromonas infection, in particular that a prior diagnosis of IBD is a risk factor for developing Aeromonas infection. This relationship was not seen with IBD and the other GI infection groups studied. The implication that established IBD is a risk factor for the development of Aeromonas infection has not been previously reported in a systematic study such as ours.

771

INFLIXIMAB TREATMENT REDUCES PAIN IN PATIENTS WITH CROHN’S DISEASE

Purpose: Pain is a frequent complication experienced by patients with Crohn’s disease. In the ACCENT I study, the effect of infliximab treatment on pain was assessed with four pain questions. The main objective was to assess the early benefit in pain reduction with infliximab therapy.

Methods: In ACCENT I, 573 patients received a single infusion of 5mg/kg infliximab at baseline. At week 2, patients were randomized to 1 of 3 treatment groups, up to week 46: 1) single-dose: placebo at weeks 2 and 6 and then every 8 weeks, 2) 5 mg/kg maintenance: 5 mg/kg infliximab at weeks 2 and 6 and then every 8 weeks, and 3) 10 mg/kg maintenance: 5 mg/kg infliximab at weeks 2 and 6 and then 10 mg/kg infliximab every 8 weeks. Wilcoxon signed rank test was used to detect the change in four pain measures (1 in each of the Crohn’s Disease Activity Index (CDAI) and Inflammatory Bowel Disease Questionnaire (IBDQ), and 2 in the SF-36) in all treatment groups. T-test on van der Waerden scores was used to compare the change from baseline to week 10 between the single-dose group (1) and the 3-dose (groups 2 and 3) induction regimens.

Results: There was a highly significant reduction (p < 0.0001) from baseline to weeks 10, 30, and 54 in all 4 pain measures in the 3 treatment groups. The reduction at week 10 was significantly (p < 0.05) greater in the 3-dose regimen than in the single-dose regimen [Table 1 - (a) Sum of abdominal pain/cramps ratings (total for previous 7 days); (b) How often during the last week have you been troubled by pain in the abdomen?; (c) How much bodily pain have you had during the past 4 weeks?; (d) During the past 4 weeks, how much did pain interfere with your normal work?]
Purpose: Patients with Crohn’s disease have impaired quality of life compared to patients in the general population. Data from the ACCENT I study were analyzed to assess antidepressant use and its relationships with disease activity and quality of life in patients with Crohn’s disease.

Methods: Baseline data collected from the ACCENT I trial were analyzed and the percentage of patients who were on antidepressants for depression and anxiety was calculated. Using the student t-test, the Crohn’s Disease Activity Index (CDAI) and two quality of life measures (the disease-specific Inflammatory Bowel Disease Questionnaire or IBDQ and the generic SF-36) were compared between patients who were on antidepressants for depression and those who were not. Chi-square test was performed to compare the percentage of patients using antidepressants among patients from North America, Europe, and the Middle East.

Results: At baseline, 83 (14.5%) of the patients were using antidepressants for depression. The CDAI (308 vs. 302) and the SF-36 physical component summary (33 vs. 34) scores were not statistically different between patients who were on antidepressants and those who were not. However, both the total IBDQ (115 vs. 130) and the SF-36 mental component summary scores (33 vs. 40) were highly significantly (p < 0.0001) higher in patients who were not on antidepressants. When examining the 4 dimensions of the IBDQ and the 8 scales of the SF-36, only the SF-36 bodily pain scale was not statistically different between the 2 patient groups. The domains that were most significantly associated with antidepressant use were: a) with p < 0.0001, the IBDQ emotional and social dimensions, and the SF-36 role emotional and mental health scales, b) with p < 0.001, the IBDQ systemic dimension and the SF-36 social functioning, vitality, and physical functioning scales. The percentage of antidepressant use was highly significantly different (p < 0.0001) among patients from North America (18%), Europe (9%), and the Middle East (2%).

Conclusions: In patients with moderate-to-severe Crohn’s disease from the ACCENT I trial, the use of antidepressants was not correlated with disease activity. However, patients who used antidepressants had a significantly lower quality of life than those who did not. Their emotional/psychosocial domains of quality of life were most negatively associated with antidepressant use.

774

ANTI-INFliximab ANTIBODIES IN CROHN’S DISEASE PATIENTS ARE SPECIFIC AND DO NOT CROSS-REACT WITH OTHER THERAPEUTIC ANTIBODIES

Jeannie R. Rojas, Ph.D.*

Purpose: Infliximab (IFX) is a chimeric IgG1 antibody approved for the treatment of rheumatoid arthritis and Crohn’s disease (CD). A small percentage of patients receiving IFX develop antibodies to IFX.

Methods: To determine whether antibodies in IFX-treated CD patients are specific for IFX or cross-react with any of a panel of commercially available therapeutic proteins (TPs), which include therapeutic antibodies and antibody constructs. Serum was obtained from 12 IFX-treated CD patients with antibody to infliximab titers between 1:40 and 1:81,920. The sera were exposed to IFX-coated microtiter wells followed by a solution of peroxidase-labeled IFX. Antibodies to IFX were detected by their capacity to bridge solid- and solution-phase IFX molecules. Pre-incubation of sera with unlabeled IFX or other TPs was performed. Inhibition of bridging was used to measure the capacity of anti-IFX antibodies to cross-react with those TPs. Controls were included in the study to show that the TPs could inhibit the binding of expected regions of an antibody molecule. The panel of TPs included humanized antibodies (adalimumab, trastuzumab, palivizumab, daclizumab, gemtuzumab, alemtuzumab), human/mouse chimeric antibodies (rituximab, basiliximab), Fab fragments (abciximab, digoxin), human IgG1 Fc fusion protein (etanercept), and murine antibody (muronobab-CD3).

Results: IFX and the murine IgG1 parental antibody from which it was derived (mIFX) inhibited bridging of all antibodies to IFX by 96.6.6 ± 2.2% and 93.1 ± 6.6% (mean standard deviation), respectively. Anti-IFX antibodies were not inhibited (3.0% ± 7.1%) by any of the TPs. All TPs containing a human Fc portion inhibited mouse anti-human Fc sample binding to IFX-coated ELISA plates and detection with goat anti-mouse HRP. Only the murine antibody OKT3 inhibited goat anti-mouse IgG sample binding to mIFX-coated ELISA plates and detection with rabbit anti-goat HRP.

Conclusions: As has been observed in rheumatoid arthritis patients, antibodies to IFX in IFX-treated CD patients are specific to the variable region of IFX and do not cross-react with the other TPs screened in this study.

775

EFFICACY AND SAFETY OF ASACOL 4.8G/DAY (800 MG TABLET) COMPARED TO 2.4 G/DAY (400 MG TABLET) IN TREATING MODERATELY ACTIVE ULCERATIVE COLITIS


Purpose: To assess the efficacy and safety of mesalamine delayed-release tablets (Asacol) dosed at 4.8 g/day using a newly formulated 800 mg mesalamine tablet compared with Asacol 2.4 g/day dosed using the currently marketed 400 mg tablet in the treatment of moderately active ulcerative colitis.

Methods: This was a prospective, multi-center, randomized, double-blind, positive-controlled clinical trial. Male and female patients 18–75 years old, with a confirmed diagnosis of ulcerative colitis within 24 months prior to study entry were randomized to receive either Asacol 4.8 g/day (800 mg tablet) or 2.4 g/day (400 mg tablet) for 86 weeks. The primary endpoint of the study was the percentage of patients in each treatment group who achieved treatment success at the end of the study. Treatment success was defined as complete or partial response to therapy, based on clinical, endoscopic, and physician assessments.

Results: A total of 268 patients with moderately active disease were randomly assigned to either the 2.4 g/day (n = 139) or the 4.8 g/day (n = 129) group, of which 254 patients were eligible for analysis. There were no statistically significant differences for any baseline demographic or anthropometric characteristic or history of ulcerative colitis between patients enrolled into the two treatment groups. At the end of the study, success was achieved in 71.8% (89/124) of patients in the 4.8 g/day group and 59.2% (77/130) of patients in the 2.4 g/day group (p = 0.0357). The higher dose of Asacol was not associated with an increase in severity or frequency of adverse events or meaningful changes in laboratory results.

Conclusions: Overall, the study results demonstrated that in the treatment of patients with moderately active ulcerative colitis, Asacol 4.8 g/day (800 mg tablet) was significantly more efficacious than Asacol 2.4 g/day (400 mg tablet). Both treatment groups showed comparable safety profiles.

776

NOD2/CARD15 GENE ALLELIC VARIATION IN CROHN’S DISEASE: EVIDENCE OF SPECIFIC CONTRIBUTIONS BY DIFFERENT ALLELIC VARIANTS

Housam E. Mardini, M.D., Kalvin Gregory, Ph.D., Lisbeth Selby, M.D., Trevor A. Winter, M.D., Willem J.S. de Villiers, M.D.*. University of Kentucky College of Medicine, Lexington, Kentucky.

Purpose: Limited information exists on the specific associations between each of the three major NOD2/CARD15 gene allelic variants (G908R, L1007fs, and R702W) and different Crohn’s disease (CD) characteristics. We sought to assess the specific associations between each of the 3 variants and Crohn’s disease clinical features.

Methods: Using our IBD database we identified CD pts who had genetic testing. Logistic regression models were conducted to estimate the odd ratios (OR) and 95% confidence intervals (CI) of the associations.

Results: Between April 2003 and May 2004 178 pts (79 M & 99 F), median age 36 (15–81) had genetic testing. Other characteristics included: 95%
Caucasians; 36% with history of current or past smoking; 21% with a family history of IBD. 114 pts (64%) had ileal involvement, 9 (5%) had upper GI tract involvement & 55 (31%) had only colonic disease. Disease phenotype was fistulizing in 67 pts (38%), stricture in 25 (14%) and inflammatory in 86 (48%). 60 pts (34%) had at least a single mutation: 47 with one allelic variant (7 G908R, 15 L1007fs, 25 R702W), 3 homozygous for L1007fs & 1 for R702W and 9 were compound heterozygous. G908R heterozygosity was associated with ileal involvement (OR 1.9; 95% CI: 1.2–5.6) while L1007fs homozygosity was associated with upper GI involvement (OR 44; 95% CI: 16–112). There was no association between R702W mutation and any of the characteristics assessed. Compound heterozygosity was associated with ileal and upper GI involvement (OR 4.8 & 9.7; CI: 1.2–10.4 & 1.8–42.2 respectively), fistulizing and stricture disease (OR 1.8 & 4.1; CI: 1.1–4.7 & 1.6–9.6 respectively). Among the 14 pts with G908R variant 10 (71%) were current or past smokers compared to 31% among pts without this variant. (OR 3.8; 95% CI: 1.2–7.6). There was no significant difference in the rates of current/past smoking among pts with either L1007fs or R702W variants and pts without these variants (44%, 38% and 33% respectively; \( p = ns \)).

Conclusions: G908R heterozygosity is associated with ileal involvement while L1007fs homozygosity or the presence of any two allelic variants is strongly associated with upper GI involvement. CD pts with the G908R allelic variant are more likely to be current or past smokers. This strong association suggests a possible gene-environment interaction where smoking may play a role in the development of CD in subjects with G908R variant.

777

INCREASED INCIDENCE OF NEOPLASMS IN PATIENTS WHO DEVELOP SUSTAINED LEUKOPENIA DURING OR AFTER TREATMENT WITH 6 MP FOR INFLAMMATORY BOWEL DISEASE

William D. DiSanti, M.D., Ramona Rajapakse, M.D., Burton I. Korelitz, M.D., M.A.C.G.*, Georgia Panagopoulos, Ph.D., Steve Furer, M.D., Leona Janamillo-Nieves. Lenox Hill Hospital and NYU School of Medicine, New York, New York.

Purpose: Studies to date have not confirmed an association between neoplasms and IBD treated with 6MP. We have observed the occurrence of a number of neoplasms in IBD patients who developed sustained leukopenia due to treatment with 6MP. As a result, we sought to compare the incidence of neoplasms in patients who developed sustained leukopenia after treatment with 6 MP relative to patients treated with 6 MP who did not develop sustained leukopenia.

Methods: A database representing the medical records of over 600 patients treated with 6MP for IBD at one center between 1969 and 2004 was searched. The patients were divided into 2 groups. The study group consisted of patients who developed sustained leukopenia, defined as a white blood cell count below 4,000 for greater than 2.5 weeks. The control group patients matched those in the study group for date of birth, sex and type of IBD (UC vs. CD). There were 3 matched controls for each patient in the study group. Data collected included disease location, cbc, 6MP dosing information, malignancy history, family history and smoking history.

Results: 31 patients developed sustained leukopenia, and of these, 8 developed neoplasms (26%). Median duration of leukopenia was 45 (17–1514) days. Of 93 patients without sustained leukopenia in the control group, 7 developed neoplasms (8%) (\( p = .017 \)). The neoplasms in the study group were assorted, including 2 leukemias, 1 NHL but no colon cancers. 2 of the 7 neoplasms in the control group were colon cancers. There was no significant difference between the two groups in terms of family history, history of smoking and disease location. Cases also developed neoplasms significantly earlier than controls (log rank test = 4.34, \( p = .037 \)) (Fig. 1). [figure1]

Conclusions: There is an increased risk of neoplasms, in total number and in earlier onset, in patients who develop sustained leukopenia following treatment with 6MP. Perhaps, persistence of leukopenia for greater than 2.5 weeks should prompt discontinuation of 6MP.

778

THE NATURE OF INFLAMMATORY BOWEL DISEASE (IBD) IN PATIENTS WITH COEXISTENT COLONIC DIVERTICULOSIS

Keith Sultan, M.D., Susan Fields, M.D., Burton I. Korelitz, M.D., M.A.C.G.*, Georgia Panagopoulos, Ph.D. Lenox Hill Hospital, NYU School of Medicine, New York, New York.

Purpose: Reports of segmental colitis with diverticula have been made in individual case studies and case series and have considered this entity as a local disease. Our goal was to examine the relationship of diverticula to regional colitis, report the clinical outcomes, and to question the association of colonic diverticulosis with generalized IBD.

Methods: A retrospective IBD database search of over 1,300 patients matched 100 cases with IBD (Crohn’s disease, Ulcerative colitis, Indeterminate colitis) and coexistent colonic diverticulosis with a control group of 100 IBD patients without diverticula. Patients were matched by gender, IBD diagnosis and date of birth. Variables examined included disease distribution, strictures, fistulae, need for surgery, extra-intestinal manifestations, family history of IBD and age at IBD diagnosis.

Results: Analysis confirmed greater disease occurrence in the sigmoid in patients with coexistent diverticular disease: 82% vs. 65% for controls (\( p = 0.005 \)). The cases had more frequent rectal involvement: 85% vs. 69% for controls (\( p = 0.005 \)). Disease distribution was otherwise similar throughout the colon, ileum and jejunum. No significant differences were observed in the incidence of strictures, fistulae, or IBD related surgery (\( p > 0.7 \)). IBD complicated by extra-intestinal disease was more frequent in the cases with colonic diverticulosis as compared to the IBD only group: 28% vs. 16% (\( p = 0.05 \)). There was no significant difference in the incidence of family history of IBD, with 28% of cases and 20% of controls (\( p = 0.19 \)) reporting a first or second-degree relative with an IBD diagnosis. Age at IBD diagnosis was significantly greater in patients with diverticula, 51.5 years (+/-17.6) as compared to 42.8 years (+/-17.5), (\( p = 0.001 \)) in the controls.

Conclusions: The finding of significantly increased sigmoid involvement in cases of IBD with colonic diverticulosis validates a long observed and accepted phenomenon. Some of our other observations however suggest a broader view of the relationship between diverticular disease and IBD. The increased frequency of extra-intestinal manifestations, rectal involvement, and the older age at time of IBD diagnosis suggest an expanded role for diverticula in IBD beyond that of local disease trigger or innocent bystander.
THE EFFECT OF ELEVATED BODY MASS INDEX ON THE CLINICAL COURSE OF CROHN’S DISEASE


Purpose: TNF-alpha production in adipose tissue is well documented. Given the role of inflammation in Crohn’s Disease (CD), patients (pts) with increased adipose tissue may have more severe disease. This study evaluated overweight pts with CD to determine if their clinical course differs from those with a normal body mass index (BMI).

Methods: Pts at the University of PA from 1997–2002 were evaluated. Data was collected from output records and standardized telephone interviews. Overweight and underweight were defined as BMI ≥25 kg/m² and <18.5 kg/m² at the time of diagnosis with CD, respectively. The primary endpoint was time to first surgery. Secondary outcomes included age at diagnosis, number of surgeries, and escalation of medical therapy. Pts with BMI ≥25 kg/m² were compared to those with BMI < 25 kg/m² using Wilcoxon Rank Sum, Chi-Square, and Fisher’s exact tests for continuous and categorical variables, respectively. Additional analysis divided the pts into subgroups (BMI < 18.5 kg/m²; 18.5–24.9 kg/m²; BMI ≥ 25 kg/m²) to compare differences in disease behavior. Survival analysis and Cox regression models with multivariable adjustment were used to compare time to first surgery.

Results: 148 pts were included in the study. 48 (32.4%) had a BMI ≥25 kg/m² at diagnosis. Pts with a BMI ≥25 kg/m² were older at diagnosis; median age 35 vs. 22.5 years for those with BMI < 25 kg/m² (p = 0.0001). Median duration of disease at the time of interview, was 213 vs. 156 months for those with BMI < 25 kg/m² and ≥25 kg/m², respectively (p = 0.05). The median time period from symptom onset to disease diagnosis did not differ significantly between the groups. The number of surgeries and disease distribution did not differ between the two groups. No difference was seen for escalation of medical therapy between the groups either, 60% vs. 66.7% for BMI < 25kg/m² and ≥25kg/m², respectively. A statistically significant difference was found for median time to first surgery, 252 vs. 24 months for pts with a BMI < 18.5 kg/m² vs. ≥25 kg/m², respectively (p = 0.04).

Conclusions: CD pts with a BMI ≥25 kg/m² at diagnosis were older at diagnosis, and had a shorter time to first surgery than those with a BMI < 18.5 kg/m². This suggests that overweight individuals require surgical intervention more quickly. Perhaps more aggressive therapy earlier in their disease course is merited.

UPPER GASTROINTESTINAL INVOLVEMENT IN PATIENTS WITH CROHN’S DISEASE IS STRONGLY ASSOCIATED WITH DOUBLE DOSE OF THE NOD2/CARD15 ALLELIC VARIANTS

Housam E. Mardini, M.D., Kalvin Gregory, Ph.D., Lisbeth Selby, M.D., Trevor A. Winter, M.D., Willem J.S de Villiers, M.D.,* University of Kentucky College of Medicine, Lexington, Kentucky.

Purpose: To assess the frequency and association between upper gastrointestinal (UGI)Crohn's disease (CD) and the 3 major NOD2/CARD15 allelic variants G908R, L1007fs, R702W.

Methods: Using our IBD database we identified CD pts with confirmed UGI tract involvement who had genetic testing. Associations and differences were assessed with the Chi-square or Fisher’s exact test and Mann-Whitney test. Logistic regression models were conducted to estimate the odd ratios (OR) and 95% confidence intervals (CI) of the associations.

Results: Between April 2003 and May 2004 178 pts (79 M & 99 F) had genetic testing. 9 (5%) pts had UGI involvement (3 jejunul and 6 duodenogastic). 4 pts (44%) had fistulizing, 2 (22%) strictureing and 3 (34%) inflammatory phenotypes. Other characteristics include: all Caucasians, 2 females (22%), median age at diagnosis 17 yrs (range 11–31), median disease duration 7 yrs, family history of IBD in 4 (44%) and smoking history in 4 (44%). 3 (33%) pts had wild type NOD2/CARD15 while the other 6 (67%) had 2 allelic variants (3 homozygous for L1007fs, 1 homozygous for R702W, 1 with G908/L1007fs & 1 with R702W/L1007fs). Among pts without UGI involvement the frequency of allelic variation was as follows: 116 (68%) had the wild type, 47 (28%) had one allelic variant, 7 (4%) were compound heterozygous (i.e. 2 different variants) and none were homozygous for the same variant. Compared to pts without UGI involvement, pts with UGI involvement were more likely to have 2 NOD2/CARD15 allelic variants (66% vs 4%; OR 38; 95% CI: 7.7–92.3), to be homozygous for L1007fs (33% vs 0%; OR 8.4; CI 3.5–36.9), to have a family history of IBD (44% vs 19%; OR 3.8; 95% CI: 1.2–8.1) to be males (78% vs 41%; OR 5.2; CI 1:1–14.2) and to be younger at diagnosis (17 vs 25; p = 0.023). There was no significant difference between pts with and without UGI disease with regard to disease phenotype, the frequency of extraintestinal manifestations, smoking history, and median disease duration (7 vs 5 yrs). Pts with UGI involvement were more likely to develop metabolic bone disease (osteopenia or osteoporosis) (33% vs 9%; p = 0.016).

Conclusions: CD pts with upper GI involvement are more likely to have 2 allelic variants of the NOD2/CARD15 gene particularly L1007fs homozygosity. Our data suggest that pts with 2 NOD2/CARD15 allelic variants should be carefully evaluated for upper GI involvement.

HIGH AFFINITY AND POTENCY OF THE PEGYLATED FAB’ FRAGMENT CDP870 — A DIRECT COMPARISON WITH OTHER ANTI-TNF AGENTS

Andrew M. Nesbitt, Ph.D.*, Alistair J. Henry, Ph.D. Celtech Research, Slough, Berkshire, United Kingdom.

Purpose: CDP870 is a PEGylated Fab’ fragment of an anti-TNF monoclonal antibody that has demonstrated efficacy in patients with Crohn’s disease and rheumatoid arthritis.1,2 Several other anti-TNF agents have proved effective as treatment for these conditions. The differences in the mechanism of action of these agents are poorly understood. Owing to the variability in assay methods from different laboratories, it has not previously been possible to compare affinity or in vitro potency data. This is the first study to directly compare the affinity and potency of three anti-TNF agents: CDP870, adalimumab (Humira®), and infliximab (Remicade®) in two different assays under comparable conditions.

Methods: (1) Affinity for TNF-α, expressed as the equilibrium dissociation constant (K_D), was determined by the technique of surface plasmon resonance using a Biacore® 3000 (Biacore International SA, Uppsala, Sweden). (2) Potency (concentration causing 50% inhibition of natural TNF-α activity [IC50]) was measured using the L929 bioassay (a mouse fibroblast cell line killed by TNF-α) in the presence of actinomycin D. Natural TNF-α was produced by a lipopolysaccharide-stimulated human monocyte cell line. Results: Affinity parameters are summarized in the table. CDP870 demonstrated higher affinity for TNF-α than adalimumab and infliximab. Potency data, obtained using natural TNF-α, reflected the affinity data, with CDP870 (IC50:0.35 ng/mL) more potent than adalimumab and infliximab (IC50:6 and 5 ng/mL, respectively).

Conclusions: CDP870 was selected to have a very high affinity for TNF-α. As a result, despite the fact that CDP870 is a monovalent antibody fragment, its potency is greater than that of the bivalent antibodies adalimumab and infliximab.


<table>
<thead>
<tr>
<th>Compound</th>
<th>K_D (nM)</th>
<th>K_a (s⁻¹)</th>
<th>K_d (s⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDP870</td>
<td>1.22 ± 0.09 × 10⁶</td>
<td>1–09 ± 0.13 × 10⁻⁴</td>
<td>89.3 PM</td>
</tr>
<tr>
<td>Adalimumab</td>
<td>7.24 ± 0.30 × 10⁵</td>
<td>1.14 ± 0.12 × 10⁻⁴</td>
<td>157.4 PM</td>
</tr>
<tr>
<td>Infliximab</td>
<td>1.01 ± 0.06 × 10⁶</td>
<td>2.30 ± 0.34 × 10⁻⁴</td>
<td>227.2 PM</td>
</tr>
</tbody>
</table>

Data are mean ± SD; (n = 3) except for CDP870 (n = 4). Data based on concentration calculations assuming that TNF-α is monomeric. k_a = association rate constant; k_d = dissociation rate constant; K_D = k_d/k_a.
CONCURRENT IMMUNOMODULATOR THERAPY IN CROHN’S DISEASE; DOES IT IMPROVE INITIAL RESPONSE TO INFliximab?

Andrew M. Weinberg, James D. Lewis, Chinyu G. Su, Gary R. Lichtenstein*. University of Pennsylvania School of Medicine/Hospital of the University of Pennsylvania, Philadelphia and Lankenau Hospital, Wynnewood, Pennsylvania.

Purpose: It has been proposed that concurrent immunomodulator (IMMUNO) rx may improve long term response to rx with infliximab (INFLEX) by reducing antibody formation against INFLEX. What impact IMMUNO rx has on the initial response to INFLEX rx is less clear.

Aim: To determine if concurrent IMMUNO rx improves the initial complete response to INFLEX in Crohn’s disease (CD).

Methods: A retrospective cohort analysis of 137 pts who received INFLEX for rx of their active CD (1/99 - 1/02). Clinical outcome definitions: complete response (achieved previous baseline), partial response (>/50% improvement), and no response (no/minimal change in symptoms) as assessed by patients and physicians. Concurrent IMMUNO therapy was defined as being treated with IMMUNO rx at the 1st infusion of INFLEX. Logistic regression was used to adjust for potential confounders including sex, age, duration of disease, smoking, presence of stricture, prior bowel resection, and disease location.

Results: 6MP/AZA was used at the time of infusion in 66 (48%) pts. Of these 66 pts, 32 (48%) had a complete response and 23 (35%) had a partial response. The duration of response to INFLEX did not statistically differ amongst pts who had used 6MP/AZA previously or who were naive to 6MP/AZA. Among the 71 pts not currently on 6MP/AZA, 41 (58%) had a complete response and 21 (30%) had a partial response. The relative risk of having a complete response given concurrent 6MP/AZA use was 0.84 (95% CI 0.61-1.15). After adjusting for potential confounders, use of 6MP at the time of the initial INFLEX infusion was not associated with complete response (OR = 0.72, 95% CI 0.34-1.54). The mean duration of complete response was similar in those not receiving 6MP/AZA at the time of initial infusion (2.3 mos vs 2.6 mos, p = 0.38 by t-test).

Conclusions: IMMUNO rx concurrent with INFLEX treatment was no more effective than INFLEX therapy alone for obtaining a complete response during the initial 12 wks of therapy. In addition, the duration of response to INFLEX did not differ amongst pts using 6MP who had prior 6MP use or who were naive to 6MP. This data suggests that concurrent IMMUNO rx with INFLEX did not add benefit to pts initial response to INFLEX rx. Future prospective trials should test this further.

DURATION OF CROHN’S DISEASE DOES NOT INFLUENCE PATIENT’S RESPONSE TO INFliximab

Andrew M. Weinberg, James D. Lewis, Chinyu G. Su, Gary R. Lichtenstein*. Hospital of the University of Pennsylvania, Philadelphia and Lankenau Hospital, Wynnewood, Pennsylvania.

Purpose: It has been suggested that short duration of Crohn’s disease (CD) ≤ 2 years may be predictive of a prolonged response to infliximab. Kugathasan et al. (Am. J. Gastroenterol, 2002; 97: 3189-3194) concluded that in pediatric inflammatory CD patients, there is an improved response in those with early disease defined as a disease duration less than 2 years. This 15 patient retrospective study only assessed pediatric patients with medically refractory CD.Aim: To determine if duration of CD impacts on patient’s response to infliximab.

Methods: A retrospective cohort analysis of pts who received infliximab for treatment of active CD between January, 1999 and January, 2002. Clinical outcome improvement definitions: complete response (pts achieved previous baseline), partial response (patients had >50% improvement), and no response (patients had no/minimal change in symptoms) as assessed by pts and physicians. Smoking definition: greater than 7 cigarettes per week within 6 months of infliximab treatment. Duration of disease was analyzed as ≤ 2 years (early) or > than 2 years (late) similar to the Kugathasan study. Logistic regression was used for univariate and multivariate analysis adjusting for gender, age, use of 6MP/AZA, smoking, presence of stricture, prior bowel resection, and disease location. Secondary analyses used 1 and 3 years of disease to define early therapy.

Results: 137 pts (mean age 38 years, 46% male) received infliximab, of whom 73 (53%) had a complete response. 30 pts (22%) had CD for ≤ 2 years at the time of therapy (20 pts (15%) had disease ≤ 1 year and 41 pts (30%) had disease ≤ 3 years). The complete response rate in those with early therapy was 50% vs. 54% for those with late therapy (OR = 0.84, 95% CI 0.38-1.90). Adjusting for potential confounders (gender, age, use of 6MP/AZA, smoking, presence of stricture, prior bowel resection, and disease location) reduced the OR, but this did not reach statistical significance (adjusted OR = 0.52, 95% CI 0.20-1.39). Analyses looking at treatment in those with disease duration of ≤ 1 year or ≥ 3 years yielded similar results.

Conclusions: The duration of CD up to 3 years does not appear to significantly influence individual pt’s response to infliximab.

NOD2 VARIANTS IN CHILDREN WITH CROHN DISEASE ARE ASSOCIATED WITH ONSET OF DISEASE IN THE FIRST DECADE OF LIFE

James Markowitz, M.D.*, Jeffrey Hyams, M.D., David Mack, M.D., Anthony Olely, M.D., Joel Rosh, M.D., Marian Pfefferkorn, M.D., Vasu Tolia, M.D., Maria Oliva-Hemker, M.D., Adam Mazoff, M.D., William Tremain, M.D., Susan Moyer, M.D., Subra Kagathasan, M.D., Katie Smith, Ph.D., Sandra Hale, Ph.D. The Pediatric IBD Collaborative Research Group, Canada and Prometheus Labs, San Diego, California.

Purpose: NOD2/CARD15 gene variants predispose to ileal disease and earlier age of onset in adults with Crohn disease (CD). We have determined the NOD2 status of newly diagnosed children with CD and assessed their disease phenotypes.

Methods: Newly diagnosed children with CD from 12 US/Canadian pediatric GI centers were prospectively enrolled in the Pediatric IBD Registry, an observational study designed to assess the clinical characteristics of children with IBD. History, symptoms, physical findings, lab assessments, radiologic and endoscopic findings were recorded prospectively. CD activity was assessed by Pediatric Crohn Disease Activity Index (PCDAI). Polymorphisms of NOD2/CARD15 (R702W, 1007fs, G908R) were measured by a commercial assay (PRO-GenoLogix (NOD2/CARD15), Prometheus Labs, San Diego, CA). IBD serologic markers were also determined using commercially available tests (IBD Diagnostic System-Generation II, Prometheus Labs). Statistical differences were determined by Fisher exact test or t-test.

Results: 102 children (ages 11 ± 3 yrs) were evaluated. 38 (37%) had NOD2 mutations, including 37/88 Caucasians (42%). There were 22 NOD2 heterozygotes, 10 compound heterozygotes, and 6 single mutation homozygotes. 48% of variant alleles were R702W, 31% 1007fs, and 20% G908R. Similar frequencies of IBD serologic markers were found in subjects with and without NOD2 mutations. 50% of subjects with NOD2 mutations were ≤ 10 yrs of age at diagnosis, compared to 20% of those with wild type alleles (p = 0.0061). Both groups had similar frequencies of ileal CD, although subjects with 2 NOD2 mutations had a higher rate of ileal CD (94%) than did those with 2 wild type alleles (72%; p = 0.0996). There were no differences between groups in PCDAI at diagnosis, rates of growth failure, poor weight gain, extraintestinal manifestations or the need for steroid or infliximab therapy in the first 30 days after diagnosis.

Conclusions: NOD2 mutations appear to predispose children to CD onset in the first decade of life. However, at diagnosis, there are no detectable differences in disease activity, growth or the early need for steroid or infliximab therapy in children with and without NOD2 mutations.
Metastatic Crohn's Disease is defined as the infiltration of noncaseating granulomas in tissues from sites noncontiguous with the gastrointestinal tract. It can involve almost any tissue of the body and rarely involves the liver and lung. We report a case of 20-year-old African American female diagnosed with metastatic Crohn's disease of liver and lung simultaneously who had a dramatic response to infliximab therapy. The involvement was found as an incidental finding of lung and liver masses on computer tomography when the patient presented with an acute flare of luminal Crohn's disease. The diagnoses of metastatic Crohn's disease was made by the finding of noncaseating granulomas filled with multinucleated giant cells on liver biopsy, and absence of any other infectious or noninfectious etiology after extensive investigation. The patient was refractory or intolerant of other Crohn's therapies but had a prior response to infliximab so she was given a single dose of IV infliximab infusion. The subsequent computer tomographic imaging of the abdomen and chest done two months after infliximab infusion revealed near complete resolution of both the liver and lung masses. In this case the metastatic involvement of lung and liver was associated with active Crohn's disease and patient also had marked improvement in the gastrointestinal symptoms. There are many cases reported of cutaneous disease responsive to infliximab and a single prior case report of lung involvement which completely resolved with a single infusion of infliximab. There are no other reports of simultaneous lung, liver and gastrointestinal Crohn's disease responding to infliximab therapy. In summary, metastatic Crohn's disease to the lung and liver, though rare, can show a dramatic response to therapy with infliximab as in luminal disease.

**THIOPURINE METHYLTRANSFERASE ACTIVITY IS CORRELATED WITH AZATHIOPRINE METABOLITE LEVELS IN INFLAMMATORY BOWEL DISEASE PATIENTS IN CLINICAL GASTROENTEROLOGY PRACTICE**

**Purpose:** Genetic polymorphisms in thiopurine methyltransferase (TPMT) influence the metabolism of azathioprine (AZA) and 6-mercaptopurine (6-MP) in patients with inflammatory bowel disease (IBD). It has been suggested in studies using weight-based dosing that higher TPMT activity is associated with lower levels of 6-thioguanine (6-TG), the metabolite thought to provide therapeutic benefit, and higher levels of 6-mercaptopurine (6-MMP), the metabolite associated with hepatotoxicity. Some studies suggest that higher TPMT activity correlates with lower rates of clinical response. The aim of this study is to assess the relationship between TPMT activity and 6-TG and 6-MMP levels in patients with IBD in clinical practice.

**Methods:** We analyzed the TPMT activity, the 6-TG level, and the 6-MMP level in all patients who had at least one TPMT assessment and at least two metabolite profiles sent from a gastroenterologist's office to Prometheus Laboratories (San Diego, CA) from June 2000 to February 2004. The use of AZA or 6-MP and the dosing of the drug was at the discretion of the patient's gastroenterologist. Linear regression was used to analyze the relationships and a Pearson correlation was calculated.

**Results:** A total of 1,020 patients were identified. Linear regression showed a significant inverse relationship between TPMT activity and 6-TG level with a Pearson correlation of -0.162 (p < 0.01), a significant direct relationship between TPMT activity and 6-MMP/6-TG ratio with a Pearson correlation of 0.141 (p < 0.01). A significant inverse relationship between TPMT activity and 6-MMP level with a Pearson correlation of 0.172 (p < 0.01), and a significant direct relationship between TPMT activity and 6-MMP/6-TG ratio with a Pearson correlation of 0.141 (p < 0.01).

**Conclusions:** Higher TPMT activity is associated with lower 6-TG levels and higher 6-MMP levels in IBD patients treated with AZA or 6-MP in clinical practice with drug dosing at the discretion of the primary gastroenterologist. This suggests a possible role for TPMT activity assays in patients being considered for treatment with these agents.

**Efficacy, Safety, and Tolerability of Natalizumab in Maintaining Clinical Response and Remission in Crohn's Disease (ENACT-2)**

**Purpose:** Natalizumab (natalizumab), a humanized monoclonal IgG4 antibody to α4 integrin, was evaluated in a randomized, controlled study (ENACT-2) to determine efficacy, safety, and tolerability over 12 months.
SAFETY AND EFFICACY OF NATALIZUMAB IN PATIENTS CONCURRENTLY RECEIVING INFlixIMAB IN A PHASE 2 STUDY OF ACTIVE CROHN'S DISEASE


Purpose: To evaluate safety and efficacy of Antegren™ (natalizumab), a humanized monoclonal IgG4 antibody to α4 integrin, in a randomized, double-blind, placebo-controlled, multicenter study in patients with active Crohn's disease (CD) receiving infliximab (IFX).

Methods: Patients aged ≥18 years with active CD despite ongoing IFX treatment (Crohn's Disease Activity Index [CDAI] score ≥150) were randomized 2:1 to receive natalizumab (300 mg; n = 52) or placebo (n = 27) every 4 weeks for a total of 3 infusions. Patients received IFX (5 mg/kg) every 8 weeks for at least 10 weeks prior to randomization and throughout the study. The study was primarily designed to assess safety; however, efficacy was also evaluated by the proportion (%) of patients with clinical response (≥70-point decrease from baseline CDAI score),% achieving clinical remission (CDAI score < 150), and the mean change from baseline CDAI score.

Results: The incidence of adverse events (AEs) and serious AEs were similar between treatment groups. Frequently reported AEs in both groups were headache, disease exacerbation, nausea, and nasopharyngitis. No patient had a hypersensitivity-like reaction to natalizumab while 4 patients (5%) experienced a reaction to an IFX infusion. One patient (2%) had detectable levels of anti-natalizumab antibodies; 10 patients (13.5%) had anti-IFX antibodies. At Week 10, 42.3% of patients achieved clinical response in the natalizumab plus IFX group vs 29.6% in the IFX-alone group. An analysis of durability of clinical response showed 25.0% of patients in the natalizumab plus IFX group met the criteria for clinical response at all time points from Week 6 to Week 10, compared with 11.1% in the IFX-alone group. Clinical remission at Week 10 was achieved by 36.5% receiving natalizumab plus IFX vs 29.6% in the IFX-alone group. The mean changes in CDAI score from baseline were greater in the natalizumab plus IFX group compared to the IFX-alone group at Week 6 (-37.7 and 3.5, respectively) but were similar at Week 10 (<57.3 and -54.6, respectively). No drug-drug interactions were noted; natalizumab and IFX serum concentrations were unaffected.

Conclusions: In this phase 2 safety study, the combination of natalizumab plus IFX was well tolerated. Several positive trends suggested improved efficacy when natalizumab was added to IFX in patients who were not in remission when receiving IFX alone.

BONE MINERAL DENSITY IN IRANIAN PATIENTS WITH INFLAMMATORY BOWEL DISEASE

Ali Bahari, M.D., Mohammad Reza Zali, M.D.*, Rahim Aghazadeh, M.D., Mohammad Mehdi Emam, M.D., Naser Ebrahimy Daryani, M.D., Seyed Hassan Mirmaji, M.D., Baharak Maleki, M.D., Ali Rezaie, M.D., Hamid Mohaghegh Shalmani, M.D., Farzad Firouzi, M.D. Research Center for Gastroenterology and Liver Diseases, Tehran; Zahedan Medical Science University, Zahedan; Shahid Beheshti Medical Science University and Tehran Medical Science University, Tehran, Islamic Republic of Iran.

Purpose: To evaluate the safety and efficacy of Antegren™ (natalizumab) in adolescent patients with moderately to severely active Crohn’s disease (CD).

Methods: Thirty-eight adolescent patients, each with baseline Pediatric Crohn’s Disease Activity Index (PCDAI) ≥30, received 3 intravenous infusions of natalizumab (3 mg/kg) every 4 weeks. Safety and tolerability were assessed by adverse events (AEs), laboratory parameters, physical examinations (PEs), and vital signs (VS). Immunogenicity was determined by presence of anti-natalizumab antibodies. Efficacy was assessed by PCDAI every 2 weeks for 12 weeks.

Results: Twenty-seven males and 11 females with mean disease duration of 34.6 months were enrolled. At study entry, 76%, 37%, and 58% of patients were receiving concomitant immunomodulators, steroids, and 5-ASA compounds, respectively. The most common AEs considered related to natalizumab were headache (13%) and pyrexia (11%). There were 8 serious AEs, none considered related to natalizumab. No opportunistic infections or lymphomas were noted. No clinically significant changes were noted in PEs, VS, or lab values. A total of 63% achieved clinical response (≥15-point decrease from baseline PCDAI), and 34% were in remission (PCDAI ≤10) at some time point during the 12 weeks. There was a significant increase from baseline in serum albumin levels at Weeks 6, 10, and 12 (p = 0.007, p = 0.004, and p = 0.016, respectively). The peak level (57.4 and 66.7 µg/mL) and half-life (92.3 and 96.3 h) of natalizumab appeared to be comparable following the 1st and 3rd infusions, and little or no accumulation of natalizumab was observed with repeated monthly dosing. Consistent with the mechanism of action of natalizumab, increases in mean absolute lymphocyte counts were observed with natalizumab treatment. These increases were not above the upper limit of normal.

Conclusions: Natalizumab appears to be well tolerated in adolescent patients with active CD, alone or in combination with immunomodulators, with a safety profile similar to adult CD patients observed in a phase 3 controlled study (ENACT-1). In addition, natalizumab treatment appears to be associated with clinical benefit. The long-term safety and tolerability is being evaluated in an open-label extension study.
Purpose: The aim of our study was to assess the effects of disease factors on both T and Z scores in a group of Iranians with inflammatory bowel disease.

Methods: We included 101 patients with UC and 31 with CD. Bone mineral density was measured by Dual-energy X-ray absorptiometry. Meanwhile, the serum level of Ca, P, ALP, and 25-OH vit D was determined.

Results: The study population included 48 males and 87 females with the mean age of 39 ± 13.9 years. The mean T and Z scores of radius were significantly differed between UC and CD patients (p < 0.012 and p < 0.003, respectively). The mean level of Ca, vit D, ALP, and P were: 9.08 ± 0.95, 40.89 ± 2.16, 212.15 ± 3.65, and 3.65 ± 3.60 in UC and CD respectively (Table 1). The mean level of Ca, vit D, ALP, and P were: 9.08 ± 0.95, 40.89 ± 2.16, 212.15 ± 3.65, and 3.65 ± 3.60 in UC and CD respectively. Meanwhile, we have found a negative association between ulcerative colitis and OCP or NSAIDs in Iranian population.

Conclusions: Appendectomy is protective in UC, but a risk factor in CD among an Iranian population. Tonsilllectomy was not associated with either UC or CD disease. UC, but not CD, is a disease of non-smokers. Meanwhile, the inverse association between ulcerative colitis and OCP or NSAIDs in Iranian population is noted.

793

MDR1 C3435T POLYMORPHISM IS NOT ASSOCIATED WITH ULCERATIVE COLITIS IN IRANIANS

Mohammad Reza Zali, M.D.*, Babak Noorinayer, M.D., Ali Bahari, M.D., Farnaz Taghizadeh, M.A., Farzad Firoozi, M.D., Rahim Aghazadeh, M.D. Research Center for Gastroenterology and Liver Diseases, Tehran and Zahedan Medical Science University, Zahedan, Islamic Republic of Iran.

Purpose: A large body of evidence suggests that interplay of genetic and environmental factors may lead to an overactive mucosal immune response that may cause tissue damage in ulcerative colitis (UC). The protective nature of a multidrug resistance 1 (MDR1) gene in the defense against intestinal bacteria and toxins is supported by the experimental finding of the mdr1a knockout mice model of UC. Lower p-glycoprotein (Pgp) expression in MDR1 3435tt genotype was proposed as a risk factor for the development of UC. Thus, we have tested weather this polymorphism predisposes to the development of UC in a group of Iranian patients with UC.

Methods: Allele frequencies and genotype distributions of the C3435T single nucleotide polymorphism were determined in 50 patients with ulcerative colitis and 34 hospital-based controls. Genomic DNA was extracted from peripheral blood lymphocytes. Specific primers used in a PCR reaction by amplify the target regions. PCR products were digested and digestive products were resolved on acrylamide gel.

Results: A total of 42% of UC patients 31.5% of controls were homozygous T and 54% vs. 68.5%, respectively, were heterozygous. The frequencies of 3435T allele and the 3435TT genotype have shown no significant difference in patients with UC compared with controls (3435T: difference, 3%; 95% confidence interval, (-7)-(+19)); 3435TT: difference, 11%, 95% confidence interval, (-7)+(+28)%).

Conclusions: Our results failed to show any significant association between the C3435T MDR1 gene polymorphism and susceptibility for UC in a group of Iranians. The present observations argue for a pivotal role of the barrier function in 3435TT subjects. Further genetic-association studies are needed to clarify in more details the possible contribution of MDR1 to susceptibility for UC.

794

SAFETY OF CELECOXIB IN PATIENTS WITH ULCERATIVE COLITIS IN REMISSION: A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY


Purpose: To compare the incidence of flare and changes in mucosal histology in ulcerative colitis patients in remission who were randomized to receive either celecoxib 200 mg bid or placebo.

Methods: This was a multicenter, parallel-group, double-blind study of patients with clinically (total Mayo Clinic score < 3) and endoscopically quiescent (Mayo flexible sigmoidoscopy score 0 or 1) ulcerative colitis who were receiving maintenance therapy and who had either present or past history of nonspecific arthritis, arthralgia, or other conditions requiring nonsteroidal anti-inflammatory drug (NSAID) therapy. Patients were randomized to celecoxib 200 mg bid or placebo for 14 days. On Day 14 or early termination, patients underwent repeat flexible sigmoidoscopy (with a mucosal...
biopsy at US sites), clinical evaluation, laboratory tests, and physical examination. Primary endpoint was the percentage of patients whose disease exacerbated after treatment (flare) defined as a total Mayo Clinic score of ≥ 5 and an increase in Mayo flexible sigmoidscopy score of ≥ 1 point. Mucosal biopsies were graded for inflammation and expression of immunoreactive COX-2.

**Results:** Celecoxib (n = 112) and placebo-treated (n = 110) patients had similar baseline characteristics. Of these, 110 celecoxib- and 107 placebo-treated patients had at least 1 dose of study drug, and both sigmoidoscopies and Mayo Clinic scores at baseline and final assessment. The mean change in total Mayo Clinic score in the placebo group was 0.44 compared with 0.28 (P = 0.37) for celecoxib. The incidence of adverse events in each treatment arm further supports the GI safety of celecoxib. In the 107 patients (celecoxib [n = 53] and placebo [n = 54]) who had a biopsy, the majority of specimens were grade 1 (chronic inflammatory filtrate). The change from baseline in histopathology scores in the placebo group reflected an increase in disease severity, while the celecoxib group change showed a slight decrease. Measures of COX-2 expression were similar in both groups at both baseline and final assessments.

**Conclusions:** Celecoxib 200 mg bid for 14 days is as safe as placebo in patients with ulcerative colitis in remission who require NSAID therapy. This was confirmed by clinical, sigmoidoscopic and histopathologic assessments.

---

**795**

MULTIPLE RECURRENT DISCRETE CUTANEOUS SQUAMOUS CELL CARCINOMAS IN A PATIENT ON CHRONIC IMMUNOSUPPRESSIVE THERAPY

Jonathan P. Pezanoski, M.D., Michael H. Piper, M.D.*, Stuart R. Gildenberg, M.D.: Providence Hospital, Southfield and St. John Hospital, Macomb, Michigan.

Squamous cell carcinoma is the most common malignancy associated with immunosuppression resulting from anti-rejection medication use in solid organ transplant patients. Reports of skin cancers related to immunomodulator use in patients with Crohn's disease are less common in the literature. Although not specifically FDA-approved for the treatment of Crohn's disease, the immunosuppressant mercaptopurine and its parent compound azathioprine are widely used in its management. We report the case of a 65-year old female diagnosed by colonoscopy and biopsy with Crohn's ileo-colitis in 1978. Soon after diagnosis, severe and rapidly forming perianal fistulas developed. Regardless of generous dosing of azathioprine, steroids, antibiotics and 5-ASA products, there was no improvement in the perianal fistulas. Azathioprine was discontinued in 1988 and mercaptopurine (6-MP) 50mg daily was later prescribed. Despite 6-MP's similarities to azathioprine she surprisingly experienced a rapid improvement in the drainage and eventual closure of her fistulas.

Five years following commencing therapy with 6-MP, the patient presented to her dermatologist multiple actinic keratoses (AKs). Within the next 6 months she presented twice with rapidly growing skin lesions. Biopsies of these two lesions were positive for squamous cell carcinoma (SCC) and surgical treatment was undertaken. Over the ensuing decade, multiple new squamous cell carcinomas, actinic keratoses and other benign lesions developed on her face and extremities and were appropriately treated. During this period of time, a total of nine separate, distinctive cutaneous squamous cell carcinomas were identified and surgically treated.

Throughout her treatment with 6-MP the patients Crohns fistulas remained quiet. Despite counseling on the long-term risks of 6-MP use, the patient strongly refused to discontinue this medication. Immunosuppression with azathioprine and mercaptopurine are closely associated with an increased incidence of malignancy in organ transplant recipients. This case highlights the need for caution and close surveillance for systemic and dermatologic malignancies in patients with inflammatory bowel disease who are exposed to prolonged immunosuppressant therapy.
were studied at the beginning of the study and, subsequently, at each visit for 12 months. Treatment failure was defined as either disease relapse or withdrawal because of adverse effects. At each visit, diaries were reviewed and clinical and laboratory assessments were performed. Colonoscopy was carried out at the beginning and the end of the study.

**Results:** At the end of the 12 months’ study, 7 of 10 patients on intermittent GCAP and 6 of 10 patients on oral 6-MP were still in full remission. In the intermittent GCAP group 3 patients relapsed at 4, 5 and 12 months, respectively. In the 6-MP group 3 patients relapsed at 4, 10 and 11 months, respectively. All patients complied with intermittent GCAP and there were no dropouts. However, one patient in the 6-MP group dropped out because of liver dysfunction.

**Conclusions:** Intermittent therapy with GCAP may be as effective as and safer than 6-MP in maintaining remission in patients with UC.

---

**RISK FACTORS FOR INFLAMMATORY AND NON-INFLAMMATORY COMPLICATIONS OF ILEAL POUCH-ANAL ANASTOMOSIS**

Bo Shen, M.D.*, Victor Fazio, M.D., Feza Remzi, M.D., Conor Delaney, M.D., Scott Strong, M.D., Ana Bennett, M.D., Farah Kwandwala, M.S., Jean-Paul Achkar, M.D., Aaron Brzezinski, M.D., Edy Soffer, M.D., Wendy Liu, M.D., Marlene Bambrick, R.N., Kerry Sherman, R.N., Bret Lashner, M.D. The Cleveland Clinic Foundation, Cleveland, Ohio.

**Purpose:** Ileal pouch-anal anastomosis (IPAA) is the surgical treatment of choice for patients with ulcerative colitis (UC) after colectomy. Inflammatory (pouchitis, Crohn’s disease of the pouch, and cuffitis) and non-inflammatory (irritable pouch syndrome [IPS]) complications of IPAA have an adverse impact on physical and psychological well being which can compromise the gain in quality of life by the curative surgery. The risk factors for CD of the pouch, cuffitis, and IPS have not been investigated.

**Methods:** A cohort of 200 patients consecutively seen in our IBD clinic were studied, including normal pouches (N = 47), antibiotic-dependent or antibiotic-refractory pouchitis (N = 47), CD of the pouch (N = 33), cuffitis (N = 35), and IPS (N = 38). The diagnosis was made based on a combined assessment of clinical history and presentation, endoscopy, and histology. 15 demographic and clinical variables (including age, gender, extent and severity of UC, duration of UC and IPAA, indications and number of stages for IPAA, pouch configurations, smoking, family history of IB, primary sclerosing cholangitis, arthralgias, and use of NSAIDs, antidepressant, and antianxiety) were evaluated with 4 separate case-control analyses comparing each complication to the normal pouch group. Logistic regression models were used.

**Conclusions:** 1) NSAID use increases the risk for pouchitis, while smoking may be associated with an increased risk for CD of the pouch; 2) IPAA with mucosectomy for dysplasia protects patients from the development of cuffitis; 3) Antidepressant use at the time of diagnosis is associated with an increased risk for IPS, suggesting association between psychological factors and the disease; 4) Arthralgias are common in patients with IPAA complications.

**Risk Factors, Odds Ratios (95% Confidence Interval)**

<table>
<thead>
<tr>
<th>Pouchitis N = 47</th>
<th>Crohn’s Disease of Pouch N = 33</th>
<th>Cuffitis N = 35</th>
<th>Irritable Pouch Syndrome N = 38</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSAID use 2.55</td>
<td>Smoking, 1.0</td>
<td>Pouchitis 1.06</td>
<td>Cuffitis 1.06</td>
</tr>
<tr>
<td>(1.00, 6.12)*</td>
<td>(0.77, 12.44)</td>
<td>(0.03, 1.06)*</td>
<td>(5.64, 17.3, 18.40)*</td>
</tr>
<tr>
<td>Smoking, 0.29</td>
<td>Arthralgias 3.33</td>
<td>Arthralgias 13.33</td>
<td>Arthralgia, 432</td>
</tr>
<tr>
<td>(0.02, 2.86)</td>
<td>(1.20, 10.83)*</td>
<td>(4.40, 40.48)*</td>
<td>(1.54, 14.39)*</td>
</tr>
<tr>
<td>Arthralgia 2.53</td>
<td>(0.00, 7.14)</td>
<td>(1.00, 7.14)</td>
<td></td>
</tr>
</tbody>
</table>

*P < 0.05

---

**PERCEPTIONS OF IMPROVEMENT UPON TREATMENT WITH INFlixIMAB IN CLINICALLY QUIESCENT BUT HISTOLOGICALLY SMOLENDERING CROHN’S PATIENTS: REMEMBERING WHAT IT’S LIKE TO BE WELL**

Mark R. Fleisher, M.D.*, Steven D. Rubin, M.D., Andrew E. Levine, M.D., Alexander W.R. Burns, M.D. Borland-Groover Clinic, Jacksonville, Florida; Long Island Gastroenterology Group, Merrick, Long Island; New York City; New York; and, New South Wales, Australia.

**Purpose:** Physicians and patients are often confronted with the following scenario: clinical remission yet histologically inflamed. Dogma averts that one is to treat the patient, not the test. We decided to test this sacred rule and treat those patients found to be mired in this murky territory.

**Methods:** Twelve surgery-naive, ANCA-negative Crohn’s patients were noted to be in clinical remission (CDAI < 150) and on a steady medication regimen over the previous year. They each underwent ileocolonoscopy. Biopsies revealed mild to moderate chronic inflammatory changes at multiple sites. The patients continued their previous regimens and received infliximab (5mg/kg) at 0/2/6/14 and week 22. Repeat ileocolonoscopy and biopsy were performed at week 24. Pathology now revealed quiescent disease.

**Results:**

**Medication Regimen**

<table>
<thead>
<tr>
<th>Number of Patients in Clinical but NOT Histologic Remission</th>
<th>Symptomatic Improvement After Augmentation Therapy With Infliximab</th>
</tr>
</thead>
<tbody>
<tr>
<td>prednisone/ mesalamine</td>
<td>2</td>
</tr>
<tr>
<td>mesalamine</td>
<td>2</td>
</tr>
<tr>
<td>mesalamine/ azathioprine</td>
<td>5</td>
</tr>
</tbody>
</table>

The vast majority of patients who had been in clinical but not histologic remission noted marked improvement in their symptoms and quality of life. The general concensus was one of increased energy and wellness.

**Conclusions:** Trying to describe the gestalt of wellness is never futile but always daunting. Although the CDAI and IBQD are useful, one must wonder if IB patients forget the joy of wellness. The available scales seem more applicable to questions of response/relativism (“are you better, worse or the same?”) than homeostatic absolutism (“are you well?”). With time with an illness, it is unclear if the patients have lowered their expectations. They may have tacitly accepted a certain level of fatigue and pain as normal. Physicians should not. Physicians must skeptically remember that even mild inflammation implies that the tissue is not well and, as such, their patient is probably not well, either. We agree that one should treat the patient and not the test; however, one must trust the test and sometimes go back to the patient for the rest of the story. Perhaps modification of these disease activity indices is in order. Moreover, large trials are needed to sort out placebo affect from drug responsiveness.

---

**ADALIMUMAB, A HUMAN ANTI-TNF-α MONOCLONAL ANTIBODY, INDUCES CLINICAL REMISSION AND RESPONSE IN PATIENTS WITH MODERATE TO SEVERELY ACTIVE CROHN’S DISEASE IRRESPECTIVE OF SMOKING STATUS**


**Purpose:** The efficacy of adalimumab (ADA) in the treatment of patients with active Crohn’s Disease (CD) was evaluated in a randomized, double-blind, placebo-controlled, multicenter study. Since smoking status has been shown to affect the efficacy of other anti-TNF agents, the potential interaction between ADA and smoking status was also assessed.

**Methods:** 299 patients without previous exposure to TNF-antagonists and with active CD (CDAI 220-450 points) were randomized equally to one of
four treatments administered subcutaneously at Week 0 and Week 2 (Week 0/Week 2): 160mg/80mg ADA, 80mg/40mg ADA, 40mg/20mg ADA, or placebo/placebo. The primary end point, the comparison of rates of clinical remission (CDAI < 150) in subjects receiving the two higher doses of ADA and placebo, was assessed at Week 4. Clinical response (CDAI decrease of ≥70 [Δ70] or ≥100 points [Δ100]) was also assessed. Subjects were categorized as nonsmokers (NS) or current smokers (CS) based on history collected at the initial visit. Chi-square test or Fisher’s exact test were used for overall comparison among the three treatment groups, and logistic regression was used to assess the consistency of the treatment effect between CS and NS.

Results: Thirty-six percent of the patients receiving ADA 160/80 mg and 24% receiving adalimumab 80/40 mg (24%) achieved clinical remission compared with 12% who received placebo (p = 0.004). The efficacy of ADA was independent of smoking status. Results of CDAI < 150, Δ70 and Δ100 are shown in the table. * = p < 0.05 for the OVERALL treatment groups.

<table>
<thead>
<tr>
<th>Medication Regimen</th>
<th>Number of Patients in Clinical Remission</th>
<th>Histologic Remission Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>prednisone/mesalamine</td>
<td>2</td>
<td>0/2</td>
</tr>
<tr>
<td>mesalamine</td>
<td>3</td>
<td>0/3</td>
</tr>
<tr>
<td>mesalamine/azathioprine</td>
<td>5</td>
<td>3/5</td>
</tr>
<tr>
<td>azathioprine</td>
<td>10</td>
<td>5/10</td>
</tr>
<tr>
<td>mesalamine/azathioprine/infliximab</td>
<td>15</td>
<td>13/15</td>
</tr>
<tr>
<td>azathioprine/infliximab</td>
<td>15</td>
<td>14/15</td>
</tr>
<tr>
<td>infliximab</td>
<td>10</td>
<td>9/10</td>
</tr>
</tbody>
</table>

None of the patients maintained on mesalamine ±/− prednisone demonstrated histologic remission. A significant proportion of patients treated with azathioprine were in histologic remission. Those treated with infliximab achieved the greatest rates of histologic quiescence.

802

INFLAMMATORY BOWEL DISEASE AND PREGNANCY: A 20 YEAR PROSPECTIVE CASE CONTROL STUDY
Flavio M. Habal, M.D., Ph.D.*, Samir C. Grover, M.D. University of Toronto, Toronto, Ontario, Canada.

Purpose: Women with inflammatory bowel disease who become pregnant often raise concerns related to fetal outcomes and to the effect of pregnancy on their disease. Population based data on pregnancy outcomes in IBD is scant and based on cohort studies and registry data. The safety of medications in pregnancy – including 5-aminosalicylic acid (5-ASA), azathioprine and corticosteroids – has been substantiated only in retrospective and cohort studies.

Methods: We present a prospective study of 138 women with IBD who gave birth to 174 infants over 20 years. 60 patients had ulcerative colitis (UC) and 76 patients had Crohn’s disease (CD). 50 patients received no therapy, 58 received oral 5-ASA (mean 2850 ± 1220 mg/d), 10 received 5-ASA per rectum, 47 received prednisone (10.0 ± 2.8 mg/d), and 9 received azathioprine (2 mg/kg). The patients were case matched with 83 non-pregnant females with IBD – 43 with UC and 40 with CD, and 100 healthy pregnant females. The maternal outcome was relapse defined as abdominal pain, diarrhea, or inability to gain weight. Fetal outcomes included mean birth weight and congenital anomalies.

Results: The relapse rate during gestation was 32/174 (18.3%) compared to 19/83 (22.9%) for the case matched group of patients with IBD. Pregnant women on maintenance therapy had a relapse rate of 10% (12/124) compared to 34% (17/50) in the group not taking medication. The mean birth weight was 3210 ± 816 g in the IBD group compared to 3215 ± 610 g in the control group. The mean birth weight in the untreated patients was 3020 ± 668 g compared to 3328 ± 555 g for those on medication (p = 0.005; see Figure 1).

Figure 1. Mean birth weights of children born to (a) women with IBD compared to disease-free controls and (b) women with IBD treated and not-treated pharmacologically.

Results: The relapse rate during gestation was 32/174 (18.3%) compared to 19/83 (22.9%) for the case matched group of patients with IBD. Pregnant women on maintenance therapy had a relapse rate of 10% (12/124) compared to 34% (17/50) in the group not taking medication. The mean birth weight was 3210 ± 816 g in the IBD group compared to 3215 ± 610 g in the control group. The mean birth weight in the untreated patients was 3020 ± 668 g compared to 3328 ± 555 g for those on medication (p = 0.005; see Figure 1).

[figure1] There were 3/174 (1.7%) congenital anomalies in the IBD group and 4/100 (4%) anomalies in the control group.
Conclusions: Pregnant patients with IBD had a lower relapse rate than case matched non-pregnant females. Patients on maintenance therapy had fewer relapses than those not on medications. Infants born to mothers on maintenance therapy had higher birth weights. The rate of congenital malformations in the IBD group was the same as infants born to healthy mothers. Patients on azathioprine had no relapses during pregnancy and did not have infants with congenital anomalies.

803

A PROSPECTIVE, OPEN-LABEL TRIAL OF INFlixIMAB IN PATIENTS WITH CROHN’S DISEASE REQUIRING HOSPITALIZATION


Purpose: To evaluate treatment response to infliximab (IFX) as a first-line therapy in patients hospitalized for severe Crohn’s disease (CD).

Methods: Patients aged > 17 with CD of ≥ 3 months, a Crohn’s and Colitis Foundation of America-International Organization of Inflammatory Bowel Disease (CCFA-IOIBD) score > 5, and who had not received IFX for > 8 weeks were eligible for the study. A single therapeutic goal was selected for each patient including: elimination of bowel symptoms (13), closure of fistula (2), reduction of abdominal mass (1) and treatment of pyoderma gangrenosum (1). IFX 5mg/kg was administered. CCFA-IOIBD score was obtained on admission and daily. Patients were discharged at the physician’s discretion when improved. Maintenance infusions were given at 2, 6, and 14 weeks and clinical response or remission was recorded on an outpatient basis using the Crohn’s Disease Activity Index (CDAI).

Results: Seventeen patients were enrolled in the study from December 2002 to January 2004. On admission the mean CCFA-IOIBD score was 13.5. Eight of 17 patients achieved a clinical response with a mean score of 4 (SD ± 1.5), representing a ≥ 50% reduction from baseline on discharge. Eight of 17 had < 50% reduction, and one patient had no response at the time of discharge. Median length of hospitalization for all patients was 3 days (range 1-9). Remission (CDAI < 150) was achieved by two weeks in 8 of 17 (47%) patients. Response required up to 14 weeks in 3 of 17 (18%) patients, all with fistulizing CD; 6 of 17 (35%) patients failed to have an adequate response (three had rescue therapy with steroids, one refused steroids, in one an enterovesical fistula failed to close, and one required surgery for persistent obstruction due to multiple small bowel strictures). Three possible adverse events were observed each in one patient: urinary infection, perirectal and intra-abdominal abscess.

Conclusions: Infliximab therapy was an effective first-line agent in patients with severe Crohn’s disease who require hospitalization. Patients can anticipate a brief hospitalization (median of 3 days) with response between 1 and 9 days except those with fistulizing CD. Failure of an early response can provide an opportunity to consider an alternate form of therapy without delay.

804

CLOSTRIDIUM DIFFICILE INFECTION INULCERATIVE COLITIS


Purpose: Ulcerative colitis (UC) flares can be triggered by enteric infections. The existing data on Clostridium difficile infection in UC flares however, is limited. We sought to examine the role of this infection in the severity and outcomes of UC flares.

Methods: All patients at Mayo Clinic Rochester with UC flares were identified using the diagnostic index and crossed with all patients who had a stool sample positive for C. difficile toxin between the dates of Jan. 1989 to Dec. 2000. Control patients with UC matched for age, gender, and date of flare who had negative toxin assays were identified. Records were abstracted for length and severity of flare, treatment before, during, and after the flare, and multiple other outcomes, including need for transfusion, colectomy, and time to next flare. Risk factors for C. difficile infection were also assessed.

Results: Twenty-three cases of UC flares with C. difficile infection were identified, with a median age of 46 years (range, 17-83); 44% were female. The cases were more likely than controls to have taken antibiotics in the preceding 6 weeks (74% vs 13%) and to have been hospitalized in the preceding 3 months (52% vs 22%). Cases were more severely ill, with more frequent weight loss (70% vs. 39%), hospitalization (78% vs 35%), need for parenteral steroids (35% vs 13%), and need for colectomy (35% vs 22%). The total WBC at presentation was higher (11.3 vs. 8.6) but other clinical and laboratory features (Hgb, stool frequency, temperature) were similar.

Conclusions: C. difficile infection in patients with UC is uncommon. However, the increased severity and treatment requirements of these patients argue for consideration of routine C. difficile testing in all patients with UC flares. Furthermore, 24% of patients had infection without preceding antibiotic use, suggesting that UC itself may be a risk factor for acquiring C. difficile infection.

805

ROLE OF APPENDECTOMY IN THE CLINICAL COURSE OF CROHN’S DISEASE

Robin Forman, D.O., Georgia Panagopoulos, Ph.D., Crescens Pellechcia, D.O., Gopal Narasimhan, D.O., Burton I. Korelitz, M.D.*; Beth Israel Medical Center and Lenox Hill Hospital, New York, New York.

Purpose: History of appendectomy is associated with an increased risk of Crohn’s disease (CD). Recently, the appendix has been noted for its significant role in mucosal immune function. The impact of prior appendectomy among CD patients on disease severity has not been studied. Therefore, we are evaluating this relationship.

Methods: We reviewed a cohort of 1500 patients with Inflammatory Bowel Disease and identified 40 patients with CD who underwent appendectomy prior to being diagnosed with CD. These patients were compared to an age and gender matched control group of 40 CD patients without a history of appendectomy. Comparisons were made on demographic characteristics as well as on disease location, behavior, and severity (CD related hospitalizations, surgeries, and relapses) using either parametric or nonparametric tests accordingly.

Table 1. Disease Severity

<table>
<thead>
<tr>
<th></th>
<th>Appendectomy</th>
<th>No Appendectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitalizations</td>
<td>mean rate (95% CI)</td>
<td>mean rate (95% CI)</td>
</tr>
<tr>
<td>(years)</td>
<td>0.60 (0.27–0.95)</td>
<td>0.32 (0.13–0.52)</td>
</tr>
<tr>
<td>Surgeries (years)</td>
<td>0.25 (0.12–0.38)</td>
<td>0.10 (0.02–0.18)</td>
</tr>
<tr>
<td>Relapses (years)</td>
<td>0.60 (0.37–0.78)</td>
<td>0.40 (0.28–0.51)</td>
</tr>
</tbody>
</table>

Results: Each group was comprised of 30% males and 70% females with CD. The distribution of professional status and medical insurance were similar (p = 0.78, p = 0.63, respectively). There was no difference in age of symptom onset (34 vs. 33 years, p = 0.58) and lag time to diagnosis (26 vs. 13 months, p = 0.15) in CD patients with and without previous appendectomy. Since the duration of patient follow-up between the appendectomy and control group was significantly different (152 [6–438] vs. 217 [9–608] months, p = 0.03), the number of hospitalizations, surgeries, and relapses were calculated as rates (number of events/follow up time) to correct for this difference. Table 1 shows the results on rate of hospitalizations, surgeries, and relapses between groups. Disease location (p = 0.57) and behavior (p = 0.37) did not differ between groups. However, there was a trend for the control group to have disease localized to the colon (p = 0.057).

Conclusions: The appendectomy group had significantly more CD related hospitalizations and surgeries. Based on these preliminary data, it appears...
that the appendix may have an immune modulating effect in the pathogenesis of CD.

807
INCIDENCE AND OUTCOME OF THE RETAINED VIDEO CAPSULE ENDOSCOPE (CE) IN CROHN'S DISEASE (CD): IS IT A "THERAPEUTIC COMPLICATION"?

Adam S. Cheifetz, M.D., Asher A. Kornbluth, M.D., Peter E. Legnani, M.D., Ira J. Schmetkin, M.D., Simon Lichtiger, M.D., Blair S. Lewis, M.D.∗.
Mount Sinai School of Medicine, New York and North Shore University Hospital, Manhasset, New York.

Purpose: To determine the risk factors, incidence, and clinical outcomes of retained capsules in a large series of patients with known or suspected CD.

Methods: We performed a retrospective chart review of a database of 997 capsule endoscopy cases performed for various indications by the authors between December 2000 and December 2003.

Results: A total of 102 cases were identified in which CE was performed in patients with known (n = 38) or suspected (n = 64) CD. The majority (68%) of patients with known CD underwent CE to document involvement or define the extent of small bowel disease. Twenty-six percent of patients with known CD underwent CE for obscure GI bleeding; whereas 2 patients underwent CE to evaluate strictures seen on small bowel series. Of these patients with known CD, 18% (7 of 38) had abnormal radiologic findings. Six percent (4 of 64) of patients in whom CD was suspected had abnormal small bowel series. Only one of 64 patients (1.6%) with suspected CD had a retained capsule. However, in five of 38 (13%) patients with known CD, the capsule was retained proximal to a stricture. Of the 6 cases of retained capsules, 3 strictures were previously unknown despite prior small bowel series being performed; whereas 3 were suspected prior to capsule ingestion. In 5 cases, the obstructing lesions were resected without complications leading to complete resolution of the patients' underlying symptoms. One patient chose not to undergo surgery and has remained without clinically important episodes of small bowel obstruction SBO for up to 24 months. Acute SBO or capsule impaction did not occur in any of the cases of capsule retention.

Conclusions: Capsule endoscopy can be safely used in patients with either suspected or established CD. In this large series, retention of the capsule did not lead to acute SBO, was not a surgical emergency, and could be safely removed electively at surgery. Moreover, surgical resection of the obstructing lesions led to complete resolution of the patients' symptoms. We propose, therefore, that a retained capsule may be considered a "therapeutic complication" that can be of value in the evaluation and management of patients with known or suspected CD, despite the possibility of intestinal strictures.

808
LPS-RESPONSIVE BEIGE-LIKE ANCHOR PROTEIN AND ITS ROLE IN THE PATHOGENESIS OF CROHN'S DISEASE

Joseph S. Cody, Patrick Brady∗, Qingmin Wang, Frank Vasey.
University of South Florida College of Medicine, Tampa, Florida.

Purpose: The recently discovered Lipopolysaccharide responsive Beige-like Anchor (LRBA) gene, codes for an "anchor" like intracellular protein. The gene is induced by Lipopolysaccharide (LPS), and aids in the inflammatory cascade. The over-expression of the LRBA gene may allow increased inflammatory response to intraluminal bacteria. The presence of this gene in patients with Crohn's disease may explain the pathogenesis of prolonged mucosal inflammation. In this pilot study we examined the presence or absence of this gene in a small group of patients with inflammatory bowel disease.

Methods: Patients were recruited from the Gastroenterology clinics at the University of South Florida. They were screened for severity of disease using the Harvey–Bradshaw simple index. Blood was drawn on-site in two green top test tubes. These samples were then tested using PCR, for the presence or absence of the LRBA messenger RNA. The data from the PCR was recorded as mRNA expression or no expression on basis of intensity of signal.

Results: Fourteen patients have been enrolled in the study to date. Of the fourteen patients, all had Crohn’s Disease except for one with Indeterminate Colitis. Four healthy controls were tested with PCR and all had negligible expression of the LRBA mRNA. The 14 patients with disease revealed 12 with variable expression of the LRBA mRNA and 2 with negligible expression. LRBA mRNA was present in 87% of the patients tested. A two tailed Fisher’s exact test revealed significance with a p value of 0.005.

Conclusions: In a small group of patients with inflammatory bowel disease, this gene has been found to have increased expression as compared to healthy controls. This increased LRBA expression in Crohn’s disease suggests that LRBA could be a biomarker in Crohn’s disease, or play a role in disease pathogenesis.

809
USE OF INFlixIMAB, PEGYLATED INTERFERON AND RIBAVIRIN IN A PATIENT WITH CROHN'S DISEASE AND HEPATITIS C INFECTION

Yamini Maddula, M.D., Genina Cottoman, M.D., Paul Lebovitz, M.D.∗, Rad Aggrawal, M.D.
Allegeny General Hospital - Drexel University, Pittsburgh, Pennsylvania.

Infliximab (antibody to TNF-alpha) that has been demonstrated to cause and maintain remission in patients with fistulizing Crohn’s disease (CD),
Because there is evidence for a role of TNF signalling in viral hepatitis and extreme paucity of data on the effect of infliximab on hepatitis C virus (HCV), cautious use of anti-TNF antibodies in these conditions has been recommended. Due to possible increase in the incidence of HCV infection in this group of patients due to surgical procedures, these concerns represent a potential drawback in effective management of CD. Here we report a case with CD and HCV who received Infliximab and Pegylated interferon (PEG-IFN) respectively.

Case: This is a 39-year-old white female with history of CD since 1985 status post ileocolonic resection 15 years ago with perianal/fistulizing disease presently. She developed HCV (genotype 1a) as a result of blood transfusions at the time of the surgery. Her liver biopsy in March 2002 showed Grade 3 inflammation with stage 2 fibrosis. The quantitative HCV-PCR was 1.2 million copies with an ALT of 75 and AST 55 (mildly elevated). The rest of her liver tests (LFTs) including coagulation profile were normal. The plan was to start treatment with Interferon for chronic HCV after inducing remission of CD. Therapy with Infliximab was initiated in April 2002 with complete closure of fistulas. Patient received initial infusions at 0, 2, 6 weeks and every 8 weeks thereafter for maintenance. LFTs were monitored every 30 days during therapy. It was noted that patient’s transaminases normalized during infliximab therapy. Repeat quantitative HCV-PCR was 5 million copies. Due to persistent elevation in viral loads, the decision was made to start anti-viral treatment. Treatment with PEG-IFN and Ribavirin was started in June 2003. Patient completed 48 weeks of therapy with undetectable viremia and no exacerbation of CD during anti-viral therapy.

Conclusions: Alpha-TNF levels are increased in patients with HCV and inhibition of these levels could lead to a selective advantage to HCV replication due to evasion of host antiviral defence mechanisms leading to accelerated progression of hepatic decompensation. But the above case depicts no change/progression in the liver disease upon treatment with infliximab and furthermore, once the CD is in remission, treatment with IFN does not appear to worsen the symptoms.

810

IMPACT OF IMMUNOMODULATORS AND CORTICOSTEROIDS ON THE OUTCOME OF INFliximab (IFx) THERAPY FOR PEDIATRIC AND ADOLESCENT PATIENTS WITH CROHN’S DISEASE (CD)


Purpose: To evaluate the impact of corticosteroids and thiopurines on the short and long term remission rates with IFx in pediatric and adolescent CD Methods: Retrospective cohort study of twenty-eight pts, 6-19 years of age, with active CD followed in an academic institution. Inclusion Criteria: patients undergoing initial series of IFX, Pediatric Crohn’s Disease Activity Index (PCDAI) ≥ 15 points, prior treatment with oral prednisone (pred), azathioprine and/or 6-mercaptopurine (AZA/6MP). Exclusion criteria: methotrexate or thalidomide within 2 months prior to the first IFX infusion. The PCDAI was calculated before, at 5-7 weeks and at 4-6 months after the first IFX infusion. Patients who had a PCDAI of < 15 points (remission), at each follow up, were analyzed according to concomitant therapies: IFX plus pred, IFX no pred, IFX plus AZA/6MP, and IFX no AZA/6MP. Differences in remission rates (RR; proportion of patients who achieved remission) and ∆PCDAI (PCDAI change from baseline to each follow up) were determined.

Results: There were no significant differences in demographic variables between the groups. Patients received 2.5 infusions with an interval of 7.6 weeks (means). Overall remission rates at short and long term: 0.52 and 0.48 respectively. Non-statistically significant differences were found in RR between the groups. Borderline significance in ∆PCDAI between the IFX plus Pred and IFX no Pred groups, and between the IFX plus AZA/6MP and the IFX no AZA/6MP groups (Tables 1 and 2).

Conclusions: Prednisone and AZA/6-MP have a positive impact on the outcome of IFX treatment based on the differences in ∆PCDAI between the compared groups. Borderline significance is likely due to small sample size. The favorable impact in PCDAI may indicate a synergistic effect with IFX based on different mechanisms of action or decreased formation of human anti-chimeric antibodies.

Table 1. Short-term effect (week 5–7) (n = 23)

<table>
<thead>
<tr>
<th>Therapy</th>
<th>IFX plus Pred</th>
<th>IFX no Pred</th>
<th>p value/95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR</td>
<td>0.54</td>
<td>0.50</td>
<td>0.6</td>
</tr>
<tr>
<td>∆PCDAI (mean)</td>
<td>15.42</td>
<td>9.68</td>
<td>0.057/-0.04, 12.51</td>
</tr>
</tbody>
</table>

*pred weaning rate 0.33.

Table 2. Long-term effect (4–6 month) (n = 28)

<table>
<thead>
<tr>
<th>Therapy</th>
<th>IFX plus AZA/6MP</th>
<th>IFX no AZA/6MP</th>
<th>p value/95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR</td>
<td>0.52</td>
<td>0.33</td>
<td>0.36</td>
</tr>
<tr>
<td>∆PCDAI (median)</td>
<td>10</td>
<td>0</td>
<td>0.1/-5.00, 15.00</td>
</tr>
</tbody>
</table>

811

PILOT STUDY ON THE SAFETY AND EFFICACY OF GRANULOCYTE/MONOCYTE ADSORPTION APERESIS WITH ADACOLUMN IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE


Purpose: Two open, multicenter, pilot studies evaluated the efficacy and safety of selective granulocyte/monocyte adsorption apheresis with Adacolumn, an immunomodulatory device, in the treatment of ulcerative colitis (UC) and Crohn’s disease (CD).

Methods: Patients who were intolerant or refractory to other IBD therapies underwent 5 sessions (60 minutes/wk). Assessments occurred at baseline, Wks 1, 3, 5, 7, 12, and 16 using the Mayo disease activity index (DAI) for UC (range 0–120) or the CD activity index (CDAI; range 0–600). Primary endpoint was change in scores from Wk 1 to Wk 7. Quality of life (QOL) was measured using the Inflammatory Bowel Disease Questionnaire (IBDQ) and SF-36. Higher IBDQ scores indicate improved QOL.

Results: Fifteen patients were enrolled in each of the 2 studies. All 5 treatments were completed by 11 of the 15 UC patients. Mean DAI scores fell from 5.9 ± 1.4 at Wk 1 to 5.2 ± 2.9 at Wk 7. Four patients (27%) responded to therapy (defined as DAI reduction of ≥3 points). Remission (defined as DAI score ≤2; rectal bleeding ≤1; endoscopic evaluation ≤1) was observed in 1 of 11 patients. Mean IBDQ scores improved (127 ± 23 at Wk 1 to 155 ± 28 at Wk 7). Mean scores on the SF-36 physical and emotional subdomains improved by a mean of 10 (13%) and 26.8 points (57.5%), respectively. Of the CD patients, 14 of 15 completed all 5 treatments. CDAI mean scores fell from 292 ± 59 at Wk 1 to 225 ± 124 at Wk 7. Eight CD patients (57%) responded to therapy (defined as CDAI reduction by >70 points). Remission (defined as CDAI score ≤150) was observed in 5 patients. Mean IBDQ scores improved (133 ± 28 before treatment to 161 ± 45 at Wk 7). Mean scores on the SF-36 physical and emotional subdomains improved by 4.6 (8%) and 12.8 points (24%), respectively. Adverse effects were infrequent. No device-related SAEs were observed.

Conclusions: Adacolumn is well tolerated and shows clinical benefits in patients with refractory IBD. Patients with UC may experience
further benefits from a longer regimen. Sham-controlled studies are underway.

812
ENDOSCOPIC FACTORS IN THE DIAGNOSIS OF COLORECTAL DYSPLASIA IN CHRONIC INFLAMMATORY BOWEL DISEASE

Purpose: We sought to determine if any procedure-related factors during surveillance colonoscopy were associated with the diagnosis of neoplasia.

Methods: We reviewed the Mayo Clinic endoscopic database and medical records of patients with IBD who underwent surveillance colonoscopy between January 2002 and November 2003. Associations were sought between procedure-related variables and the diagnosis of dysplasia.

Results: We evaluated 757 surveillance colonoscopies carried out in 635 patients. Five hundred thirty-five patients with ulcerative colitis, 93 patients with Crohn’s disease and 7 patients with indeterminate colitis were evaluated retrospectively. The median age of the patients enrolled in the study was 51 years (range 19–87). Among 635 IBD patients, 24 (3.8%) had flat dysplasia and 12 (1.9%) had IBD-related polypoid dysplasia. In 28 patients (4.4%), sporadic tubular adenoma was identified. Eighty-three patients had inflammatory or hyperplastic polyps that were biopsied or removed during the procedure. The median total procedure duration for surveillance colonoscopy in this study was 23 minutes. The presence of polyps appeared to lengthen the procedure, with a median procedure duration of 30 minutes (range 2–74) compared to 22 minutes (range 3–81) in colonoscopies without polyps, p < 0.0001. Colonoscopies in which flat dysplasia was identified took a median duration of 24.5 minutes (range 7–81), compared to 22 minutes (range 3–70) for those in which dysplasia was not found. Using logistic regression analysis, we found that every additional minute in total colonoscopy time increased the flat dysplasia diagnosis rate by 3.5%, p = 0.0157. There was a significant correlation between median surveillance colonoscopy duration per endoscopist and flat dysplasia diagnosis rate, p = 0.0066. The median number of biopsies obtained per procedure was 25, range 2–54. There was no significant difference in the median number of biopsies taken during the procedures with (28, range 6–36) and without (25, range 2–54) flat dysplasia.

Conclusions: There is variance in surveillance colonoscopy practice even in the same institution among endoscopists. Spending more time during surveillance colonoscopy of IBD might increase dysplasia yield.

813
SUBCUTANEOUS STERNAL ABSCESS AS AN EXTRAINTESINAL MANIFESTATION OF ULCERATIVE COLITIS

Background: Cutaneous lesions are one of the most common extra-intestinal manifestations of inflammatory bowel disease (IBD), seen in approximately 10% of the cases. Subcutaneous abscesses are known to rarely affect patients with IBD and occur in parallel to the activity of primary disease. We report a 17 year-old male with ulcerative colitis (UC) who presented with a sternal abscess.

Case: A 17 year-old male diagnosed at an outside hospital with UC 2 years ago presented with a mass in the anterior chest, fever and facial lesions. His home medications were mesalamine, docusate, hyocynamine, ferrous sulfate, isoretinoin, loparamide and a prednisone taper. Repeated tapering courses of prednisone were used for a long period of time because of recurrent skin lesions on his trunk, extremities and face. His review of systems was positive for abdominal pain and bloody diarrhea. His examination showed a 6 × 6 cm tender, fluctuant mass in the anterior chest, facial vesiculopustular lesions and ulcerated skin lesions on the face, leg and back. Pertinent investigations were: elevated WBC of 27.1 X10E+9/L (72% neutrophils, 9% bands), platelets 1102 X10E+9/L, ESR 59 mm/h, decreased albumin of 2.5 gms/dl and hemoglobin of 7.4 gms/dl. Blood and abscess cavity cultures for bacteria, fungi and acid fast bacilli were negative. The abscess fluid consisted of a predominantly neutrophilic infiltrate. A CT scan of the chest showed sternal osteomyelitis surrounded by an abscess. Initial treatment included surgical drainage and antibiotics. An upper endoscopy and colonoscopy with biopsies showed active pan colitis and a normal terminal ileum. As the skin lesions and symptoms of colitis improved significantly in response to systemic steroids, the patient was placed on 6-mercaptopurine for maintenance of remission and isoretinoin was discontinued.

Conclusion: Aseptic skin abscesses result from a deep localization of neutrophilic disease and are related to disease activity in IBD. Therefore, appropriate treatment of the underlying disease and for possible infection is necessary.

814
A DOUBLE-BLIND, PLACEBO-CONTROLLED RANDOMIZED CLINICAL TRIAL EVALUATING THE EFFECTS OF SULFASALAZINE ON 6-MERCAPTOPURINE METABOLISM IN PATIENTS WITH CROHN’S DISEASE
Jean-Paul Achkar, M.D.*, Aaron Brzecinski, M.D., Bret Lashner, M.D., Deborah Vogel, Douglas Scidner, M.D., Bo Shen, M.D. Cleveland Clinic Foundation, Cleveland, Ohio.

Purpose: In-vitro data suggest that 5-ASA agents inhibit the enzyme thiopurine methyltransferase (TPMT) thereby potentially affecting the metabolism of 6-mercaptopurine (6-MP) and azathioprine. Inhibition of TPMT could lead to clinically favorable effects by maximizing 6-thioguanine nucleotide levels (6-TGN) while minimizing 6-methylmercaptopurine (6-MMP) production. The aim of this study was to determine if sulfasalazine (SSZ) affects metabolism of or clinical response to 6-MP in patients with Crohn’s disease.

Methods: This was a 16-week randomized, double-blind, placebo-controlled study in patients with Crohn’s disease starting therapy with 6-MP. Subjects starting 6-MP (1.2 mg/kg/day) were randomized in addition to receive either SSZ (target dose of 4 g/day) or identical appearing placebo. Exclusion criteria included low TPMT enzyme activity, sulfasalazine allergy, and prior colectomy. Metabolic endpoints (6-MP metabolites, TPMT enzyme activity) and quality of life as measured by IBDOQ were assessed at weeks 8 and 16.

Results: 62 patients met inclusion criteria and started 6-MP and either SSZ or placebo. Of these patients, 25 were withdrawn from the study: allergic reaction to 6-MP (N = 10 [16%]; 3 on SSZ and 7 on placebo), suspected SSZ reaction (N = 7), and other reasons (N = 8). Data for the remaining 37 patients are presented in the table.

<table>
<thead>
<tr>
<th></th>
<th>SSZ (N = 18)</th>
<th>Placebo (N = 19)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPMT- Wk 0</td>
<td>34.7 ± 8.3</td>
<td>31.9 ± 5.2</td>
<td>0.2</td>
</tr>
<tr>
<td>TPMT- Wk 8</td>
<td>39.2 ± 7.6</td>
<td>38.8 ± 8.1</td>
<td>0.9</td>
</tr>
<tr>
<td>TPMT- Wk 16</td>
<td>35.3 ± 6.8</td>
<td>33.9 ± 6.5</td>
<td>0.6</td>
</tr>
<tr>
<td>6-TGN- Wk 16</td>
<td>324 ± 161</td>
<td>282 ± 129</td>
<td>0.5</td>
</tr>
<tr>
<td>6-MMP- Wk 16 (median)</td>
<td>2760</td>
<td>4211</td>
<td>0.6</td>
</tr>
<tr>
<td>6-MMP/6TGN ratio - Wk 16 (median)</td>
<td>14.9</td>
<td>18.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Median WBC- Wk 16</td>
<td>6.0</td>
<td>4.8</td>
<td>0.03</td>
</tr>
<tr>
<td>IBDOQ- Wk 0</td>
<td>154 ± 35</td>
<td>158 ± 28</td>
<td>0.7</td>
</tr>
<tr>
<td>IBDOQ- Wk 16</td>
<td>169 ± 19</td>
<td>167 ± 30</td>
<td>0.9</td>
</tr>
</tbody>
</table>

There was an initial induction of TPMT enzyme activity seen at week 8 in both groups, although the effect was less pronounced in the SSZ group (Week 0 vs. week 8 TPMT: P = 0.1 for SSZ; P = 0.003 for placebo); enzyme activity then returned towards baseline level by week 16. Four patients in the SSZ group and 2 patients in the placebo group developed significant leukopenia (WBC < 3.5).
Conclusions: There is an initial, transient induction effect of TPMT enzyme activity when starting therapy with 6-MP. The addition of SSZ when initiating therapy with 6-MP does not significantly affect 6-MP metabolism or IBD-Q compared to 6-MP monotherapy.

815

MICROSCOPIC COLITIS WITH MINIMAL COLLAGEN: IS THIS LYMPHOCYTIC COLITIS OR COLLAGENOUS COLITIS?
Luke T. Evans, M.D., Wei Xin, M.D., Barbara J. McKenna, M.D., Henry D. Appelman, M.D., Michelle A. Anderson*. University of Michigan, Ann Arbor, Michigan.

Purpose: Lymphocytic colitis (LC) and collagenous colitis (CC) are two clinical and histologic variants of microscopic colitis. They are easily differentiated when a thick subepithelial band of collagen is present. Occasionally, there is a delicate, but still abnormal layer of collagen present. The aim of this study is to determine whether such cases of colitis with minimal collagen (CMC) behave more like CC or LC, and whether this histologic pattern may explain cases diagnosed as LC that respond poorly to therapy.

Methods: Colon biopsies from 201 patients diagnosed with microscopic colitis were reviewed. Biopsies were categorized as LC, CC, or CMC. Diagnoses of LC and CC were based on accepted criteria. CMC was diagnosed if a thin, irregular deposit of subepithelium collagen was not apparent on H & E sections, but was seen on trichrome stains. Clinical data was collected with blinded to pathologic diagnosis.

Results: Of the 83 patients with an original diagnosis of LC, 16 (19%) had the CMC histologic pattern. Of the 118 patients with a diagnosis of CC, 27 (23%) had the CMC pattern.

Clinical associations: Only 11% of the collagenous colitis group was male, compared to 27% and 33% of the lymphocytic and CMC groups respectively (p = 0.007). Forty-nine percent of patients in the CC group actively smoked, compared to 15% and 21% of CMC and LC patients respectively (p = 0.0007).

Clinical outcomes: Patients with LC were less likely to need ≥3 therapies due to treatment failure compared to patients with CC or CMC (4.6%, 20%, and 23% respectively p = 0.004). Moreover, 6.1% of the patients with LC were treated with steroids. By contrast, 24% and 18% of patients with CC and CMC respectively required steroids (p = 0.009). Patients originally diagnosed with LC but reclassified as CMC required more aggressive therapy than the LC patients; 13% needed steroids compared to 5% and 6% respectively in the LC group.

Conclusions: CMC may have minimal collagen deposition, seen only with trichrome stain. CMC has demographic features more similar to LC than to CC, but the treatment course is similar to CC and different than LC. For prognostic purposes, CMC should be regarded as a variant of CC. We recommend that patients thought to have LC, should have trichrome stains performed to evaluate for minimal collagen.

816

A RANDOMIZED CONTROLLED PILOT STUDY COMPARING BISMUTH SUBSALICYLATE VERSUS MESALAMINE (ASACOL®) FOR THE TREATMENT OF MICROSCOPIC COLITIS

Purpose: Microscopic colitis (MC), including lymphocytic and collagenous colitis, is a condition characterized by chronic watery diarrhea, grossly normal appearing colonic mucosa, and inflammation on colon biopsy. Bismuth subsalicylate (BSS) and mesalamine are commonly used agents for this condition. No trials to date have evaluated the efficacy of BSS compared to mesalamine for MC. Our primary objective was to compare the efficacy of BSS to mesalamine for MC in a prospective randomized fashion. Our secondary objectives were to determine tolerability of these medications, impact of the two treatments on quality of life, and the utility of autoimmune markers in predicting response to treatment.

Methods: Patients with chronic diarrhea and histologically proven microscopic colitis were randomized to receive either BSS 3 tablets (262 mg each) TID or mesalamine 4 tablets (400 mg each) TID for 8 weeks. Clinical symptoms were assessed by a standardized questionnaire which was completed by the patients before and after treatment. Anti-nuclear antibody (ANA), anti-smooth muscle antibody (ASMA), and perinuclear antineutrophil cytoplasmic antibody (pANCA) were measured in each patient prior to treatment.

Results: 42 patients were randomized; 34 patients were available for per protocol analysis. A partial response to treatment was achieved in 8/17 (47%) in both groups (p = NS). A complete response was achieved in 3/17 (18%) in the BSS group compared to 1/17 (6%) in the mesalamine group (p = 0.60). There was no significant difference in response rate in lymphocytic colitis (9/17) versus collagenous colitis (7/17). ANA, ASMA, pANCA were not helpful in predicting a response to treatment. There were no serious adverse events reported by patients taking either of the medications.

Conclusions: Treatment with either BSS or mesalamine for eight weeks is associated with a partial response in half of the patients and is safe and well tolerated. Although the sample size was small, this study suggests that there are no significant differences in the response rate of MC to BSS or mesalamine. Based on the small difference in efficacy observed between the two agents, a larger, prospective, randomized multicenter trial is needed to confirm these results.

817

INFLUENCES ON AGE AT DIAGNOSIS OF ULCERATIVE COLITIS

Purpose: Earlier age at diagnosis (aad) is associated with more extensive and severe ulcerative colitis (UC). Although smoking appears to delay disease onset, childhood factors may also result in changes in aad. We determined the independent influences on the aad of UC that have potential importance for genetic, and prognostic studies.

Methods: We evaluated 150 consecutive UC patients to determine the independent effect of family history of IBD, childhood tobacco exposure, childhood urban residence and appendectomy on aad of UC after adjustment for personal smoking history (never, active or former) and attained age. The diagnosis of UC and aad was confirmed by the medical record and risk factor assessment was through a patient questionnaire.

Results: Unadjusted comparisons showed aad in never, active and former smokers was 34, 42 and 52 years respectively. Aad of those who lived in a urban residence during early childhood was 11 years earlier compared to rural residence (p < 0.001). Aad of those who had appendectomy was 19 years later than those who had not had this procedure prior to diagnosis of UC (p < 0.002). Parental smoking and family history of IBD were not associated with earlier aad. The mean aad increased with each successive birth decade suggesting that attained age influenced aad. Regression analysis (Table) of the independent effect of each risk factor on aad is shown after adjustment for attained age and the other factors in the model. Active smokers had aad 3.9 and former smokers 7.8 years later compared to nonsmokers. Appendectomy delayed the onset of UC by 9 years. Urban residence and parental smoking in childhood resulted in 4.9 and 3.5 years earlier diagnosis respectively. Family history of IBD did not influence aad.

Conclusions: Age at diagnosis (aad) of UC was adjusted for attained age because the mean age at diagnosis increased as population attained age increased. Multivariate analysis found that passive tobacco exposure led to an earlier aad while smoking in adulthood a later aad suggesting a differential effect of tobacco based on age at exposure. Appendectomy delayed disease onset while urban residence was associated with earlier onset of UC. Family history of IBD did not influence aad.
DO PHYSICIANS ADDRESS FERTILITY AND PREGNANCY ISSUES IN WOMEN WITH INFLAMMATORY BOWEL DISEASE?


Purpose: Women with inflammatory bowel disease have concerns about the influence of their disease upon fertility and pregnancy. It has been suggested that physicians may infrequently address these issues. This study evaluated the frequency that physicians discussed fertility and pregnancy issues in women with IBD.

Methods: All women with inflammatory bowel disease attending an educational seminar were asked to anonymously complete a survey addressing whether physicians discussed fertility and pregnancy related issues. Information was obtained about the women’s age and race/ethnicity. A database with the exclusion of any identifying factors was developed. Statistical analysis was performed using Fisher’s exact test.

Results: Sixty-three women (44 white, 16 African-American, 4 Hispanic; mean age 37.6 years) with inflammatory bowel disease completed the survey. Sixty (93.8%) women noted that issues related to fertility and pregnancy were pertinent to them. In the individuals in whom fertility and pregnancy issues were active concerns, 24 (40%) reported that their physician addressed these issues. Twelve (50%) of the women who had discussions with their physician about fertility and pregnancy noted that the physician initiated the discussions and 12 (50%) women noted that they initiated the discussion. Hispanic women more often had discussions about fertility and pregnancy related to inflammatory bowel disease compared to white women (p = 0.0034). There was not a statistically significant difference in the rate at which physician discussions occurred in African-American and white (p = 0.1014) or Hispanic women (p = 0.0751). While the patients expressed overall satisfaction in their IBD care, there was dissatisfaction in the frequency at which fertility and pregnancy issues were discussed. Age did not impact upon whether discussions about fertility and pregnancy occurred.

Conclusions: Fertility and pregnancy are important issues to women with inflammatory bowel disease. Physicians may inadequately address these issues. Efforts should be made to identify when these issues are pertinent to women with inflammatory bowel disease and to address their concerns.

RACE/ETHNICITY MAY INfluence WHERE WOMEN WITH INFLAMMATORY BOWEL DISEASE OBTAIN MEDICAL INFORMATION


Purpose: Patients with inflammatory bowel disease (IBD) frequently obtain information about their disease from multiple sources. It is uncertain whether there is a difference in the sources of information for patients of different races/ethnicity. This study evaluated where African-American (AA), white (W) and Hispanic (H) women received IBD information.

Methods: All women with IBD attending an educational seminar were asked to anonymously complete a survey about their sources of medical information. Information was obtained about the women’s race/ethnicity. A database with the exclusion of any identifying factors was developed. Statistical analysis was performed using Fisher’s exact test.

Results: Sixty-four women with IBD (44 W, 16 AA, 4 H; mean age 37.6 years) attending an educational seminar anonymously completed a survey about their information sources. Multiple sources of information were reported, including physicians, others with the disease, medical literature and the Internet. Most (56.3%) reported that the Internet was a source of information. There was not a difference (p = 0.1589) in the rate at which the Internet was used for information compared to others with the disease (43.8%). However, the Internet was used statistically more often for information when compared to medical literature (31.3%, p = 0.0045) and physicians (25%, p = 0.0003). Others with the disease were also more likely to be used as a source of information compared to physicians (p = 0.0261).

In W women, there was no difference in the rate at which the various sources were used for information. AA women were more likely to use the Internet compared to others with the disease (p = 0.0013), medical literature (p < 0.0001) and physicians (p < 0.0001) for information. H women were more likely to obtain information from others with the disease compared to the Internet (p = 0.0081), medical literature (p = 0.0081) and physicians (p = 0.0081). AA women were more likely to obtain information using the Internet compared to W (p = 0.0001) and H (p = 0.0001) women. H women were more likely to obtain information from others with the disease compared to W (p = 0.0144) women.

Conclusions: Women with IBD frequently relied on the Internet and infrequently relied on physicians for information. AA women more frequently relied on the Internet for information compared to W and H women. H women more frequently relied on others with the disease for information compared to W women. Physicians should be aware of their patients’ sources of information and ensure that the information is accurate.
single source of information received their information from their physician was higher (mean age 56 yrs) than those who received information from others with the disease (mean age 44.5 yrs) and the Internet (mean age 36.7 yrs).

**Conclusions:** A significant portion of women with IBD (50%) obtained medical information from a single source. Physicians were the least frequent sole source of information about gender-specific issues. The younger patients more frequently obtained information from the Internet. Increased awareness by physicians of women's gender-specific concerns and their sources of information is important.

**821**

**THE EFFECT OF INFLAMMATORY BOWEL DISEASE ON THE OUTCOME OF PREGNANCY-A SINGLE CENTER STUDY**

**Prasun K. Jalal, M.D., David Lee, M.D., Simmy Bank, M.D.**. Long Island Jewish Medical Center, New York, New York.

**Purpose:** Inflammatory bowel disease (IBD) commonly affects young adults in the reproductive age. A number of population-based studies showed adverse outcomes in pregnant mothers with IBD, such as pre-term delivery, low birth weight and congenital malformations, causing concern among patients and physicians. The aim of the study was to look for adverse birth outcomes in pregnant patients with IBD.

**Methods:** Records of all patients with IBD and pregnancy in our hospital serving a large population in Long Island, New York were reviewed. During the period of 5 years (1998–2003), 57 patients were identified. Eight patients were excluded due to ongoing pregnancy. Of the 49 completed pregnancies, 34 had Crohn’s disease (CD), and 15 had Ulcerative colitis (UC). Patients were analyzed for parity, flare up during pregnancy, use of drugs during pregnancy and previous surgery. The outcome of pregnancies was examined to look for stillbirths, pre-term births, low birth weight and congenital malformations. The results were compared with 50 consecutive pregnancies in 2003 in women without the diagnosis of IBD and not exposed to any medications during pregnancy.

**Results:** The mean age of patients with CD and UC was 32 years and in the control group was 29 years. There was no statistical difference in the number of pregnancies, live births or spontaneous abortions between patients with CD and UC, compared with controls. Mean birth weight of babies in women with CD was 7.4 lbs, with UC 6.9 lbs and in control group was 7.3 lbs. Mean ages of gestation were 38.3, 37.6 and 39 weeks respectively, without any statistical difference. 12 patients (35%) with CD had surgery related to IBD prior to pregnancy and it did not have any effect on the outcome. None of UC patients had surgery related to the disease. There was a trend of smaller birth weight and earlier delivery in patients with UC without any medication, compared to patients on maintenance treatment; however, it did not show any statistical difference. Only 3 patients with CD and one with UC had disease flare up during pregnancy. Maternal weight, height and hematocrit were independent factors in the outcome of pregnancy in patients with IBD.

**Conclusions:** Presence of IBD does not adversely affect the outcome of pregnancy. Maintenance treatment during pregnancy is safe. Further study with a larger sample size is needed to see if the adverse outcome is related to disease activity or disease flares-ups during pregnancy.

**822**

**PHYSICIANS INADEQUATELY ADDRESS SEXUALITY AND SEXUAL FUNCTIONING IN WOMEN WITH INFLAMMATORY BOWEL DISEASE**


**Purpose:** Women with inflammatory bowel disease (IBD) frequently express a desire to obtain information about the impact of IBD upon sexuality and sexual functioning. However, there is limited data addressing these issues. This study evaluated the frequency at which physicians discussed issues related to inflammatory bowel disease and sexuality/sexual functioning with women.

**Methods:** All women with inflammatory bowel disease attending an educational seminar were asked to anonymously complete a survey. The survey inquired about the physicians from whom they received medical care and whether their physicians discussed issues related to sexuality and sexual functioning. Information was also obtained about the women’s age and race/ethnicity. A database with the exclusion of any identifying factors was developed. Statistical analysis was performed using Fischer’s exact test.

**Results:** Sixty-four women attending a patient education seminar completed the survey. All of the women reported that they received medical care from a primary care provider, gastroenterologist and obstetrician/gynecologist. All of the women expressed a desire to obtain information about inflammatory bowel disease and it’s potential impact upon sexuality and sexual functioning. Twelve (18.8%) women reported that a gastroenterologist had discussions about sexuality and sexual functioning. Gastroenterologists more frequently addressed these issues compared to a primary care provider (0%, p = 0.0002) or obstetrician/gynecologist (0%, p = 0.0002). In the patients who had discussions with their gastroenterologists, all of them reported that they (rather than the physician) initiated the discussion. The patient’s age and race/ethnicity (p = 0.2758) did not influence whether discussions occurred.

**Conclusions:** Sexuality and sexual functioning are important issues for women with inflammatory bowel disease. Physicians infrequently had discussions about these issues. However, women with inflammatory bowel disease reported that gastroenterologists more frequently addressed issues of sexuality and sexual functioning in IBD compared to primary care physicians and obstetricians/gynecologists. Nevertheless, patients who had these issues addressed by their gastroenterologists noted that they had to initiate the discussion. Increased attention to issues related to sexuality and sexual functioning by physicians is desired by women with inflammatory bowel disease.

**823**

**ONCE-DAILY, ORAL OPC-6535 IN THE TREATMENT OF ACTIVE ULCEERATIVE COLITIS: EFFECT OF CONCOMITANT 5-ASA USE**

**Stephen B. Hanauer, M.D.*, Ali Keshavarzian, M.D., John Schollenberger, Ph.D., M. Scott Harris, M.D. University of Chicago; Rush Presbyterian St. Lukes Medical Center, Chicago, Illinois and Otsuka Maryland Research Institute, Rockville, Maryland.

**Purpose:** OPC-6535 represents a novel thiazole class of IBD medications determined, in part, to inhibit phosphodiesterase (PDE) 4. Its mechanisms of action, which include inhibitory effects on neutrophil and monocyte superoxide production, cytokine secretion, and endothelial adhesion, are distinct from those of 5-ASA. This offers the potential for use in ulcerative colitis (UC) alone or in combination with 5-ASA therapy. A recent randomized, multi-center, placebo-controlled trial of once daily, oral OPC-6535 (OPC) in subjects with mild to moderate UC demonstrated improvement in mean DAI score and other endpoints. The aim of the current investigation was to compare treatment responses in subjects with and without concomitant 5-ASA use.

**Methods:** 186 subjects were randomized to receive an oral, once daily dose of either 25 mg or 50 mg OPC or placebo for 8 weeks. Eligibility included a new or established diagnosis of UC, flare within 12 weeks, and Disease Activity Index (DAI) score of 4–11 on a scale of 12. Concomitant 5-ASA was permitted if stable for 14 days before entry and throughout the study.

**Results:** Baseline DAI scores were comparable between 5-ASA and non-5-ASA users (mean ± SD: 5-ASA 7.5 ± 1.7 vs non-5ASA 7.2 ± 1.8). 73% of subjects used concomitant 5-ASA (mean dose ± SD: 2.2 ± 1.5 g/d); 27% were above therapeutic dose. Improvement in DAI scores (negative change from baseline) at OPC 25 and 50 mg was similar between 5-ASA users and non-users. The treatment effect of giving OPC 25 or 50 mg to 5-ASA users and non-users was superior to using 5-ASA alone. These
differences were even more pronounced in subjects with greater disease severity (DAI 7-11).

**Conclusions:** OPC-6535 shows promise as both primary and adjunctive (to 5-ASA) therapy of UC, especially in subjects with greater disease severity.

<table>
<thead>
<tr>
<th>Mean Change from Baseline in the DAI Score—All subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S-ASA Users</strong></td>
</tr>
<tr>
<td><strong>Time Point</strong></td>
</tr>
<tr>
<td>4 weeks</td>
</tr>
<tr>
<td>8 weeks</td>
</tr>
</tbody>
</table>

**824**

**CROHN’S DISEASE AND 6-MERCAPTOPURINE**


**Purpose:** To study the effect of 6-Mercaptopurine (6-MP) in decreasing the risk of colon cancer, steroid dependency, fistula formation, and need for colorectal surgery in patients with Crohn’s disease.

**Methods:** A retrospective analysis of data collected from office and inpatient records on 217 patients with Crohn’s disease between 1983 and 2004. Outcome variables included hospitalisations, number of surgeries, fistula formations, incidence of colorectal cancer, steroid dependency and Remicade use. Data was analyzed using SPSS 10.0.

**6-MP USE AND ASSOCIATED OUTCOMES IN CROHN’S DISEASE**

<table>
<thead>
<tr>
<th>6MP USE</th>
<th>Percentage</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitalizations</td>
<td>YES</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>87%</td>
</tr>
<tr>
<td>Surgeries</td>
<td>YES</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>59%</td>
</tr>
<tr>
<td>Fistulas</td>
<td>YES</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>17%</td>
</tr>
<tr>
<td>Fistula Surgery</td>
<td>YES</td>
<td>0.3%</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>11%</td>
</tr>
<tr>
<td>Remicade Use</td>
<td>YES</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>20%</td>
</tr>
<tr>
<td>Steroid Dependency</td>
<td>YES</td>
<td>15.1</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>51.0</td>
</tr>
</tbody>
</table>

**Patients:** The study sample was divided into two groups; 73 of whom were treated with 6-MP alone and 143 patients treated with a combination of Asacol, Sulfasalazine or Pentasa. Forty two percent were males and the age range was nine to eighty one years. Patients included in the study had a histopathological and endoscopic evidence of Crohn’s disease. The disease severity based on Crohn’s disease severity index ranged between Grade I and IV. Patients were followed by colonoscopies at one or three year intervals and blood work including HCT and ESR.

**Results:** There was a decrease in steroid dependency in patients on 6-MP (chi-square = 22.2, p = .00), a decrease in the incidence of fistulas (t = 2.41, p = 0.02) and surgeries for fistulas (t = 2.01, p = 0.05). We also noticed a decrease in the number of hospitalisations once the patients were placed on 6-MP (t = 5.42, p = 0.00), and a decrease in the number of surgeries (t = 4.48, p = 0.00). Use of Remicade was not significantly different (t = 0.51, p = 0.60). Furthermore, multiple logistic regression analysis to study the effect of 6-MP use on cancer incidence when adjusted for age, gender and race shows that 6-MP use is associated with a decreased risk of cancer but the difference was not statistically significant given the small sample size (Relative Risk = .35, p = .43).

**Conclusions:** There appears to be a decrease in the morbidity due to Crohn’s disease among patients treated with 6 MP. Randomized prospective studies are needed to further study this relationship and ascertain the outcomes.

**825**

**ILEAL CROHN’S DISEASE IN PATIENTS WITH NORMAL COLONIC MUCOSA**


**Purpose:** To determine the prevalence of ileal crohn’s disease in patients with normal colonic mucosa on colonoscopy and the proportion of missed diagnosis.

**Methods:** A retrospective analysis of data collected from office and inpatient records on 217 patients with crohn’s disease between 1983 and 2004. Ninety eight of these patients had presented with chronic diarrhea that lasted 3–6 months. These patients were subsequently evaluated for Inflammatory Bowel Disease (IBD) via colonoscopies. Forty two percent were males and the age range was between nine and eighty one years.

**Results:** Forty five percent (98/217) of the patients presenting with chronic diarrhea were diagnosed with chron’s disease. Thirty one percent (31/98) of the above population were found to have isolated terminal ileal crohn’s disease via biopsy, with a completely normal colonic mucosa from cecum to rectum. Sixty five percent (20/31) required a second colonoscopy to diagnose ileal chron’s disease because of persistant symptoms.

**Conclusions:** Terminal ileal disease can be missed in a great proportion of chron’s disease patients presenting with chronic diarrhea if the terminal ileum is not intubated during colonoscopy. Terminal ileal intubation should be considered as a standard of care during all colonoscopies for patients with suspected IBD and normal colonic mucosa.

**826**

**BODY MASS INDEX (BMI) OF IBD CHILDREN AT DIAGNOSIS; THE EFFECTS OF OBESITY EPIDEMIC**


**Purpose:** Low BMI is a common feature of IBD at diagnosis. Previous studies report weight loss at diagnosis in 63–75% of Crohn’s disease (CD) and 17% of ulcerative colitis (UC) in children, resulting in the common perception that newly diagnosed children with IBD have low BMI and decreased weight for height. Overweight (85-94 BMI %) and obesity (>95 BMI %) continue to increase in the pediatric and adolescent population; the USA National Health and Nutrition Examination Surveys (NHANES) 3 report that 23% of children are above 85% for BMI, and 10.5% are above 95%. We hypothesize that the increasing weight of children in the general population would also be seen in children with new onset IBD, resulting in improved weight and BMI % than previously reported.

**Methods:** Since Jan 2002, 18 US/Canadian pediatric GI centers prospectively enrolled newly diagnosed children with IBD in an observational
registry designed to assess clinical characteristics and to study the natural history of IBD in children. Weight, weight for age %, height, and height for age % at diagnosis were extracted from the database. All measurements were obtained before any treatment had been initiated. BMI and BMI % were calculated in both CD and UC children at diagnosis using CDC standards BMI chart for children.

Results: Mean age was 12.3 for CD and 11.8 for UC at diagnosis. BMI % data are shown in table. 34/335 CD (9%) and 14/109 (13%) UC subjects had BMI % >84% (overweight or obese). A majority of CD and UC subjects had BMI % which fell in the normal range. Only 147/444 (32%) of IBD children presented with low BMI (<10%) at diagnosis.

Conclusions: The majority of newly diagnosed IBD children have weight and BMI % within the normal range (10-84%) only. Only 34% of CD and 32% of UC had BMI of 10% or less at presentation. More importantly, 10% of newly diagnosed IBD children were either overweight or obese at presentation. Changing anthropometric data on North American youth appear to be altering the BMI of children presenting with IBD. IBD must be considered in all children with suggestive symptoms regardless of weight or BMI %.

**Table 1.**

<table>
<thead>
<tr>
<th>BMI % for age</th>
<th>CD (n = 335)</th>
<th>UC (n = 109)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI &lt; 10%</td>
<td>115 (34%)</td>
<td>32 (29.1%)</td>
</tr>
<tr>
<td>BMI 11–84%</td>
<td>186 (57%)</td>
<td>63 (58%)</td>
</tr>
<tr>
<td>BMI 85–94%</td>
<td>18 (5%)</td>
<td>8 (7.4%)</td>
</tr>
<tr>
<td>BMI &gt;95%</td>
<td>16 (4%)</td>
<td>6 (5.5%)</td>
</tr>
</tbody>
</table>

827

**ENACT-2 SAFETY, TOLERABILITY, AND IMMUNOGENICITY RESULTS OF NATALIZUMAB IN PATIENTS WITH CROHN’S DISEASE**


Purpose: The safety, tolerability, and immunogenicity of Antegen™ (natalizumab), a humanized monoclonal IgG4 antibody to α4 integrin, were evaluated in a randomized, double-blind, placebo-controlled, multicenter study (ENACT-2) in patients with Crohn’s disease (CD) who responded to natalizumab treatment in the induction of response/remission study (ENACT-1).

Methods: A total of 339 adult patients with CD who achieved response (≥70-point reduction in baseline Crohn’s Disease Activity Index [CDAI]) and/or remission (<150) and had a CDAI score <220 after receiving 3 infusions of natalizumab in ENACT-1 were re-randomized 1:1 to natalizumab (300 mg) (n = 168) or placebo (n = 171) and received up to 12 additional monthly infusions. Safety and tolerability were assessed by adverse event (AEs), lab parameters, physical examinations (PEs), and vital signs (VS). Immunogenicity was assessed by testing for anti-natalizumab antibodies.

Results: The incidence of serious AEs and AEs were similar between the 2 groups with the exception of CD exacerbation: natalizumab (n = 21 [13%]) and placebo (n = 69 [40%]). The most common AEs in both treatment groups were headache, nasopharyngitis, and nausea. No hematopoietic malignancies or lymphomas were reported. Additionally, the incidence of infection was similar between treatment groups. There were 4 patients that experienced hypersensitivity-like reactions in the natalizumab group, only one of which was classified as serious by the investigator. All 4 patients responded to discontinuation of the study drug and appropriate medical therapy. Overall, persistent anti-natalizumab antibodies were detected in 13 of 339 patients (3.8%). No clinically significant findings were noted in lab value assessments, PEs, or VS.

Conclusions: Natalizumab was well tolerated in patients receiving up to 15 monthly infusions. Few patients developed anti-natalizumab antibodies in association with longer-term treatment, and a low rate of infusion reactions occurred. The safety and tolerability of maintenance therapy with natalizumab is consistent with the safety profile previously reported in the 3-month induction of response/remission study (ENACT-1).

828

**POTENTIAL CAUSE OF UNRESPONSIVENESS TO INFlixIMAB (REMICADE) THERAPY IN PATIENTS WITH CROHN’S DISEASE**


Purpose: Current therapy for Crohn’s Disease (CD) includes sulfasalazine/5-aminosalicylates, antibiotics, steroids, and/or immunomodulators. Among these, infusion of infliximab, a chimeric monoclonal antibody against tumor necrosis factor α (anti-TNF-α) remains the main therapeutic choice for refractory CD. However, a significant number (20–40%) of patients with active CD do not respond to this therapy.

Methods: To identify any clinical factor(s) contributing to the unresponsiveness to infliximab therapy we analyzed five variables namely, age of onset, disease duration, location, family history, smoking history. The effect of these factors on the responsiveness and/or symptom relief after infliximab infusions (5 mg/kg) among 83 patients were investigated for active CD patients at the Crohn’s and Colitis Center of New Jersey during the period of October 1998 to February 2004.

Results: Forty five patients (54%) went into remission, 17 patients (21%) responded partially whereas no clinical response was seen in 21 patients (25%). The relationship of the demographic data to clinical response in infliximab therapy is summarized:

Additionally, the patients who were on immunosuppression (IS) regimen (6-MP or azathioprine) had a greater response rate (82%, n = 37) when compared to those without IS treatment (18%, n = 8). Among the responders 53% (24/45) were females and 47% (21/45) were male. In the non-responder group 67% (14/21) were female and 33% (7/21) were male.

Conclusions: The duration of disease prior to the introduction of infliximab infusion appears to influence the clinical response, whereas as variables such as age of onset, disease location, family history and smoking habit do not bear any relationship to the outcome of infliximab treatment in patients with active CD. These results may help to develop better treatment strategies for the subgroup of CD patients who have the disease for more than 10 years (p value = 0.094).

**Table 1.**

<table>
<thead>
<tr>
<th>Age of Onset (yrs)</th>
<th>Disease Duration (yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>11-25</td>
</tr>
<tr>
<td>Remission (n = 45)</td>
<td>72% (n = 21)</td>
</tr>
<tr>
<td>Nonresponders</td>
<td>28% (n = 8)</td>
</tr>
</tbody>
</table>

**Table 2.**

<table>
<thead>
<tr>
<th>Category</th>
<th>Bone</th>
<th>Colon</th>
<th>Rectal</th>
<th>Family History</th>
<th>Smoking History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Remission (n = 45)</td>
<td>15% (n = 6)</td>
<td>48% (n = 10)</td>
<td>46% (n = 21)</td>
<td>19% (n = 8)</td>
<td>78% (n = 34)</td>
</tr>
<tr>
<td>Nonresponders (n = 21)</td>
<td>85% (n = 6)</td>
<td>52% (n = 10)</td>
<td>34% (n = 7)</td>
<td>25% (n = 4)</td>
<td>83% (n = 17)</td>
</tr>
</tbody>
</table>

829

**THIOPURINE Methyl TRANSFERASE (TPMT) PHENOTYPE AS A PREDICTOR OF CLINICAL RESPONSE AND SIDE EFFECT PROFILE IN A POPULATION OF IBD PATIENTS**

Purpose: TPMT is responsible for the conversion of 6-mercaptopurine (6-MP) to 6-methylmercaptopurine, an inactive metabolite that has been associated with hepatotoxicity. Patients with decreased TPMT activity produce more 6-thioguanine (6-TG) which at high levels can lead to leukopenia. With the availability of TPMT enzyme activity testing, it is possible to screen patients with IBD starting therapy with 6-MP or azathioprine (AZA) in an attempt to limit drug side effects and toxicity.

Aim: The purpose of this study was to determine if TPMT activity correlates with clinical response or the development of side effects in IBD patients starting therapy with 6-MP or AZA.

Methods: 90 patients with IBD who had undergone TPMT phenotype testing were identified. Clinical response at 6 months could be assessed in 59 of these patients and was classified as complete response, non-response, partial response, or continued remission. Side effects were recorded including hepatitis, leukopenia, pancreatitis, allergic reactions, gastrointestinal intolerance, and opportunistic infection.

Results: At 6 months, 22 patients were classified as complete responders, 14 as non-responders, 12 as partial responders, and 11 as continued remission. No significant difference was present in drug dosing for the 4 groups (1.11 – 1.16 mg/kg ± 0.35–0.45). The 22 complete responders had a mean TPMT of 28.0 ± 10.4 EU, while the 14 non-responders had a mean TPMT of 31.8 ± 8.4 EU (p = 0.26). Mean TPMT values for partial responders and continued remission were 30.6 ± 4.6 and 31.0 ± 7.1 EU, respectively. Analysis of multiple cut points demonstrated no distinct cut off level of TPMT activity that correlated with clinical response. 52 patients reported 59 side effects. 31 patients (54.9%) had treatment discontinued due to side effects (mean TPMT 29.8 ± 9.5 EU). Leukopenia was the most common side effect occurring in 23 patients (15.6%). A TPMT level of < 29.0 EU correlated with increased risk of leukopenia compared to a TPMT level S 29.0 EU (p = 0.038). No distinct cut off level of TPMT activity correlated with the development of side effects.

Conclusions: 1) TPMT activity did not correlate with clinical response or side effects other than leukopenia. 2) TPMT activity of < 29.0 EU correlated with an increased risk of leukopenia.
features. About 80-85% of the pts with CD have SB involvement, causing inflammation leading to fibrosis and luminal strictureing. SBFT is most commonly modality to diagnose these strictures. We postulate that SBFT does not always accurately diagnose the strictures and renders these patients to delay their appropriate treatment. Aim: The specific aim of our study was to determine the accuracy of SBFT in diagnosing SB strictures in comparison to the surgical findings.

Methods: Electronic medical records of our institution were searched retrospectively for the past five years (95-00) identifying 32 patients. Male/female 12:19, age range, 23-55 years, mean 38 years.

Inclusion Criteria:
- Pts who underwent SB surgery due to Crohn’s disease and had a SBFT within 6 months of the operation.
- SBFT-enteroclysis findings were compared with the surgical findings.

Results: Out a total of 32 patients, 13 were completely diagnosed

- In 4 additional patients SBFT diagnosed strictures but missed fistulas
- In 10/32 patients SBFT missed strictures (3 reported normal, in 7 additional strictures missed)
- In 5/32 pts disease severity was overestimated by identifying a false positive stricture

Inaccurate Dx:
- Overall (strictures + fistulas) = 19/32 (59.37%)
- Stricture = 16/29 (55.17%)
Missed completely/partially = 10/31.25%]
Overestimated = 5 (15.62%)]
- Fistula = 4/6 (66.6%)

Total patients with strictures = 29
Identified
Completely = 16/29 (55.17%), Partially = 10/29 (34.48%), Total = 26/29 (89.65%)
Missed
Completely = 3/29 (10.34%), Partially = 07/29 (24.13%), Total = 10/29 (34.48%)

Conclusions: SBFT is not an ideal test for diagnosing CD strictures especially when more than one stricture is present.

- Patients with CD, especially steroid dependent, if present with persistent obstructive symptoms can initially be evaluated with a SBFT, but if negative and level of suspicion for stricture is high, should be referred for surgical evaluation to prevent significant delay in the definitive treatment.
- Now a days a capsule endoscopy should be considered when diagnosis is in doubt.

Purpose: To evaluate prevalence of abnormalities of the uterine cervix in women with inflammatory bowel disease (IBD) when compared to healthy controls.

Methods: 93 patients with IBD [46 Crohn’s disease (CD), 45 Ulcerative colitis (UC), 2 indeterminate colitis] were age matched (+ years to 2 years) to 93 healthy controls. Cases and controls were of middle to high socio-economic status. Data was collected for age, race, marital status, diagnosis of IBD with duration, severity, and use of immunomodulators. Pap smear results for five years prior to enrollment were obtained and results were categorized as normal, “of unknown significance,” and abnormal (dysplasia or carcinoma). For data analysis purposes, “abnormal” and “of unknown significance” results were grouped into one category.

Results: Mean age at the time of pap was 44 years (SD ±) and median duration of IBD was 15 years (0.55). Majority of the patients were Caucasian (90% cases vs. 82%) and married (73% vs. 63%). 58% of IBD patients had received past or concurrent immunomodulators (6-mercaptopurine, imuran, or infliximab).

Univariate analysis showed a trend toward a higher occurrence of abnormal pap (9% vs. 3%) and pap “of unknown significance” (6% vs. 2%) in the IBD group as compared to the controls (p = 0.06). Severity of IBD correlated positively with abnormal pap smear (r = 0.17, p = 0.02). No significant correlation was observed between exposure to immunomodulators and age with abnormal pap results (p > 0.20). Subgroup analysis for CD and UC revealed an equal distribution of abnormal pap results in the two groups (p > 0.80).

Multivariate analysis predicting abnormal pap results was performed using the following variables: diagnosis of IBD (present or absent), age at the time of pap test and previous or concurrent exposure to immunomodulators. The overall model tended towards significance (p = 0.06) although the diagnosis of IBD appeared to be the only meaningful predictor of outcome (OR = 4, 95% CI 1.23 – 14.5; p = 0.02).

Conclusions: Diagnosis of IBD bears a relationship with abnormal pap smear results while age and exposure to immunomodulators do not. Women with IBD should be screened regularly with pap smears because of the possible increased prevalence of abnormal finding.

834

A META-ANALYSIS OF CAPSULE ENDOSCOPY (CE) COMPARED TO OTHER MODALITIES IN PATIENTS WITH NON-STRUCTURING SMALL BOWEL CROHN DISEASE (NSCD)

Purpose: Accurate diagnosis of NSCD can be challenging. Multiple studies have shown that CE is an effective diagnostic tool for the evaluation of NSCD.

Aim: To evaluate the diagnostic yield of CE compared to other traditional modalities in patients with NSCD using meta-analysis.

Methods: A recursive literature search of prospective studies comparing CE to other diagnostic tests in patients with suspected or known NSCD was undertaken. Data on diagnostic yield among various modalities were extracted, pooled and analyzed using RevMan 4.2.3 software; heterogeneity was tested by the chi2 method. Incremental yield (IY) (diagnostic yield of CE – diagnostic yield of comparative modality) and 95% confidence intervals (CI) of CE over comparative modalities was calculated using a fixed effect model (FEM) for analyses without and a random effect model (REM) for analyses with heterogeneity. Funnel plot analyses were performed to look for publication bias.

Results: Ten studies compared the diagnostic yield of CE and small bowel radiology (SBR). The yield for CE and SBR was 62% and 27%, respectively (n = 226; CE = 37%; SBR = 25 – 49%; P < 0.0001; REM). Four studies compared diagnostic yield of CE and colonoscopy + ileoscopy (C+IL). The yield for CE and C+IL for any finding was 57% and 43%, respectively (n = 117; CE = 15%; C+IL = 27%; P = 0.02; FEM). Three studies compared diagnostic yield of CE and CT Enterography (CTE). The yield for CE and

ABNORMALITIES OF THE UTERINE CERVIX IN WOMEN WITH IBD
Jayoti K. Bhatia, M.D., Shlomo M. Mannor, M.D., Maria Shevchuck, M.D., Burton I. Korelitz, M.D., M.A.C.G., Jason Bratcher, M.D., Ashiyana Nariani, Georgia Panagopoulos, Ph.D, Adam Ofer, M.D., Ecaterina Tamas, M.D., Perry Edelstein, Katherine Vakher, M.D. Lenox Hill Hospital and New York University School of Medicine, New York, New York.
CTE for any finding was 73% and 41%, respectively (n = 70; IY = 31%; CI 16-47%; P < 0.0001; FEM). Two studies compared diagnostic yield of CE to push enteroscopy (PE). The yield for CE and PE for any finding was 47% and 7%, respectively (n = 75; IY = 40%; CI 28-52%; P < 0.0001; FEM). One study compared yield of CE to MR enterography (MRE) (n

one study suggested that TC-2403-12 inhibits LPS stimulated IL-8 production. In vivo studies with TC-2403-12 have demonstrated broad analgesic effects in several animal models. In the SRD study the drug was well tolerated with minimal side effects, including mild, (_<1.5 × upper limit normal), non-clinically significant, reversible increase in transaminases, skin rash and watery stools. Results from sigmoidoscopy procedures were normal. In the MRD study, TC-2403-12 was well tolerated with mild increase in transaminases and dizziness being the most commonly observed side effects. Images from radioisotope Tc and Sm released in the colon demonstrated that the product moved intact through the gut and dispersed in the terminal ileum, ascending and transverse colon.

Conclusions: A Phase II, enema placebo-controlled study in ulcerative colitis is currently underway. In parallel, the two most promising oral formulations are being optimized for delivery in the distal colon and will be tested in an upcoming human scintigraphy study.

**FUNCTIONAL BOWEL DISORDERS**

**DEPRESSION INFLUENCES SYMPTOM PRESENTATION IN PEDIATRIC PATIENTS WITH RECURRENT ABDOMINAL PAIN**

Cheryl A. Little, M.D., Sara E. Williams, Lynn S. Walker, Ph.D.*
Vanderbilt University Medical Center, Nashville, Tennessee.

**Purpose:** Recurrent abdominal pain (RAP) is a frequent childhood complaint, comprising 35-45% of referrals to pediatric gastroenterologists. Comorbid psychiatric disorder is common in RAP and may complicate diagnosis. We investigated the impact of depression on symptom presentation in RAP.

**Methods:** We studied 243 consecutive new patients (ages 8–15 years; 58% female) referred to the pediatric gastroenterology clinic for evaluation of persistent abdominal pain. All patients met Apley’s criteria for RAP. Patients completed the Children’s Depression Inventory (CDI) and responded to a symptom checklist assessing symptoms experienced during abdominal pain episodes. Two types of symptoms were assessed: (1) GI symptoms including “upset stomach,” “feeling of fullness,” and “feeling like throwing up,” and (2) nonspecific non-GI symptoms including dizziness, chest pain, weakness, headache, backache, fatigue, and heart palpitations.

**Results:** Patients were divided into Depressed and Non-Depressed groups according to the clinical cut-point on the CDI. T-tests compared symptom reports of the Depressed (n = 52) and Non-Depressed (n = 191) groups. Depressed patients were significantly more likely than non-depressed patients to report abdominal pain accompanied by other GI symptoms including upset stomach (92.2% vs. 72.4%, p < .01) and feeling like throwing up (82.4% vs. 57.5%, p < .01) but did not differ in feelings of fullness (60.8% vs. 53.3%). Depressed patients were significantly more likely than non-depressed patients to report nonspecific non-GI symptoms including dizziness (56.9% vs. 28.2%), chest pain (43.1% vs. 21.5%), weakness (72.5% vs. 37%), back pain (47.1% vs. 26.0%), fatigue (74.5% vs. 53%), and heart palpitations (41.2% vs. 18.8%) (all p’s < .01). The majority of both groups reported headache with abdominal pain (62.7% vs. 51.9%, ns). No gender differences were found.

**Conclusions:** The presence of nonspecific non-GI symptoms in patients referred for evaluation of RAP should signal the practitioner to evaluate for depression.

**SORBITOL INDUCED BREATH HYDROGEN IS COMPAREABLE TO LACTULOSE INDUCED BREATH HYDROGEN**

Norma S. Mann, M.D.*, Eddie C. Cheung, M.D. VA Medical Center, UC Davis, Martinez, California.

**Purpose:** Sorbitol is used as a sugar substitute in gums, foods and soft drinks. Many otherwise healthy people get GI symptoms from such foods. We have previously reported (Am J Gastro 2003; 98:571-72; Int Med J 2003; 10:295-298) that male normal volunteers after 20 Gm oral lactulose in 8 hours produce 19.6 ± 2.8 (range 11.85-2.4) ppm H2, area under the curve (AUC) and pass flatus 19.6 ± 2.8 (range 11-36) times and have a mean bloating score of 7.0 ± 1.4 (range 6-8). We wanted to measure the same parameters after 20 Gm oral sorbitol in the same normal volunteers.

**Methods:** The same 5 normal male volunteers who had participated in the lactulose study, participated in this study. They fasted overnight and fasting breath hydrogen was measured using an EC 60 gastolyzer (Bedfont Scientific; Medford, NJ), which has a sealed electrochemical sensor specific for H2. Then they ingested sorbitol 20 Gm with 30 ml of water. Thereafter breath H2 was measured every 15 minutes for the next 8 hours (480 minutes). Number of passage of flatus passed over 8 hours was recorded as also a bloating score (on a scale of 1–10). Cumulative H2 over 8 hours was calculated by AUC. The data are reported as mean ± standard error of the mean (SEM) and were compared using t-test; p value of <0.05 was considered significant.

**Results:** The five healthy volunteers after sorbitol produced cumulative H2 in 8 hours 19.6 ± 24 (range 1185–2342) parts per million; they passed flatus 19.6 ± 2.8 (range 10–31) times and had a mean bloating score of 6.8 ± 0.4 (range 6-8). There was no significant difference (p > 0.05) in these parameter compared to those with lactulose.

**Conclusions:** Oral sorbitol after oral ingestion produces breath hydrogen, bloating, and flatus passage comparable to that after lactulose in male volunteers. Sorbitol should be avoided as a food additive.
TREATMENT OF GASTROPARESIS WITH BOTULINUM TOXIN A: THE TEMPLE UNIVERSITY HOSPITAL EXPERIENCE

Purpose: To evaluate the efficacy and durability of pyloric injection with botulinum toxin A (Botox) for the treatment of refractory gastroparesis. To determine which variables predict response to treatment.

Methods: We identified all patients who underwent EGD with Botox injection into the pylorus between 1/1/00 and 3/1/04 for documented gastroparesis. Patient's were included if follow-up data were available either by chart review or phone call. For each patient we determined: demographic data, etiology of gastroparesis, GES results, prior surgical history, and prokinetic therapy before injection. We also determined each patient's major and minor symptoms prior to treatment. “Complete response” = elimination of all symptoms for at least 4 weeks. “Partial response” = improvement but not resolution of major symptom or 2 minor symptoms for at least 4 weeks. “No response” = no improvement in symptoms or improvement lasting less than 4 weeks.

Results: 63 of 115 patients had sufficient data for study inclusion. There were 53 females and 10 males. Mean age was 41.8 ± 13.5 (range 14-70). Mean follow-up was 9.3 months (range 1-37). Etiologies of gastroparesis were diabetic (41.3%), post-op (3.2%), and idiopathic (55.6%). Mean baseline GES results (% reduction) were 68.2 ± 20.2% (normal < 50%) at 2 hr and 41.2 ± 25.3% (normal < 10%) at 4 hr. 14 patients (22%) had a complete response and 13 (21%) had a partial response for a mean of 5.1 ± 2.8 and 2.9 ± 2.2 months, respectively. 36 patients (57%) had no response. Both response categories were combined for further analysis. By stepwise logistic regression main symptoms, GES result, age, and concurrent use of prokinetics were not associated with a response. Only female gender was associated with a response (OR = 8.6, 95% CI 1.8-40, p = 0.006). Moreover, females who responded had a longer response (4.4 ± 2.8 vs 2.5 ± 1.3 months, p = 0.036) than males who responded. Only females responded for ≥ 5 months after injection.

Conclusions: This represents the largest report to date on the use of Botox for treatment of gastroparesis. Approximately 43% of patients had a response to this treatment. Of responders, over half had a complete response with elimination of symptoms for ≥ 4 weeks. Female gender was associated with a response which was more durable in comparison to males who responded. Controlled trials appear warranted based on these results.

839
PREDICTING DIGESTIVE SYMPTOMS IN SUBJECTS NOT SEEKING CARE: A COMPARISON OF THREE MEASURES OF SOMATIZATION (SOM)
Michael Williams, M.D., Kimberly Lovett, M.S., Bruce D. Nalliboff, Ph.D., Sharon H. Jones, B.S., Michael D. Crowell, Ph.D., Michael P. Jones, M.D.*, Northwestern University, Chicago, Illinois; UCLA, Los Angeles, California and Mayo Clinic College of Medicine, Scottsdale, Arizona.

Purpose: SOM influences symptom tolerance, reporting and generation. SOM is also a complex construct that can be measured in a number of ways. The assessment of SOM in pts with functional digestive symptoms is not a mature science and currently available measures have not been well studied in this setting. To better understand the utility of measures of SOM, we evaluated 3 validated instruments in a mildly symptomatic nonconsulting population.

Methods: Second year medical students (MS) without a history of digestive disorders were studied immediately prior to academic examination. MS completed the Gastrointestinal Symptom Questionnaire (GSQ) which evaluates 36 digestive symptoms using 4-point Likert scales for frequency, severity, and bothersomeness of each symptom. MS also completed the Visceral Sensory Index (VSI; a measure of visceral-specific anxiety), the Somatization Scale of the Symptom Checklist 90-Revised with the two digestive items removed (SCL-som; a measure of SOM that may also reflect somatized anxiety) and Barsky’s Somatosensory Amplification Scale (SSAS; a measure of bodily hypervigilance).

Results: 92/102 MS (90%) reported at least one symptom. The median (25th-75th percentile) GSQ score was 24 (10-57). VSI, SCL-som and SSAS all correlated significantly with total symptom scores and each other (table). Stepwise regression identified a 2-step model in which VSI alone explained 23% of total symptom score variance and VSI with SCL-som predicted 33% of symptom score variance. SSAS did not enter into the model. The model was not influenced by gender. These associations also held when the analysis was performed using total scores for symptom frequency, severity or bothersomeness as the dependent variable.

Conclusions: Digestive symptom reporting by MS prior to examination is best predicted by visceral-specific anxiety and SOM. Hypervigilance as measured by SSAS is not predictive of symptom reporting. These data support the utility of VSI in digestive symptom assessment and highlight the important interactions between anxiety and SOM in symptom reporting.

Correlation Matrix

<table>
<thead>
<tr>
<th>GSQ Total</th>
<th>VSI</th>
<th>SCL-som</th>
<th>SSAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSQ Total</td>
<td>1.0</td>
<td>0.47*</td>
<td>0.46*</td>
</tr>
<tr>
<td>VSI</td>
<td>0.47*</td>
<td>1.0</td>
<td>0.35*</td>
</tr>
<tr>
<td>SCL-som</td>
<td>0.46*</td>
<td>0.35*</td>
<td>1.0</td>
</tr>
<tr>
<td>SSAS</td>
<td>0.27#</td>
<td>0.48*</td>
<td>0.44*</td>
</tr>
</tbody>
</table>

*p < 0.0001 / p < 0.02

840
INCREASING UPPER DIGESTIVE SYMPTOM SEVERITY IN IBS IS ASSOCIATED WITH INCREASED PSYCHIATRIC DISTRESS: THE POLYSYMPTOMATIC PATIENT
Sarah Wessinger, M.D., Lorrie Roth, R.N., Terrence Barrett, M.D., Alan Buchman, M.D., Michael P. Jones, M.D.*, Northwestern University, Chicago, Illinois.

Purpose: Many IBS pts also report symptoms (sxs) referable to the UGI tract or have abnormalities of UGI motility or sensation. Additionally, pts with one FGID often “morphe” into another FGID at a later date. To better understand multi-organ sxns in IBS, we evaluated dyspeptic sxs in IBS pts, IBD pts and healthy ctrls.

Methods: Consec. pts with IBD or RomeII IBS were enrolled and ctrls recruited by advertisement. Pts rated 15 dyspeptic sxs using the sx checklist of the Nepean Dyspepsia Index (NDI): upper abd. pain, discomfort and burning; chest pain, burning and regurgitation; upper abd.bloating; pressure; early satiety; inability to finish a meal; cramps; nausea; vomiting; belching/burping and bad breath. Pts also completed the SCL-90-R (SCL; a measure of psychiatric distress) and two measures of somatization: Toronto Alexithymia Scale (TAS) and Somatosensory Amplification Scale(SSAS). Comparisons across groups were made by ANOVA with Bonferroni’s postest.

Results: 42 ctrls, 29 IBD pts and 79 IBS pts were studied. IBS pts had significantly higher NDI sx scores than IBD pts who were significantly more symptomatic than ctrls (fig). Sx scores in IBS pts showed a bimodal distribution. Subsequently, we compared three groups: IBS with sx scores >70 (n = 23); IBS with sx scores <50 (n = 48); and IBD with sx scores <50 (n = 26). IBS and IBD pts with sx scores < 50 did not differ with respect to sxs, SCL, TAS or SSAS scores. In contrast, IBS pts with sx scores > 70 had significantly greater scores for total sxns, SCL and TAS but not SSAS (table).

Conclusions: Reporting of UGI sxs is common in IBS and IBD pts. A subset ofIBS pts (29%) reported significantly more upper digestive sx severity. This group demonstrated both greater psychiatric distress and somatization than did IBD and IBS pts reporting fewer upper digestive sxs.
Coping Strategies (CS) in IBS and IBD differ from controls but not each other

Sarah Wessinger, M.D., Lorrie Roth, R.N., Terrence Barrett, M.D., Alan Buchman, M.D., Michael D. Crowell, M.D., Michael P. Jones, M.D.*.
Northwestern University, Chicago, Illinois and Mayo Clinic College of Medicine, Scottsdale, Arizona.

Purpose: CS are used to manage conflict and illness and can have both adaptive or maladaptive effects on health status. Perceived availability and quality of social support (SS) also influence health status. CS and SS are not well studied in IBS. We evaluated CS and psychiatric distress in patients with IBS, IBD and controls.

Methods: Consec. pts with RomeII IBS or IBD were recruited from clinic and ctrls were recruited by advertisement. Subjs completed the Ways of Coping Questionnaire, a validated instrument measuring 8 common CSs. Subjs also completed the Interpersonal Support Evaluation (ISEL; a measure of perceived availability and quality of social support), SCL-90-R (SCL; a measure of psychiatric distress), IBS and IBD-QOL, and two measures of somatization: Somatosensory Amplification Scale (SSAS) and 20-Item Toronto Alexithymia Scale (TAS). Comparisons across groups were made by ANOVA with Bonferroni’s posttest.

Results: 55 ctrls, 57 IBS and 30 IBD pts were studied. No differences existed for age or sex. IBS and IBD pts demonstrated significantly greater psychiatric distress (SCL) and somatization (SSAS but not TAS) than ctrls but did not differ from one another. For IBD pts, IBD-QOL and IBS-QOL were highly correlated (r = 0.77; p < 0.001). IBS-QOL scores did not differ bwn IBS and IBD groups suggesting similar symptom impact. ISEL scores did not differ bwn IBS, IBD and ctrl groups. Total scores for all CS did not differ bwn ctrls, IBD and IBS. Planful problem solving was the dominant CS endorsed by ctrls. Compared with ctrls, both IBS and IBD relied significantly less upon planful problem solving and positive reappraisal and more upon escape-avoidance strategies than did ctrls (figure).

Conclusions: IBS and IBD pts did not differ from ctrls with respect to social support but did differ with respect to psychiatric distress, somatization and CS. IBS and IBD pts did not differ from each other with respect to CS suggesting that observed differences in CS strategies reflect illness behavior rather than a disorder-specific process.

Data stated as mean ± SD

Data in Table 1.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>IBD: NDI Sxs &lt; 50</th>
<th>IBS: NDI Sxs &lt; 50</th>
<th>IBS: NDI Sxs &gt; 70</th>
<th>p (ANOVA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDI Sx Score</td>
<td>19 ± 15</td>
<td>25 ± 14</td>
<td>94 ± 26</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>SCL</td>
<td>60 ± 32</td>
<td>50 ± 35</td>
<td>82 ± 37</td>
<td>0.004</td>
</tr>
<tr>
<td>TAS</td>
<td>40 ± 12</td>
<td>39 ± 10</td>
<td>50 ± 13</td>
<td>0.001</td>
</tr>
<tr>
<td>SSAS</td>
<td>29 ± 5</td>
<td>28 ± 8</td>
<td>30 ± 5</td>
<td>0.45</td>
</tr>
</tbody>
</table>

842

Most bothersome symptoms in Irritable Bowel Syndrome (IBS) Patients


Purpose: The number and intensity of IBS symptoms vary from patient to patient and fluctuate over time. This study assessed the most bothersome symptoms in IBS patients with different bowel patterns.

Methods: Data were collected during a two wk screening preceding an 8-wk randomized, double-blind, placebo-controlled study evaluating a new therapeutic agent for IBS in men and women. Subjects’ predominant bowel pattern was determined from daily self-assessment. Diarrhea (D-IBS) and constipation (C-IBS) predominant bowel patterns were defined as ≥70% of days with either diarrhea or constipation, respectively. Subjects recorded their most bothersome IBS symptom at the onset of the two wk screening period.

Results: 1234 subjects (984 women and 250 men) were enrolled. Most (64%) did not meet the screening criteria for either D-IBS (20%) or C-IBS (16%). These subjects (Other) had moderate pain and two formed bowel movements per day. In the total population, most subjects ranked abdominal pain (46%) as the most bothersome symptom, followed by urgency (23%) and bloating (15%) (Figure 1). Rankings of most bothersome symptoms for Other subjects were similar to the total population due to their prevalence (64%) in the study. The percentages of C-IBS and D-IBS subjects citing abdominal pain, urgency, number of stools, bloating, and straining as most bothersome were significantly different. For C-IBS and Other subjects, percentages were significantly different for abdominal pain, urgency, and straining. For D-IBS and Other subjects, percentages were significantly different for abdominal pain, urgency, number of stools, and bloating.
Conclusions: The most bothersome symptoms of IBS vary by bowel pattern subtype. C-IBS subjects, or those whose bowel pattern is neither constipation nor diarrhea predominant, cite abdominal pain as the most bothersome symptom. D-IBS subjects cite urgency as most bothersome with abdominal pain a close second. Optimal treatment options for IBS should be those that manage abdominal pain and appropriate bowel pattern specific GI symptoms.

843
CORRELATING GLOBAL OUTCOME MEASURES IN IRRITABLE BOWEL SYNDROME (IBS)

Purpose: To determine the concurrence between the two validated global outcomes measures Adequate Relief of IBS Pain and Discomfort (AR) and the Global Improvement Scale (GIS).

Methods: Men and women ≥ 18 yrs of age meeting Rome II IBS criteria were randomized in an 8-week clinical trial (n = 618) evaluating a new IBS treatment. The primary efficacy measure was AR of IBS pain and discomfort. AR responders answered yes to the question: In the past seven days, have you had adequate relief of your IBS pain and discomfort? (Yes/No). A secondary efficacy measure was the 7-point GIS rating question: Compared to the way you usually felt during the 3 months before you entered the study, are your IBS symptoms over the past 7 days: 1) substantially worse 2) moderately worse 3) slightly worse 4) not changed 5) slightly improved 6) moderately improved 7) substantially improved. GIS responders were subjects reporting moderate or substantial improvement.

Results: More subjects with adequate relief also reported improvement in the GIS rating of IBS symptoms (Figure). 83% and 95% of subjects with moderate or substantial improvement. GIS responders were subjects reporting moderate or substantial improvement.

Conclusions: AR and GIS are valid global outcome measures for IBS that are well-correlated with each other. The concurrence was similar in men and women and in subjects with diarrhea and/or constipation.

844
SYMPTOM SEVERITY IN WOMEN WITH DIARRHEA-PREDOMINANT IBS (D-IBS)

Purpose: Severity of IBS patients’ symptoms may be underestimated in clinical practice and it is often unclear what determinants of severity are used. We sought to assess whether physician ratings of IBS severity correlate with self-assessments made by women with IBS whose symptoms included diarrhea.

Methods: Patients (n = 2456) were enrolled in a 24-week clinical study (S3B30020). Physicians assigned IBS as mild, moderate or severe. Patients self-assessed the severity of their IBS symptoms during a 1-week screening period.

Results: Mean age was 48 yr and mean duration of IBS was 12 yr. Physicians classified 6%, 68% and 26% of the population as mild, moderate, or severe. Gastroenterology and primary care practices did not differ in the percentages of study patients classified in each category. Many subjects classified their pain (29%) and urgency (55%) as more severe than their physician’s overall rating. Increasing severity of IBS as categorized by physicians was positively correlated with increasing severity of individual patient assessed symptoms, including pain and urgency (figure), and with lower scores on an IBS specific QOL instrument. The correlation was highest (0.34) for pain.

Conclusions: In this population, gastroenterologists and primary care physicians indicate a sizable percentage of their patients have severe IBS. While physician classification of severity is generally consistent with patients’ assessments of individual symptoms and QOL profiles, for up to 50% of patients there is discordance. The best agreement in physician and patient severity ratings are for patients with the most severe symptoms.

845
RESPONSE TO CONVENTIONAL THERAPY IN WOMEN WITH MODERATE TO SEVERE DIARRHEA-PREDOMINANT IBS (D-IBS)

Purpose: Traditional IBS therapy may include prescription and OTC medications targeting individual symptoms. In order to better understand current practices in clinical management of IBS, traditional therapy use and improvements in symptoms were assessed for US women whose IBS symptoms included diarrhea.

Methods: Subjects (n = 796) were randomized to Tx with their traditional IBS therapy in a 24-wk open label study (S3B30020). Physicians categorized IBS as mild (6%), moderate (68%) or severe (26%). Traditional therapy was defined as any therapy excluding 5-HT3 antagonists prescribed to treat IBS. A 1-wk screening period profiled demography and bowel symptoms. At wk-4 and end of study, improvement in IBS symptoms was rated using the Global Improvement Scale question that assesses IBS symptoms using a 7-pt Likert scale ranging from substantially worse to substantially improved. GIS responders were subjects reporting moderate or substantial improvement.

Results: Mean age was 48 yr and 90% of subjects had D-IBS. Approximately 150 different medications were reported as traditional therapies for IBS. 42% of subjects used only one traditional IBS medication, 32% used 2, and 26% used 3 or more. The most commonly used traditional IBS therapy medications (conventional therapies) included anticholinergics/antispasmodics (71%), anti-diarrheals (35%) and bulking agents (27%). 39% of subjects used some combination of these medications. Other traditional therapies used by 6% or less of subjects included tricyclic antidepressants. 83% and 71% of
subjects were non-responders at the 4-wk and end of study assessments, respectively (Figure). Among non-responders, 28% of patients had severe, 66% had moderate and 7% had mild IBS.

Conclusions: While traditional IBS therapy may include multiple medications, conventional therapies for D-IBS are anticholinergics/antispasmodics, anti-diarrheals, and bulking agents. For the large majority of female patients with moderate or severe IBS, symptoms are not significantly improved over a 24-wk period on these conventional therapies.[figure1]

GASTROPARESIS IS NOT MORE COMMON IN DIABETES MELLITUS

Purpose: To determine whether symptomatic diabetics have an increased incidence of gastroparesis when compared with symptomatic non-diabetic patients.

Methods: We retrospectively reviewed the results of all consecutive gastric emptying studies done at our hospital for the period 1/1/00 to 8/22/02. A gastric emptying study was performed following the oral administration of 2–3 mCi of Tc-99m sulfur colloid labeled scrambled eggs. Sequential images were obtained for 90 mins. The half-time for clearance of the tracer from the stomach was calculated. A t ½ of ≤ 90 mins was considered to be normal. A t ½ of 90-180 mins was designated as mild gastroparesis and a t ½ of >180 mins was considered as severe gastroparesis.

Results: GES was performed in 85 of 86 patients during the study period. In one patient the study was aborted due to claustrophobia. There were 57 female and 29 male patients. The age range was 20–86 yrs (median 52). Thirty-nine patients had diabetes mellitus while 46 patients did not have diabetes mellitus. Of the 39 patients with diabetes mellitus, 21 had gastroparesis and 18 had normal studies (Odds 1.16). In the non-diabetic subset of 46 patients, 22 had evidence of gastroparesis and 24 had normal studies (Odds 0.92). The Odds ratio was 1.27. But with confidence intervals ranging from 0.54–2.99, the difference between the two groups was not significant.

Conclusions: We conclude that there is no significant difference in the incidence of gastroparesis in diabetic and non-diabetic patients.

847
A PROSPECTIVE ASSESSMENT OF BOWEL HABIT IN IBS: DEFINING AN ALTERNATOR

Purpose: IBS is subclassified as IBS with constipation or diarrhea (IBS-C or IBS-D) using patient recall of symptom subsets of the Rome II Criteria. Patients not fitting these two categories are considered “mixed” (IBS-M). The definition of an alternator has not been determined since prospective assessment of change in bowel habit using Rome II definitions has not occurred. Our aim is to prospectively assess change in bowel habit consistent with Rome II.

Methods: Females (n = 317) with IBS entering an NIH treatment trial were studied at baseline with questionnaires and 2-week diary cards of pain (VAS), stool frequency (BMs/day) and consistency (Bristol Stool Form – BSS). Questionnaires and 2-week diary cards were repeated at end of treatment and at 3-mo. intervals for 1 yr. (N = 163; 75% 1-yr response). Algorithms from diary cards for IBS-D, IBS-C and IBS-M were “fitted” to Rome II definitions using ROC curves (best sensitivity, specificity, sensitivity/specificity, and closest clinical comparison). The best bowel habit “fit” for stool frequency was at least 25% of days at 0 BM/day and at >3 BM/day, and stool consistency at least 25% of days with BSS 1 or 2 or BSS 6 or 7 (weighted k = 0.60; p < 0.0001). Changes in bowel habit at 3-month intervals were then assessed using these surrogate diary card measures.

Results: At baseline 36% had IBS-D, 34% IBS-C and 31% IBS-M. These proportions did not change over the study periods (IBS-D 25-31%; IBS-C 37-43%; IBS-M 27-36%). However, 83% of subjects changed to another stool pattern (93% IBS-D, 91% IBS-C, 99% IBS-M) at least once, and 29% switched between IBS-D and IBS-C. Notably, patients were more likely to transition between IBS-C and IBS-M than from IBS-D to IBS-M and vice versa during baseline to 3 months.

Conclusions: 1) We developed for prospective study surrogate diary card measures for IBS-D and IBS-C consistent with Rome II; 2) Although the proportion of subjects in IBS-D, IBS-C and IBS-M remain stable over time, over 80% of subjects change their stool pattern over 1 year; 3) Transitions between IBS-C and IBS-M occur more frequently than between IBS-D and IBS-C. Notably, IBS alternators could be defined as those who move from IBS-D to IBS-C or vice versa (29% in this study). Supported by NIH: RO1DK49334 and Novartis.
but not for depression and vitality. Gender determined anxiety (higher in men) and self-control (lower in men) (p < .005 and p < .05, resp.), and total QoL scores were higher in men as compared to women (p < .025). Age correlated negatively with UGI and total symptom scores (p < .001) and with anxiety (younger subjects showing less QoL-anxiety) but not with other QoL measures.

Conclusions: Symptom and QoL assessment in subjects suffering from symptoms suggestive of functional bowel disorders using an open internet questionnaire is feasible and generates data which are comparable to those from other sources, despite the fact that the population addressed is on the average younger than previously studied cohorts. (Supported by grants from Deutsche Forschungsgemeinschaft)

849
CILANSETRON IMPROVES HEALTH RELATED QUALITY OF LIFE IN PATIENTS WITH IRRITABLE BOWEL SYNDROME WITH DIARRHEA PREDOMINANCE (IBS-D)
Kevin W. Olden, M.D., Douglas A. Drossman, M.D.*, Frederick Carter, M.S., Steven Caras, M.D., Guenter Krause, M.D., Claus Steinborn, M.D. University of South Alabama, Mobile, Alabama; University of North Carolina, Chapel Hill, North Carolina; Solvay Pharmaceuticals, Inc., Marietta, Georgia and Solvay Pharmaceuticals GmbH, Hannover, Germany.

Purpose: Patients with irritable bowel syndrome with diarrhea predominance (IBS-D) have been shown to have impaired health-related quality of life (HRQOL). Cilansetron is a novel 5-HT3 receptor antagonist being developed for the treatment of IBS-D. Results from clinical trials have demonstrated that cilansetron is well tolerated and is efficacious in treating the symptoms of IBS-D in men and women. This study investigates the effect of cilansetron 2 mg TID compared to placebo on HRQOL as measured by the IBS-QOL.

Methods: In a double-blind, placebo-controlled, 6-month multinational trial, subjects meeting the Rome criteria for IBS-D were randomized to cilansetron 2 mg TID or placebo (P). The IBS-QOL, a 34-item IBS-specific quality-of-life measure for IBS consisting of 8 subscales (Drossman et al., Am J Gastroenterol, 2000), was administered at baseline and end of study (EOS) with high scores indicating better quality of life (QoL).

Results: The intent-to-treat population consisted of 792 subjects. The IBS-QOL sub-sample size was 168 (91F, 77M) for cilansetron and 170 (90F, 80M) for P. Baseline mean overall IBS-QOL scores were 55.0 for cilansetron and 55.5 for P. Subjects showed improvements of 17.7 for cilansetron and 9.6 for P at EOS (p < 0.005). Cilansetron was statistically significant to P (p < 0.005) for all subscales except sexual, which showed the highest scores at baseline. The largest improvements were observed for the interference with activity, food avoidance, and dysphoria subscales which had the lowest levels of QoL at baseline.

Mean Changes From Baseline to EOS

<table>
<thead>
<tr>
<th></th>
<th>Baseline Mean</th>
<th>Mean Change</th>
<th>Mean Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cilansetron</td>
<td>P</td>
<td>Placebo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+17.7*</td>
<td>+9.6</td>
</tr>
<tr>
<td>Total</td>
<td>54.3</td>
<td>55.4</td>
<td></td>
</tr>
<tr>
<td>Interference with activity</td>
<td>43.9</td>
<td>44.8</td>
<td>+22.1*</td>
</tr>
<tr>
<td>Body image</td>
<td>66.5</td>
<td>66.4</td>
<td>+13.1*</td>
</tr>
<tr>
<td>Health worry</td>
<td>62.5</td>
<td>62.9</td>
<td>+13.0*</td>
</tr>
<tr>
<td>Food avoidance</td>
<td>43.5</td>
<td>45.6</td>
<td>+18.7*</td>
</tr>
<tr>
<td>Social reaction</td>
<td>58.3</td>
<td>62.1</td>
<td>+17.1*</td>
</tr>
<tr>
<td>Sexual</td>
<td>75.5</td>
<td>76.1</td>
<td>+7.4</td>
</tr>
<tr>
<td>Relationship</td>
<td>63.7</td>
<td>65.1</td>
<td>+15.9*</td>
</tr>
<tr>
<td>Dysphoria</td>
<td>47.9</td>
<td>48.6</td>
<td>+22.0*</td>
</tr>
</tbody>
</table>

*P < 0.005 for mean change cilansetron vs P

Conclusions: Cilansetron treatment resulted in a significant improvement in HRQOL compared to placebo in IBS-D patients treated over a period of 6 months. These data support the ability of cilansetron to improve overall HRQOL in addition to relieving specific symptoms of IBS-D.

850
CILANSETRON IN IRRITABLE BOWEL SYNDROME WITH DIARRHEA PREDOMINANCE (IBS-D): EFFICACY AND SAFETY IN A 3 MONTH US STUDY
Philip Miner, M.D., David B. Stanton, M.D., Fred Carter, M.S., Steven Caras, M.D.*, Guenter Krause, M.D., Claus Steinborn, M.D. Oklahoma City Foundation for Digestive Research, Oklahoma City, Oklahoma; Orange, California; Solvay Pharmaceuticals, Inc., Marietta, Georgia and Solvay Pharmaceuticals GmbH, Hannover, Germany.

Purpose: Patients with irritable bowel syndrome with diarrhea predominance (IBS-D) have suffered due to a lack of treatment options for men and women. There is emerging interest in serotonin for the treatment of IBS-D. Cilansetron is a 5-HT3 receptor antagonist being developed for the treatment of IBS-D. This study evaluated the efficacy and safety of cilansetron over 3 months in males and females with IBS-D.

Methods: In a double-blind, placebo-controlled study, subjects meeting the Rome criteria for IBS-D received cilansetron 2 mg TID or placebo (P) for 3 months. An interactive voice response system was used to collect weekly data concerning adequate relief of IBS symptoms, abdominal pain/discomfort, and abnormal bowel habits including diarrhea and urgency. The overall responder rate was the proportion of subjects who reported adequate relief on ≥50% of their weekly responses.

Results: The intent-to-treat population included 692 subjects, 205 males and 487 females. Results demonstrated statistically significant efficacy of cilansetron vs P for relieving IBS symptoms (Table 1). A higher percentage of responders in the cilansetron group vs P reported relief from abdominal pain/discomfort, 52% vs 37% (p < 0.001) and relief from abnormal bowel habits including diarrhea and urgency, 51% vs 26% (p < 0.001). Both females and males responded to cilansetron. The responder rate for relief of abdominal pain/discomfort for cilansetron vs P was 55% vs 43% (p = 0.008) for females, and 45% vs 23% (p = 0.001) for males and for relief of abnormal bowel habits was 56% vs 29% (p < 0.001) for females, and 39% vs 17% (p < 0.001) for males.

For cilansetron and P, 12% and 6%, respectively, withdrew due to adverse events (AEs). The most common AEs for cilansetron vs P were constipation (19% vs 4%), abdominal pain (6% vs 1%), and headache (6% vs 3%). No complications of constipation were observed. There was one case of ischemic colitis which resolved in 7 days.

Conclusions: Cilansetron 2 mg TID was well tolerated and significantly improved IBS-D symptoms in both men and women with treatment sustained up to 3 months.

Table 1. Percent of Responders with Adequate Relief of IBS Symptoms

<table>
<thead>
<tr>
<th></th>
<th>Cilansetron (n = 344)</th>
<th>Placebo (n = 348)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Subjects</td>
<td>49</td>
<td>28</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Men</td>
<td>41</td>
<td>18</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Women</td>
<td>52</td>
<td>33</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

851
USE OF THE LEAP MEDIATOR RELEASE TEST TO IDENTIFY NON-IgE MEDIATED IMMUNOLOGIC FOOD REACTIONS THAT TRIGGER DIARRHEA PREDOMINANT IBS SYMPTOMS

RESULTS IN MARKED IMPROVEMENT OF SYMPTOMS THROUGH USE OF AN ELIMINATION DIET
Fred H. Williams, M.D.*. St. John’s Mercy Medical Center, St. Louis, Missouri.

Purpose: Diarrhea Predominant IBS (D-IBS) is a common condition that is often refractory to standard therapy. Though some treatments may improve...
certain symptoms, there is no treatment that has been shown to result in improvement of global D-IBS symptoms. The Lifestyle Eating and Performance Mediator Release Test (LEAP MRT) is an in vitro test that detects non-IgE mediated food reactions that can trigger D-IBS symptoms. Elimination of the offending foods often results in marked improvement in global IBS symptoms. We report on our early experience with this dietary modification program.

Methods: Ten patients who met Rome II criteria for D-IBS are reported in this study. These patients presented to our community-based gastroenterology practice and were evaluated by a gastroenterologist. Evaluation for other causes of their symptoms was based on the patient's previous evaluation and the discretion of the gastroenterologist. Typically, if not already employed in the past, a trial of standard therapy such as fiber and anti-spasmodyc agents was attempted. If the patient didn’t improve, they were then offered LEAP MRT testing. Using an in vitro assay, the patient’s blood was tested for non-IgE mediated reactivity to 150 foods and food additives. A specific elimination diet that omitted the reactive foods was then designed for the patient. A Symptom Survey was employed to follow the patients for improvement in D-IBS as well as systemic symptoms. The survey graded multiple GI and systemic symptoms on a scale of 0-4 with increasing severity represented by a higher number. The maximum points possible for the entire survey was 236 and for the GI portion was 36.

Results: Prior to beginning the LEAP MRT based elimination diet, the average score for the entire survey was 56.9 and for the GI portion was 19.1. After at least one month on the diet, the average scores had decreased to 26.3 and 6.3 respectively. Patients generally reported a marked improvement in their D-IBS symptoms, decreased systemic symptoms, and an overall increase in their feeling of well-being.

Conclusions: The LEAP MRT identifies non-IgE mediated immunologic food reactions that trigger D-IBS symptoms. Elimination of these foods from the diet results in a marked improvement in D-IBS and other systemic symptoms.

852

PSYCHOLOGIC PROFILES AND QUALITY OF LIFE IN PATIENTS WITH REFRACTORY CONSTIPATION


Purpose: This study evaluated psychologic profiles, quality of life scores and parameters of anorectal physiologic function in patients with chronic, refractory constipation.

Methods: Thirty-one patients with constipation who were referred to the pelvic floor laboratory underwent anorectal manometry, including a balloon expulsion test, and completed the brief symptom inventory 53 (BSI-53) and the SF-36. Constipation was defined as 2 or fewer bowel movements per week and/or defecatory difficulty for at least 6 months. For comparison, 40 healthy volunteers completed the BSI-53 and the SF-36. Psychologic profiles and quality of life scores were also compared between constipated patients with evidence of pelvic floor dysfunction (defined as the inability to pass a 60 ml balloon spontaneously within 3 minutes) and constipated patients without pelvic floor dysfunction (PFD). For continuous variables, means were compared using the two-sample T-test. Categorical variables were analyzed using chi-square or Fisher’s exact tests.

Results: The constipation group consisted of 31 patients (mean age, 44.5 ± 10.9 years; 87% female). There were 40 healthy controls (mean age, 42.0 ± 12.4 years; 85% female). The global severity index (GSI, a measure of overall psychologic distress) was higher in the constipation group vs. controls (62.3 ± 9.4 vs. 52.2 ± 8.6, p < 0.001). For all scales of the SF-36, mean quality of life scores were significantly lower in patients with constipation compared to controls (p < 0.01 for all comparisons). Within the constipation group, 4 patients were identified as having PFD (2 females; mean age, 42.8 ± 14.3 years). In the subgroup analysis comparing patients with evidence of PFD to patients with constipation alone (n = 27), there was no difference in the GSI. Significant differences were found between groups in the SF-36 subscales of role limitations (physical health and emotional problems) and social functioning (p < 0.05).

Conclusions: Patients with constipation who were referred to the pelvic floor laboratory demonstrated lower overall quality of life (as measured by the SF-36) and significantly higher scores for psychologic distress (as measured by the GSI) when compared to controls. Further studies are needed to clarify whether psychologic distress contributes to symptoms of refractory constipation or results from chronic illness.

853

SYSTEMATIC REVIEW: THE EFFICACY AND SAFETY OF TRADITIONAL MEDICAL THERAPIES FOR CHRONIC CONSTIPATION

Davendra P. Ramkumar, M.D., Satish S. Rao, M.D.*. University of Iowa Carver College of Medicine, Iowa City, Iowa.

Purpose: Constipation is common, and its treatment is unsatisfactory. Although many agents have been tried, there is limited data to support their use. Our aim was to undertake a systematic review of the efficacy and safety of traditional medical therapies for chronic constipation to determine the quantity and quality of data available, and thus make recommendations regarding their use from an evidence-based perspective.

Methods: We searched the English language literature for trials evaluating known agents for the treatment of constipation by using the MEDLINE and PUBMED databases from 1966 to 2003. Only studies that were randomized, conducted on adult subjects, and published as full manuscripts were included. Studies were assigned a quality score based on published methodology. Standard forms were used to abstract data regarding study design, duration, outcome measures and adverse events. By using the cumulative evidence of published data for each agent, recommendations were made regarding their use following the United States Preventive Services Task Force guidelines.

Results: Good evidence (Grade A) was found to support the use of polyethylene glycol. Moderate evidence (Grade B) was found to support the use of psyllium, and lactulose. Because of inferior quality, or lack of evidence, Grade C (insufficient evidence) recommendation was made for all of the other agents looked at. There was a paucity of quality data regarding many commonly used agents including milk of magnesia, senna, bisacodyl, and stool softeners.

Conclusions: There is excellent evidence to support the use of PEG, and good evidence for lactulose and psyllium. Surprisingly, there is a paucity of good quality trials for many commonly used agents. These aspects should be considered when designing trials comparing new agents with traditional therapies because their use may not be well validated.

854

THE CCK1 ANTAGONIST DEXLOXIGLUMIDE ACCELERATES GASTRIC EMPTYING AND DELAYS EMPTYING OF THE ASCENDING COLON IN CONSTIPATION-PREDOMINANT IRRITABLE BOWEL SYNDROME (C-IBS) PATIENTS

Filippo Cremonini, M.D., Sanna McKinzie, M.S., Duane Burton, George Thomforde, Alan R. Zinsmeister, Ph.D., Michael Camilleri, M.D.*. Mayo Clinic College of Medicine, Rochester, Minnesota.

Purpose: Cholecystokinin (CCK) regulates gastrointestinal responses to meals. The effects of CCK1 peripheral receptor antagonists in functional gastrointestinal disorders are unclear. Our aim was to study the effects of the CCK1 receptor antagonist dexloxiglumide on gastrointestinal transit and symptoms in c-IBS.

Methods: 36 female patients with C-IBS were randomized to 7 days of dexloxiglumide 200 mg (n = 18) or placebo (n = 18) t.i.d. 11 days after the 7 day treatment period, a follow-up period of 3 days on placebo was conducted. Eighteen age- and gender-matched controls were also evaluated. A single dose of dexloxiglumide 200 mg was administered the first day of the 3 day follow-up period. All patients were required to keep a meal diary and to record their bowel movements. The primary outcome measures were percentage change in meal-induced gastrocolonic delay, percentage change in meal-induced ascending colon transit delay and percentage change in meal-induced colonic symptoms scores as measured by the Bristol Stool Form Scale.
functions and weekly satisfactory relief of IBS were recorded. At baseline and at the end of treatment, gastrointestinal and colonic transit was measured by scintigraphy using $^{99m}$Tc-egg meal and $^{111}$In-activated charcoal, respectively. The relationship between colonic transit and bowel function was evaluated.

**Results:** (Table): Dexloxiiglumide accelerated gastric emptying (GE) ($p = 0.004$) and delayed ascending colon (AC) emptying $t_{1/2}$ ($p < 0.01$ after adjusting for baseline colonic transit). There was no significant effect on satisfactory relief or bowel function. Changes in aggregate stool scores and stool consistency were associated with colonic transit geometric center (GC) at 24 and 48 hours ($p = 0.05$ and $p < 0.01$, respectively).

**Conclusions:** Dexloxiiglumide accelerates gastric emptying and retards ascending colon transit in C-IBS. These data suggest dexloxiiglumide should be evaluated in functional gut disorders associated with rapid proximal colonic transit or those with delayed gastric emptying.

<table>
<thead>
<tr>
<th>Endpoint (mean ± SEM)</th>
<th>Dexloxiiglumide</th>
<th>Placebo</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric emptying $t_{1/2}$, min</td>
<td>95 ± 6</td>
<td>130 ± 10</td>
<td>0.004</td>
</tr>
<tr>
<td>GE 2 hours (%)</td>
<td>67 ± 4</td>
<td>48 ± 5</td>
<td>0.006</td>
</tr>
<tr>
<td>GE 4 hours (%)</td>
<td>98 ± 1</td>
<td>90 ± 3</td>
<td>0.017</td>
</tr>
<tr>
<td>AC emptying $t_{1/2}$, hours</td>
<td>20.8 ± 2.3</td>
<td>14.8 ± 1.9</td>
<td>0.011</td>
</tr>
<tr>
<td>GC colon 24 hours</td>
<td>2.0 ± 0.21</td>
<td>2.3 ± 0.24</td>
<td>0.11</td>
</tr>
<tr>
<td>GC colon 48 hours</td>
<td>3.0 ± 0.28</td>
<td>3.0 ± 0.26</td>
<td>0.07</td>
</tr>
</tbody>
</table>

**855 BLOATING AND QUALITY OF LIFE IN WOMEN WITH IRRITABLE BOWEL SYNDROME**

Peggy Headstrom, M.D., Kevin Cain, Ph.D., Monica Jarrett, Ph.D., Sandra Motzer, Ph.D., Christina Saravicz, M.D.*, Margaret Heitkemper, Ph.D. University of Washington, Seattle, Washington.

**Purpose:** In clinical practice, the complaint of abdominal bloating as a symptom of Irritable Bowel Syndrome (IBS) appears prevalent especially among women. Additionally, women with IBS appear to be quite distressed by the symptom of bloating. The aim of this study was to assess whether the physical complaint of abdominal bloating negatively impacts patients’ quality of life.

**Methods:** Normally menstruating IBS women (ages 18-45) were recruited through community advertisement for 3 separate studies. The women were screened using Rome I criteria for irritable bowel syndrome. During an initial meeting the women gave informed consent, completed questionnaires (Bowel Disease Questionnaire, Disease Specific Quality of Life Questionnaire). Women were instructed on the use of a validated 30 day structured symptom diary. Data from all three studies were merged for a total of 241 women (approximately 5,000 days of daily data). Days surrounding the menses were excluded from the analyses. Three bloating severity categories were defined: low if 80% of days patients reported no bloating and no days with bloating greater than mild, high if at least 40% of days were rated as at least moderate bloating, and medium otherwise.

**Results:** Of the 241 women with IBS (average age 32) the distribution based on predominant bowel pattern was equal with approximately a third with either a constipated, diarrhea or alternating bowel pattern. With regard to bloating 63 reported none-minimal, 147 moderate, and 31 severe bloating based on daily diary responses. On 25% of days (daily diary excluding perimenstrual days) bloating was identified as the worst gastrointestinal symptom. Daily reports of bloating were significantly correlated with interference with work, relationships, job performance and inversely related with coping, sense of well being and restfulness ($p < .001$). When reports of abdominal pain severity were controlled for in the analyses, these relationships were weakened but remained statistically significant.

**Conclusions:** For women with IBS as severity of abdominal bloating increased the quality of life indicators were more negatively impacted.

**856 THE POTENTIAL OF DEXTOFISOPAM FOR TREATMENT OF IRRITABLE BOWEL SYNDROME AND INFLAMMATORY BOWEL DISEASE**


**Purpose:** A series of nonclinical and clinical studies were conducted to determine the potential of dextofisopam, the R-enantiomer of the homophthalazine tofisopam, for treating irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD).

**Methods:** We tested dextofisopam in animal models of IBS and IBD, including the glass bead expulsion test (IBS), the balloon distension test (IBS), and the dextran sodium sulfate (DSS)-induced colitis test (IBD). We also tested the effects of dextofisopam on various aspects of GI function, including basal upper (the charcoal meal test) and lower (focal output) GI motility, basal gastric acid secretion, and gastric irritancy. Dextofisopam was also tested in randomized, placebo-controlled, double-blind, single- and multiple-dose Phase 1 clinical trials in healthy human volunteers, and is currently under investigation in a double-blind, placebo-controlled Phase 2 clinical trial in male and female patients with diarrhea-predominant or alternating IBS.

**Results:** In animal models, dextofisopam attenuated distension-induced contractile activity in the glass bead expulsion test and reduced abdominal contractions in the balloon distension test. In contrast, dextofisopam had little or no effect on basal upper or lower GI motility. Dextofisopam, administered orally, intraperitoneally, or intracolonically, also reduced the signs and symptoms of colitis in the DSS-induced colitis test. At pharmacologically relevant doses, dextofisopam had little or no effect on basal gastric acid secretion and did not cause gastric irritation.

In the two Phase 1 studies in healthy volunteers, single oral doses of up to 400 mg dextofisopam and multiple oral doses of up to 600 mg BID for 7 days were well tolerated, with no serious or severe adverse events and minimal impact on cognitive or motor function. Preliminary, blinded safety data from the ongoing Phase 2 study of dextofisopam in patients with IBS continue to support a favorable safety profile for the drug.

**Conclusions:** Preclinical data support the potential utility of dextofisopam for the treatment of IBS and IBD. Results from completed Phase 1 studies indicate dextofisopam is well tolerated at daily doses of up to 600 mg BID. Data from an ongoing trial of dextofisopam in patients with IBS continue to support a favorable safety profile for the drug. Additional clinical studies are planned.

**857 HYPERSENSITIVITY TO CUTANEOUS THERMAL PAIN STIMULI IN IRRITABLE BOWEL SYNDROME**


**Purpose:** Irritable bowel syndrome (IBS) is a functional bowel disorder characterized by altered visceral hypersensitivity. We have previously shown that IBS may have cutaneous hypersensitivity in which a gradient of hyperalgesia exists with the most pronounced hyperalgesia occurring at the lumbarosacral level at which the rectum and foot nociceptive affers are likely to converge on common spinal segments. Extra-intestinal symptoms of IBS have raised the possibility of central hyperalgesic dysfunction in IBS patients. The aim of the study was to measure pain sensitivity to noxious thermal stimuli in regionally separated dermatomes in order to test whether sensitivity in IBS patients follows a gradient from lower to higher spinal segments.

**Methods:** Nine female patients with diarrhea predominant IBS (mean age 36) and 12 healthy female controls (mean age 27) rated pain intensity using the electronic visual analog scale (eVAS) to spontaneous clinical pain (daily symptoms) and experimental pain (induced by contact thermode). Thermal stimulation was given at three locations on the right side of the body; lateral
calf (dermatome S1), volar forearm (dermatome C6, T1) and right cheek (dermatome V2, V3). Temperature was set to 40°C and increased by 0.7°C increments from one pulse to the next until a pain rating of 45% was reached.

**Results:** Thermal sensitivity of the IBS patients was significantly higher in all three dermatomal segments. The temperatures necessary to reach pain level 10, 20, and 40% were significantly lower (p < 0.001) in IBS patients compared to the control group. The temperature needed to elicit a given pain intensity rating (10%, 20%, 40%) was approximately 2°C lower in the IBS group for all three areas tested: calf, forearm, and cheek.

**Conclusions:** These results suggest that sensitization is not limited to symptomatic dermatomes (L4-S2) but extends across the body, including the face. Also, pain sensitivity was not dependent on the magnitude of clinical pain expressed at the time of experimental pain testing. Our finding suggests that thermal hypersensitivity in IBS patients is evenly distributed and not predominantly in the foot/leg that would suggest convergence of visceral input of the colon and rectum at the level of the lumbosacral spinal input.

---

**858 PHYSICIANS’ ATTITUDES AND PRACTICES IN THE EVALUATION AND TREATMENT OF IRRITABLE BOWEL SYNDROME**

Brian E. Lacy, M.D.*, Justin Rosemore, M.D., David Corbin, M.D., Douglas Robertson, M.D., Maria Grau, M.D., Michael D. Crowell, Ph.D. Dartmouth-Hitchcock Medical Center, Lebanon, New Hampshire; Kaiser-Permanente Health Care System, Largo, Maryland; White River Junction VA Medical Center, White River Junction, Vermont; Dartmouth Medical School, Hanover, New Hampshire and Mayo Clinic, Scottsdale, Arizona.

**Purpose:** Despite the high prevalence of IBS, and the significant costs associated with it, little is known about how physicians perceive IBS. This study was designed to measure physicians’ understanding of IBS, assess physicians’ attitudes towards patients with IBS, and determine whether differences exist in the way Family Practice (FP), Internal Medicine (IM), and Gastroenterology (GI) physicians evaluate and treat IBS patients.

**Methods:** A survey was sent to 3,000 physicians nationwide, 1,000 to each of 3 groups (FP, IM, and GI). The survey contained 35 questions assessing demographics, the etiology and pathophysiology of IBS, the use of diagnostic tests, and practice patterns and attitudes.

**Results:** Of 3,000 questionnaires mailed, 501 questionnaires were completed (22.2% response rate). 472 saw only adult patients and these results were analyzed. The mean age of all respondents was 47; most were men (80%). FPs and IMs made a new diagnosis of IBS 1.3–1.6 times each week, while GIs made a new diagnosis 5.4 times each week (p < .0001). Compared to FPs and IMs, GIs felt that IBS patients were less sick than other patients (p < .001), although they required more time per visit. More GIs than FPs and IMs stated that a prior infection and a history of abuse caused IBS (p < .01); while FPs were more likely to believe that diet was a cause of IBS (p < .01). All 3 groups believed that IBS patients saw doctors more frequently than other patients (p = .003). FPs and IMs were more likely to refer diarrhea-predominant IBS compared to other sub-types.

**Conclusions:** The attitudes and practice patterns of physicians towards IBS patients differs based on practice specialty. This may occur due to differences in training, the ability to perform specialized tests, and/or differences in referral patterns. Further educational efforts may improve the ability of physicians in all specialties to confidently diagnose and treat patients with IBS.

---

**859 WHY DOES IBS RUN IN FAMILIES? ROLES OF SUBSTANCE ABUSE AND MENTAL ILLNESS**

James R. Knight, G. Richard Locke, M.D.*, Alan R. Zinsmeister, Ph.D., Cathy D. Schleck, Nicholas J. Talley, M.D. Mayo Clinic College of Medicine, Rochester, Minnesota.

**Purpose:** Alcohol abuse, mental illness and Irritable Bowel Syndrome (IBS) each aggregate in families. These disorders may be related to one another. Aim: To determine if a family history of substance abuse or mental illness is associated with IBS.

**Methods:** A valid GI symptom survey was mailed to a cohort of Olmsted County, MN residents who had been randomly selected and responded to a GI symptom survey in the past. Survey responses were used to identify people with IBS (cases) and healthy controls for this study. The electronic medical record was reviewed to record the subjects’ self reported personal and family health histories. Logistic regression was used to identify independent predictors of IBS.

**Results:** 2457 subjects responded to the questionnaire (response rate 55%). IBS was reported by 13% (n = 319). 230 subjects with IBS and 318 controls were eligible after chart review. Cases had a mean age of 62 years and 70% were female, while controls had a mean age of 61 years and 64% were female. Family history of substance abuse was reported by 33% of cases and 25% of controls (OR adjusted for age and gender 1.4; 95% CI 1.0–2.1; p = 0.06). Family history of mental illness was reported by 37% of cases and 22% of controls (OR adjusted for age and gender 2.0; 95% CI 1.3–2.9; p < 0.001).

In a multiple logistic regression model, family history of substance abuse was not independently predictive of IBS given the family history status of mental illness. In a model which included substance abuse among specific family members (eg, mother, father), reporting a child with substance abuse was associated with IBS (OR 2.3; 95% CI 1.1–4.8; p < 0.05). In a model which included mental illness among specific family members, reporting a mother, or separately, a child with mental illness was associated with IBS (OR 2.0, 95% CI 1.1–3.6, p < 0.05; OR 1.9, 95% CI 1.0–3.6, p < 0.05; respectively).

**Conclusions:** In this population-based study, IBS was associated with a family history of mental illness rather than substance abuse. Future work will require precise identification of IBS, substance use and psychological status of individual family members to understand the pathogenesis of familial aggregation of IBS.

---

**860 DRINKING TEST WITH WATER OR NUTRITIONAL BEVERAGE DISCRIMINATES BETWEEN NORMAL SUBJECTS AND PATIENTS WITH FUNCTIONAL DYSPEPSIA**

Aldo Montano-Loza, M.D., Jose M. Remes-Troche, M.D., Max Schmulson, M.D., Sergio Zepeda-Gomez, M.D., Miguel A. Valdovinos, M.D.*. Instituto Nacional de Ciencias Medicas y Nutricion Salvador Zubiran, Mexico City, DF, Mexico.

**Purpose:** Impaired fundic accommodation and visceral hypersensitivity are recognized as important pathophysiological mechanisms for functional dyspepsia (DF). Evaluations of these abnormalities required invasive and expensive studies. In the present study we sought to reproduce if a drinking loading test with water and/or a nutritional beverage can discriminate between patients with FD and normal subjects.

**Methods:** Nineteen FD patients were matched by age and gender with 19 controls. All underwent both drinking tests at a rate of 15 mL/min, 7 days apart, in a randomized fashion. Every 5 minutes within each test, four symptoms were evaluated (satiation, bloating, nausea and pain) by using Likert scales from 0 to 5. Maximum tolerated volume (MTV) was defined as the ingested volume when a score of 5 was reached for any symptom. Sensitivity and specificity values were analyzed, considering the Rome II criteria and normal endoscopy as the gold standard.

**Results:** FD patients had higher symptom scores for both tests compared to controls (p < 0.05). The MTV for water and Nutren® were lower in FD (water: 1014 ± 288 vs. 1749 ± 275 ml; p < 0.001; Nutren®: 652 ± 168 vs. 1278 ± 286 ml; p < 0.001; Figure 1). Sensitivity and specificity were 0.77, 0.95 for water and 0.86, 0.95 for Nutren®. There was a significant correlation in the MTV between the water and the Nutren® tests with a correlation coefficient of 0.78 (p < 0.001; Figure 2)

**Conclusions:** A drinking loading test with water or a nutritional beverage can adequately discriminate between FD patients and healthy subjects, with
high sensitivity and specificity. These tests could be used as a noninvasive approach for functional dyspepsia. [figure1] [figure2]

Results: There were no differences in age or gender among the subgroups of the different FD classifications. There were no differences in symptom predominance in FD IBS-pos vs. FD IBS-neg: U 7(8%) vs 8(24%), M 19(22%) vs 3(9%), 1.58(70%) vs. 22(67%). FD-U were significantly less associated with IBS (OR: 0.28; 95% CI: 0.10–0.82; p = 0.02) than FD-M and FD-I. There were no differences in QOL based on symptom predominance, but the IBS-pos had lower PCS than the IBS-neg (40 ± 8.2 vs. 47.4 ± 8.8, p < 0.001, respectively), with no differences in MCS.

Conclusions: Based on both classifications, the majority of our FD patients were FD-I and IBS-pos. FD patients differ in clinical and QOL according to the used classification. These differences should be taken in consideration in clinical studies.

862
RIFAXIMIN IN ABDOMINAL BLOATING AND FLATULENCE TRIAL (RAFT): A RANDOMIZED DOUBLE-BLIND PLACEBO-CONTROLLED TRIAL
Ala I. Sharara, M.D., F.A.C.P.*; Elie Aoun, M.D.; Rawad Monzur, B.S.; Shahid Sidani, B.S.; Ihab El Hajj, M.D. American University of Beirut Medical Center, Beirut, Lebanon.

Purpose: Functional GI disorders represent the bulk of outpatient practice in gastroenterology. Although many treatment options are available, the subjective response rate of patients remains sub-optimal. The aim of this study is to assess the efficacy of rifaximin, a non-absorbable antibiotic, in relieving functional symptoms such as bloating and flatulence.

Methods: This randomized double-blind placebo-controlled trial included three phases of 10 days each: phase 1 for baseline symptom recording, phase 2, the actual treatment phase, and phase 3 for post-treatment symptom recording. Recruitment was done through community advertisements. Patients were randomized into group A (rifaximin 400 mg BID for 10 days) and B (placebo). The primary end point was the subjective feeling of general symptom improvement at the end of each phase. A symptom score consisting of abdominal pain, bloating, change in bowel habits, feeling of incomplete evacuation, and urgency was calculated for each phase using a patient symptom diary. Lactulose hydrogen breath test (LHBT) was conducted at the beginning of phase 1 and at the end of phase 3.

Results: 103 patients were included (52 in group A and 51 in group B). Baseline characteristics were comparable. Symptom duration was 1.98 ± 1.38 years and 2.07 ± 1.19 years in groups A and B respectively. At the end of phase 2, a subjective feeling of symptom relief was reported by 21/52 (40.4%) in group A versus 11/51 (21.6%) in group B (p = 0.03). Similarly, 16/52 (30.8%) in group A and 6/51 (11.8%) in group B reported a decrease in their symptomatology at the end of phase 3 (p = 0.02). The mean symptom scores dropped significantly from 112.27 ± 9.38 to 106.42 ± 12.08 for group A (p < 0.01) but not in group B. There was no difference between baseline hydrogen excretion in both groups. LHBT values dropped in the overall rifaximin group but this change was not statistically significant when compared to the placebo group. However, within the rifaximin group, LHBT results amongst responders dropped significantly from baseline and correlated with symptom relief (p = 0.04).

Conclusions: This trial shows that rifaximin is effective in reducing symptoms of abdominal bloating and flatulence. Symptom relief correlated with a drop in LHBT values in the treatment arm. Further studies are needed to evaluate the efficacy of long-term or cyclic use of rifaximin in this patient population.

864
A POPULATION-BASED CASE-CONTROL STUDY OF FOOD CONSUMPTION AND FUNCTIONAL GASTROINTESTINAL DISORDERS
Yuri Saito, M.D., G. R. Locke, M.D., Amy L. Weaver, Alan R. Zinsmeister, Ph.D., Nicholas J. Talley, M.D.*. Mayo Clinic and Foundation, Rochester, Minnesota.
Purpose: Diet has been implicated to play a role in functional gastrointestinal disorders (FGID) in studies and our previous analysis showed that nutrient consumption between FGID cases and controls differed only slightly. The purpose of this study is to compare the dietary consumption of food items commonly implicated to exacerbate gut symptoms between individuals with FGID and without symptoms in a population-based sample.

Methods: A validated self-report Bowel Disease Questionnaire was mailed to an age- and gender-stratified random sample of persons aged 20-50 years from Olmsted County, MN. All persons who reported either FGID symptoms (IBS or dyspepsia) or no gastrointestinal symptoms were invited to undergo a blinded physician interview and physical exam and to complete a validated Harvard Food Frequency Questionnaire (HFFQ). A subset of 53 cases and 58 controls maintained one week diet diaries. The Wilcoxon rank sum test was used for the statistical analysis.

Results: 222 of the 260 eligible (85%) subjects participated and 221 provided diet data: 102 were FGID cases and 119 were healthy controls. Shown in the table below, cases and controls consumed similar number of servings per week of the following food items: wheat-containing foods, lactose-containing foods, caffeinated drinks, fructose-sweetened beverages, and alcoholic beverages. Cases also consumed a similar amount of serotonin-containing foods as controls (4 v. 4.5 servings) as well as similar amounts of tryptophan-containing foods (802.9 units v. 706.4 units). When norepinephrine and epinephrine-containing foods were evaluated, a similar proportion of cases and controls consumed 7 or more servings of coffee and tea (53% v. 53%) but cases were slightly more likely to consume 7 servings per week of chocolate, nuts, bananas, oranges, and raisins (57% v. 45%, p = 0.10).

Conclusions: No differences were seen in the consumption of frequently-suspected “culprit” foods between community residents with and without FGID symptoms. Furthermore, little difference was seen in the consumption of food items containing serotonin, tryptophan, and norepinephrine and epinephrine.

<table>
<thead>
<tr>
<th>Mean (SD)</th>
<th>Wheat-containing</th>
<th>Lactose-containing</th>
<th>Caffeinated drinks</th>
<th>Fructose-containing beverages</th>
<th>Alcoholic beverages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases, n = 99</td>
<td>25.4 (15.6)</td>
<td>16.2 (11.2)</td>
<td>18.2 (10.6)</td>
<td>3.9 (1.4)</td>
<td>2.5 (4.0)</td>
</tr>
<tr>
<td>Controls, n = 119</td>
<td>26.1 (14.9)</td>
<td>14.9 (8.9)</td>
<td>18.3 (10.9)</td>
<td>5.4 (4.4)</td>
<td>2.2 (1.1)</td>
</tr>
</tbody>
</table>

865

**ANS BALANCE IS ELEVATED IN CONSTITUTION-PREDOMINANT IBS AND LOWERED IN DIARRHEA-PREDOMINANT IBS, BUT ONLY AMONG PATIENTS WITH SEVERE ABDOMINAL PAIN**

Kevin C. Cuih, Ph.D., Robert L. Burr, Ph.D., Monica E. Jarrett, Ph.D., Margaret M. Heitkemper, Ph.D.*. University of Washington, Seattle, Washington.

Purpose: To examine heart rate variability (HRV) in subsets of Irritable Bowel Syndrome (IBS) patients, in particular constitution-predominant versus diarrhea-predominant IBS.

Methods: Menstruating women with IBS (n = 170) and without GI symptoms (Controls, n = 50) were recruited mainly through newspaper advertisements. IBS subjects were classified into predominant bowel pattern based on the Rome II criteria: constitution-predominant (IBS-CON, n = 45); diarrhea-predominant (IBS-DIA, n = 64); alternating (IBS-ALT, n = 56). Symptoms were measured with the Bowel Disease Questionnaire and with a daily diary for about 30 days. HRV was measured from a 24 hour ambulatory recording.

<table>
<thead>
<tr>
<th>Patients</th>
<th>IBS-CON</th>
<th>IBS-DIA</th>
<th>IBS-ALT</th>
<th>Controls</th>
<th>Age</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Subjects</td>
<td>45.64±.6</td>
<td>3.4</td>
<td>3.7</td>
<td>3.5</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Severe Pain</td>
<td>15.1±2.4</td>
<td>11.4</td>
<td>2.1</td>
<td>3.5</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Not Severe Pain</td>
<td>30.4±12</td>
<td>4.0</td>
<td>1.7</td>
<td>3.5</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Age &gt; 30</td>
<td>31.3±3.3</td>
<td>2.7</td>
<td>3.6</td>
<td>4.5</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Age ≤ 30</td>
<td>14.2±2.6</td>
<td>2.9</td>
<td>3.1</td>
<td>3.5</td>
<td>2.5</td>
<td></td>
</tr>
</tbody>
</table>

Results: As seen in the first row of the table, ANS balance as measured by the ratio of low to high frequency power is higher in IBS-CON than in IBS-DIA, not quite significant. This difference is more striking and highly significant among IBS subjects with severe pain or older than 30. Though not shown in the table, this effect is also stronger among patients with abdominal pain for at least 2 years, and patients without somatic complaints such as fatigue or insomnia. Among women over 30 with either severe pain or pain that interrupts activities, the 25 subjects with IBS-CON have a LF/HF ratio of 7.4, significantly higher than the median of 4.1 among older controls, while the 20 women with IBS-DIA have a LF/HF ratio of 2.8, significantly lower than the control group. Among older women with pain there was also a striking difference in vagal tone; the median HF power is 69 in IBS-CON compared to 340 in IBS-DIA, both significantly different from the 180 among older control women.

Conclusions: HRV changes in opposite directions for IBS-CON versus IBS-DIA. It is not clear why this effect is not present in women who are younger, have a recent onset of IBS, have only moderate pain, or have high somatic symptoms.
Conclusions: 1) GA inhibited the hyperglycemia and overweight in genetic innate polyphagia animal. 2) The inhibitory effects were due to not only directly suppression the intestinal absorption but also suppression innate polyphagia, a key reason of diabetes and obesity. 3) The inhibitory effects were without rebound after GA withdrawal, therefore GA could be useful for diet regimen in polyphagia, especially in diabetes and obesity.

867
ANTINOCICEPTIVE ACTIONS OF MD-1100, A NOVEL THERAPEUTIC AGENT FOR c-IBS, IN ANIMAL MODELS OF VISCERAL PAIN
Lionel Bueno, Ph.D., Catherine Beauprand, Ph.D., Shalina Mahajan-Miklos, Ph.D., Alexander P. Bryant, Ph.D., Mark G. Currie, Ph.D.*. Institut National de la Recherche Agronomique, Toulouse, France and Microbia, Inc., Cambridge, Massachusetts.

Purpose: MD-1100 is a novel therapeutic agent being developed for the treatment of c-IBS and chronic constipation. It acts by stimulating guanylate cyclase-C (GC-C) on the luminal surface of the intestine. Oral administration of MD-1100 stimulates intestinal secretion and accelerates intestinal transit in rodent models. The current study expands our understanding of the therapeutic potential of MD-1100 by characterizing its antinociceptive effects in rat models of inflammation and stress-induced hyperalgesia during rectal distension.

Methods: Six groups each of male and female Wistar rats (200-225 g) were surgically prepared for electromyographic recordings. colorectal distension (CRD) was performed using a balloon inflated from 0 to 60 mmHg using increments of 15 mmHg for 5 minutes each. For the inflammation protocol, male rats were subjected to CRD performed 1 day prior to (basal condition) and 3 days after intrarectal administration of trinitrobenzene-sulfonic acid (TNBS, 80 mg/kg). For the stress protocol, female rats received CRD directly before and 15 min after 2 hours of restraint induced stress. In both models, rats were treated orally with MD-1100 (0.3, 3 or 30 µg/kg) or vehicle (distilled water, 1 ml) 1 hour before the CRD procedure.

Results: Following TNBS-induced colonic inflammation, MD-1100 reduced the abnormal response to CRD at the lowest distending pressure tested of 15 mmHg when administered at 0.3 µg/kg (mean values ± SEM were 9.1 ± 1.7 vs. 18.0 ± 2.5 contractions/5min for vehicle) and 3 µg/kg (12.0 ± 3.0 vs. 18.0 ± 2.5 contractions/5min for vehicle). Similarly, MD-1100 also produced a significant reduction in stress-induced hyperalgesia when administered at a dose of 3 µg/kg with distension pressure of 15 mmHg (4.1 ± 0.8 vs. 16.6 ± 1.5 contractions/5min for vehicle). In the basal state, MD-1100 produced no observable effect on abdominal response to CRD or change in colorectal volume regardless of the dose tested.

Conclusions: Orally administered MD-1100 acts locally on the intestinal lumen to reduce colonic hypersensitivity in animal models. These data further elucidate the potential for this molecule as a novel therapeutic agent for the treatment of c-IBS. Thus, MD-1100 has the potential to stimulate secretion, enhance transit, and reduce pain in c-IBS patients.
World are lacking. This is the first population-based study to delineate the epidemiologic profile of FGIDs and IBS in the Latino population, utilizing an epidemiology surveillance system which is unique in Spanish-speaking Latin America.

Methods: The study design is a cross-sectional survey with nested case-control component, using household interviews. The University of Nicaragua, Leon maintains a computerized population database for Western Nicaragua, population 200,000, facilitating rigorous sampling. The population is Hispanic mestizo, with small indigenous groups. The ROME II Modular Questionnaire serves as the core instrument, with translation and validation per Rome Committee standard. External validation was performed in 200 subjects. Potential associations with poverty, diet, abuse, domestic violence, and war trauma are examined with validated instruments. Organic disease is excluded with physician exam, CBC, stool exam and subset EGD.

Results: Interim analysis is available for 1,617 subjects of the target enrollment of 3,000. The overall prevalence at least one functional disorder was 26%, with 31% and 20% in females and males, respectively. The prevalence of IBS was 13%, with 16% in females and 9%, in males (OR = 1.8, p < .001). The prevalence of functional dyspepsia was 4.5%, gender equal. Proctalgia fugax is surprisingly common, potentially reflecting differences in physiology, cultural expression, or language. There is no significant association between a positive FGID outcome and the validated poverty index.

Conclusions: The ROME II Modular Questionnaire has been translated and validated in Spanish, facilitating the first population-based study of IBS and FGIDs in the Latino population and Latin America. IBS is common, 13%, with a nearly 2:1 female predominance. This ongoing effort will further delineate FGID prevalence and risk associations in this important population.

Functional GI Disorder Prevalence

<table>
<thead>
<tr>
<th>Functional GI Disorder</th>
<th>Prevalence (%)</th>
<th>Female Prevalence (%)</th>
<th>Male Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FGID (1 or &gt;)</td>
<td>26</td>
<td>31</td>
<td>20</td>
</tr>
<tr>
<td>IBS</td>
<td>13</td>
<td>16</td>
<td>9.3</td>
</tr>
<tr>
<td>Dyspepsia</td>
<td>4.5</td>
<td>4.6</td>
<td>4.2</td>
</tr>
<tr>
<td>Proctalgia Fugax</td>
<td>13</td>
<td>16</td>
<td>8.8</td>
</tr>
<tr>
<td>Functional Incontinence</td>
<td>7.4</td>
<td>9.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

869

RECTOR LIDOCAINE, A NEW TREATMENT FOR IRRETRABLE BOWEL SYNDROME?

Vishal Gupta, M.D., Michael E. Robinson, Ph.D., Lene Vase, Ph.D., Donald D. Price, Ph.D., G. Nicholas Verne, M.D.*. University of Florida and VA Medical Center, Gainesville, Florida.

Purpose: The purpose of this study was to determine if rectal lidocaine reduces visceral and thermal hyperalgesia in IBS patients compared to rectal placebo.

Methods: In a prospective double-blind, placebo controlled, crossover design, twenty six women with IBS (mean age 30 ± 10 years) and ten control women (mean age 29 ± 7 years) rated pain intensity and unpleasantness (VAS 0-10) to barostat distension of the rectum (35 mmHg) and thermal stimulation (immersion in 47°C water) of the foot before and after rectal administration of either lidocaine jelly or saline (placebo) jelly. Rectal and thermal stimuli were repeated at 5, 10, 15, 20, 40 and 50 minutes following administration of the agent. Serum lidocaine levels were obtained in all patients at 5 and 50 minutes following rectal administration of lidocaine and saline jelly.

Results: Intrarectal lidocaine (300 mg) significantly reduced pain report to rectal distension and thermal stimulation of the foot in all of the IBS patients. The effects were greater than those of placebo (p < .001) and most pronounced effects were present within 5 to 15 minutes after the onset of treatment. In controls, rectal lidocaine did not decrease pain report to either rectal or thermal stimuli. These changes were likely due to the local effect of lidocaine rather than a systemic effect as the rectal lidocaine did not result in detectable blood levels of lidocaine.

Conclusions: The results of this study support the hypothesis that local anesthetic blockade of peripheral impulse input from the rectum/colon reduces both visceral and thermal hyperalgesia in IBS patients. The results provide further evidence that visceral hyperalgesia and thermal hyperalgesia in IBS reflects central sensitization mechanisms that are dynamically maintained by tonic impulse input from the rectum/colon. Rectal administration of lidocaine jelly may also be a safe and effective means of reducing hypersensitivity in IBS patients. Supported by a Clinical Research Award from the ACG.
delivery system, similar to sulfasalazine, the only other effective agent in ARE.

**Methods:** We selected patients receiving RT for carcinoma of the prostate as a sample representative of pelvic RT patients. Informed consent was obtained for this IRB-approved study. Eligible patients included those with AJCC stage T1-3 M0 disease, or biochemical failure after prostatectomy. Minimal acceptable RT dose was 64 Gy. Patients receiving external beam radiotherapy followed by a boost with brachytherapy were also considered. Patients were administered 2250 mg BSZ or an identical-appearing placebo twice daily beginning 5 days prior to RT, and continuing for 2 weeks after completion. Toxicity was graded by NCI Common Toxicity Criteria for proctitis, diarrhea, dysuria, weight loss, and fatigue. A symptom index was formulated for each toxicity, consisting of the toxicity’s numeric grade multiplied by the number of days it was experienced, and summed for all grades of each toxicity. A higher index is indicative of worse toxicity. Results are presented from the first 24 patients enrolled.

**Results:** For each area examined, BSZ patients had more favorable outcomes. Three patients elected to discontinue study participation, and are not included in the analysis. Proctitis was prevented most effectively with a symptom index of 40.78 in BSZ patients and 74.08 in placebo patients. Similarly, the diarrhea index was 40.67 in placebo patients and 32.89 in BSZ patients. Weight loss averaged 2.7 pounds in the placebo group, while BSZ patients on average gained weight. BSZ patients had an average fatigue index of 27.11 vs. 41.75 for placebo. Unexpectedly, dysuria was also less problematic in BSZ patients.

**Conclusions:** BSZ has the potential to limit major toxicities caused by radiotherapy of the pelvis. As such, it may positively affect the quality of life of numerous cancer patients.

**872**

**COMPARISON OF ELECTROGASTROGRAPHY (EGG) AND GASTRIC EMPTYING (GE) ABNORMALITIES WITH SYMPTOM SCORES IN PATIENTS WITH REFRACTORY FUNCTIONAL DYSPESIA**


**Purpose:** Electrography (EGG) and gastric emptying scintigraphy are used to evaluate patients with refractory dyspeptic symptoms. Our aim was to determine EGG abnormalities among functional dyspeptic patients and correlate them with symptoms and their gastric emptying tests.

**Methods:** EGGs performed at our institution using the Medtronic Multi-channel EGG system during the first half of 2004 were reviewed. Multi-channel EGG recordings were obtained with four cutaneous recording electrodes placed along the antral axis. EGGs were recorded for one hour in the fasting state followed by two, one-hour postprandial recordings after an egg sandwich meal with orange juice. The patients graded symptoms of nausea, abdominal fullness and discomfort, each hour on a 0 (none) to 10 (severe) scale, giving a symptom score of 0 to 30. Patients also had a 4 hr gastric emptying scintigraphy performed to assess gastric emptying. EGG recordings were analyzed using PolyGram Net EGG Analysis Module (Medtronic Inc) after manually deleting any artifact. EGG variables assessed included dominant frequency (DF) and its power (DP), percent (%) time in 2–4 cpm frequency, and % slow-wave coupling (% SWC). EGGs were classified as normal or abnormal compared to values previously obtained in normal subjects.

**Results:** Overall 44 patients with dyspeptic symptoms were studied - of whom all, but two, were female. Among these patients, 70% (31/44) had abnormal EGGs and 68% (28/41) had abnormal gastric emptying. 81% (25/31) of patients with abnormal EGG and 77% (10/13) of those with normal EGG studies listed nausea and vomiting as their main symptoms. Patients with abnormal EGGs had a significantly higher total postprandial symptom score of 12.3 ± 1.5 (Mean SEM) compared to those with normal EGG with score of 8.0 ± 1.6 (p = 0.047). Postprandial abdominal fullness (p = 0.05), but not discomfort (p = 0.2) or nausea (p = 0.5) was associated with abnormal EGGs. In contrast, there were no significant differences in symptoms among patients with normal versus delayed gastric emptying (p = 0.4).

**Conclusions:** Abnormal EGGs were found in 70% of patients with refractory dyspepsia symptoms seen at a tertiary care center. Symptoms, specifically postprandial abdominal fullness, were associated with an abnormal EGG. Thus, EGG abnormalities rather than delayed gastric emptying appears to be associated with symptoms in these patients with functional dyspepsia.

**873**

**IS DYSPESIA MORE PREVALENT IN FUNCTIONAL CONSTIPATION THAN FUNCTIONAL DIARRHEA? A POPULATION-BASED STUDY**

Ashok K. Tuteja, M.D., Nicholas J. Talley, M.D., Sandra K. Joos, Ph.D., David H. Hickam, M.D.*. University of Utah, Salt Lake City, Utah; C.E.N.T.E.R., Mayo Clinic, Rochester, Minnesota and VA Medical Center & Oregon Health Science University, Portland, Oregon.

**Purpose:** In chronic constipation, disturbed gastric and small bowel transit as well as abnormal esophageal motility has been demonstrated. The aim of this study was to determine if the prevalence of dyspepsia is higher in subjects with functional constipation than diarrhea. We conducted a cross-sectional study to examine the prevalence of upper gastrointestinal symptoms in subjects with chronic colonic symptoms.

**Methods:** 1069 employees of an integrated healthcare system were mailed a validated questionnaires inquiring about their upper and lower gastrointestinal symptoms (validated Bowel Disease Questionnaire). Definitions of dyspepsia subgroups (including dysmotility, reflux and ulcer-like), functional constipation and diarrhea were based on the Rome I criteria. Reflux-like dyspepsia was defined as having dyspepsia according to the Rome criteria with heartburn and/or reflux once a week or more.

**Results:** 723 subjects (response rate 72%) returned the survey (age range 24–77). One hundred and forty (19.4%) subjects reported constipation and 10.9% reported diarrhea. Symptoms of dyspepsia were reported by 14.7% of subjects (6.2% ulcer-like, 6.1% dysmotility-like, and 9.4% reflux-like dyspepsia). Controlling for age, constipation was more common in females (OR 1.95, 95% CI 1.29–2.95, p < 0.01), whereas diarrhea and dyspepsia (including its subgroups) were not associated with gender (all p > .41). Dyspepsia (including ulcer-like and reflux-like) was slightly more common in subjects with constipation than diarrhea but the differences were not significant (all p > 0.25) (Table). On individual symptom analysis, heartburn (7% vs. 3%) and acid regurgitation (4% vs. 2%) were more common in subjects with constipation than diarrhea, but these differences were not significant (all p > 0.23).

**Conclusions:** There is considerable overlap of upper gastrointestinal symptoms in both functional constipation and diarrhea. The prevalence of symptoms of dyspepsia and its subgroups are not significantly higher in subjects with constipation than diarrhea.

**Table:** Prevalence and 95% CI of dyspepsia and dyspepsia subtypes in subjects with constipation and diarrhea

<table>
<thead>
<tr>
<th>Symptom Type</th>
<th>Constipation N = 140</th>
<th>Diarrhea N = 79</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspepsia</td>
<td>4 (3-6)</td>
<td>3 (2-4)</td>
<td>0.25</td>
</tr>
<tr>
<td>Ulcer-like</td>
<td>2 (1-3)</td>
<td>1 (0-2)</td>
<td>0.73</td>
</tr>
<tr>
<td>Reflux-like</td>
<td>3 (2-4)</td>
<td>2 (1-3)</td>
<td>0.85</td>
</tr>
<tr>
<td>Dysmotility-like</td>
<td>2 (1-4)</td>
<td>2 (1-3)</td>
<td>0.68</td>
</tr>
</tbody>
</table>

All values are expressed in percentage.
Purpose: Cyclic Vomiting Syndrome (CVS), a disorder of episodic nausea and vomiting similar to migraine headaches (MHA), is associated with a number of underlying disorders including Diabetes Mellitus (DM). CVS has a typical pattern with rapid onset and resolution of episodic nausea, vomiting, and abdominal pain with interval asymptomatic periods. The frequency and characteristics of CVS in DM pts with GI symptoms is unknown. CVS and its relationship to migraine headaches have not been investigated in pts with DM who may have autonomic neuropathies similar to migraine. To our knowledge, this is the first study to address the subset of patients with cyclic vomiting syndrome in a population of diabetic gastroparetics and compare data on the two groups.

Methods: We investigated 68 consecutive patients presenting with the clinical diagnosis of diabetic gastroparesis (GP). These patients were divided into two groups based on the presence or lack of cyclic symptoms. Presence of cyclic symptoms (CVS) was documented in 38 of the 68 patients. Patients were stratified by demographic variables, duration of DM and GP illness, personal or family history of MHA, the presence or absence of CVS, insulin dependence, results of standardized gastric emptying study (GES), and total symptom score (TSS) when symptomatic. Results were compared between DM-GP patients with or without CVS (control).

Results: 38 patients had CVS and differed from 30 patients with NoCVS (control). The two groups were similar in regards to age, sex, duration of DM, duration of GP symptoms, insulin use, and TSS when symptomatic. There were as statistically significant differences in the following parameters: MHA (47.4% vs. 20.7%, p = 0.02), GES 1 hr (84.1% vs. 59.9%, p = 0.0187), and the repeated measures analysis of variants (area under the curve equivalent, p = 0.0302).

Conclusions: We conclude that a sizeable percentage of patients with Diabetic GP have CVS like episodes. 55.88% of our diabetic GP population has cyclic symptoms and this subset has different clinical manifestations. Diabetic GP patients with CVS have a higher incidence of migraine headaches and a greater delay in gastric emptying. Previous studies have postulated that autonomic dysfunction may occur in CVS and migraine. This explains the increased 1 hour GES results and AUC difference. The existence of this CVS subset and the difference being either a manifestation of, or a response to, an underlying cause of diabetic GP warrants further evaluation.

875 TREATMENT RESPONSE IN FUNCTIONAL BOWEL DISORDERS (FBD) IS PREDICTED BY CHANGES IN BOTH PHYSIOLOGICAL AND PSYCHOSOCIAL FACTORS

University of North Carolina, Chapel Hill, North Carolina and University of Toronto, Toronto, Ontario, Canada.

Purpose: Tricyclic Anti Depressants are commonly used for treatment of FBD. The therapeutic effects may relate to central psychotropic effects and/or peripheral effects on gastrointestinal physiology. Aims: to investigate 1) the effects of desipramine (DES) treatment on psychological and physiological factors and 2) the ability of these factors to predict clinical response to treatment in patients with FBD.

Methods: We studied a subset of 101 female patients with FBD in a treatment trial. Patients were treated with DES, 50–150 mg/day (mean 109±30 mg/day) or placebo, for 12 weeks. Psychosocial assessment included SCL-90 (Global Severity Index, Somatization, Anxiety, Depression), Coping Strategies Questionnaire (assessing catastrophizing subscale, degree of control over symptoms, and ability to decrease symptoms). Physiologic assessment included rectal pain sensation threshold (mmHg), muscle tone, and frequency of bowel movements. A composite score of general well being, 2 weeks pain scores (McGill Pain Questionnaire), IBS health related quality of life (IBS-QOL), and overall satisfaction with the treatment was used to assess the clinical outcome. Linear regression analysis (SAS, Cary NC) was used to calculate the predictive value of 1) DES treatment on changes in psychological scores and physiological scores controlling for baseline scores and demographics, and 2) Changes in psychological scores and physiological scores on the outcome composite scores.

Results: 1) Increased rectal sensation threshold, reduced change in bowel frequency, and increased degree of control over symptoms predict clinical response (p < 0.03 for all). 2) DES treatment significantly predicts a decrease in catastrophizing scores (p = 0.04) and an increase in rectal sensation threshold (p = 0.05). Treatment did not predict overall clinical response.

Conclusions: The response to treatment in FBD is predicted by changes in physiological and psychological factors. DES has central and peripheral effects.

Supported by NIH RO1DK49334

876 DEVELOPMENT OF A BLOATING SEVERITY QUESTIONNAIRE

University of North Carolina, Chapel Hill, North Carolina.

Purpose: Bloating is a bothersome symptom for many patients with gastrointestinal disorders. There has been a lack of self-report instruments that can quantify bloating in a reliable and valid manner.

Methods: Following a review of the bloating research literature and previous bloating assessment methods, internet-mediated focus groups with adults suffering from bloating were conducted. A preliminary 8-question Bloating Severity Questionnaire (BLSQ) was tested on 58 patients with recurrent abdominal bloating. After analysis of the pilot results, the BLSQ was expanded to 13 questions to accommodate separate scales for general severity (SevGen) and severity in the past 24 hours (Sev24). The 13-question BLSQ was administered twice, 2-weeks apart, via mail to a new sample of 149 adults with abdominal bloating (ages 18–69; mean age 33.8; 91.5% female).

Results: One question on the Sev24 was eliminated due to lack of consistency with the remaining scale content. The resulting 7-question SevGen and the 5-question Sev24 had good internal consistency (see table). The SevGen had strong test-retest reliability and correlated well with overall QoL impact of bloating from the BLSQ. A 4-question sum of bloating interference with work, intimate relationships, hobbies, and social activities; as expected for a 24-hour measure, the Sev24 had lower (but moderately strong) test-retest and QoL impairment correlations. Multiple regression analyses revealed that 3 questions on each scale (ratings of bloating severity, and pain and non-pain discomfort associated with bloating) accounted for much of the variance in QoL impairment as the longer versions. These 3-question versions (SevGen, 3 and Sev24-3) had reliability and QoL impairment correlations equal to SevGen and Sev24, but lower internal consistency.

Conclusions: The two brief scales of the newly developed 12-question BLSQ have good psychometric properties and measure general and 24-hour bloating severity in a way that is highly reliable and shows indications of validity based on correlations with quality of life impact of GI bloating. The short-ened versions (3-question scales) also have satisfactory test characteristics and their brevity may prove useful in some research applications. The validity of the BLSQ is being further assessed in ongoing work.

877 ASSESSING THE SENSITIVITY OF THE BLOATING SEVERITY QUESTIONNAIRE (BLSQ)

Syed M. Thiwain, M.D.; William E. Whitehead, Ph.D., F.A.C.G.*; Olafur S. Palsson, PsyD.
University of North Carolina at Chapel Hill.
Purpose: Sixty percent of IBS patients describe abdominal bloating as their most bothersome symptom (vs. abdominal pain, 29%). However, no reliable tool exists to differentiate different types of bloating and to assess the severity of abdominal bloating. We developed a Bloating Severity Questionnaire (BLSQ) to discriminate mild vs. severe cases of bloating and to detect changes over time and in response to treatment. The BLSQ contains the following sub-scales: 1. Sev24 (5 questions on frequency, intensity, duration, and associated pain and discomfort in the last 24 hours). 2. SevGen (7 questions on general bloating severity). 3. BLQoL (4 questions on impact on work and social interactions). The aim of this study was to assess the sensitivity of this scale by comparing different types of bloating: 1. GI bloating vs. menstrual (non-GI) bloating. 2. Postprandial bloating vs. non-meal related GI bloating.

Methods: The BLSQ was developed by a step-wise process involving review of the literature, focus groups, and feedback from expert consultants. Subjects with bloating at least two days in a month were recruited through a web site. 149 subjects completed this questionnaire online (130F, mean age 33 years and 12M, mean age 45, 7 missing sex info). The scores of each sub-scale were normalized to percent of maximum possible to adjust for differences in number of items in the scales. A student t-test compared the mean scores of these three scales between menstrual-only and GI bloating groups, and a separate t-test compared postprandial bloating to non-meal related bloating.

Results: Among women < 50 years old, 29 had only menstrual bloating, and 85 had GI bloating. One subject with both types was excluded from analysis. Women with menstrual bloating only had significantly lower scores across all the scales (Sev24: 20.5 ± 44.4; SevGen: 43.8 ± 54.2; and BLQoL: 21.6 ± 34.4; p < 0.01 for each). In a second analysis of all GI bloating, 40 with postprandial bloating were compared to 78 with other types of GI bloating. Subjects with postprandial bloating had significantly higher scores across all the scales (Sev24: 61.0 ± 41.3; SevGen: 71.5 ± 50.0; and BLQoL: 47.4 ± 31.3; p < 0.01 for each).

Conclusions: The sensitivity of the BLSQ is supported by showing that it can detect different degrees of severity in GI vs. non-GI bloaters (in general and in the past 24 hours) and between different types of GI bloating. Currently the BLSQ is being validated for use in clinical trials. (Supported by Novartis Pharmaceuticals Corp.)
ENDOSCOPY

880

FACTORS PREDICTING SUCCESS OF ENDOSCOPIC VARICEAL LIGATION FOR SECONDARY PROPHYLAXIS OF ESOPHAGEAL VARICEAL BLEEDING

Purpose: Hemorrhage from esophageal varices is a serious complication of portal hypertension. Obliteration of varices by endoscopic variceal ligation (EVL) is an effective form of secondary prophylaxis. However, there is no consensus on the technical aspects of EVL for secondary prophylaxis. The aim of this study was to compare the technical aspects of EVL (number and frequency of sessions) in patients who rebled following secondary prophylaxis of esophageal varices by EVL compared to those who did not rebled.

All patients undergoing EVL for treatment of acute variceal bleeding followed by EVL for secondary prophylaxis and who subsequently developed recurrent variceal bleeding during the same time period who did not re-bleed, matched by Child-Pugh score and beta-blocker use was also identified. During the study period, 216 patients with acute esophageal variceal hemorrhage underwent emergent EVL treatment with follow-up EVL for secondary prophylaxis, 20 (9.3%) subsequently rebled. The median interval between EVL sessions in the rebleeding group (2 weeks, range 1–8 weeks) was significantly shorter compared to the non-rebleeding group (5 weeks, range, 2–15 weeks), p = 0.004. Adjusting for age, gender, and Child-Pugh class, inter-banding interval ≥3 weeks was associated with increased likelihood of not rebleding, hazard ratio 3.84 (95% C.I.: 1.69–11.79), p = 0.0007. The inter-banding interval in the non-rebleeding group (2 weeks, range, 1–7) was significantly less than the non-rebleeding group (3, range, 2–6), p = 0.0002. Our findings illustrate the importance of technical aspects of EVL, endorsing a longer inter-banding interval. Longer inter-banding intervals were associated with more EVL sessions possibly reflecting partial recurrence of varices with longer inter-banding intervals thereby allowing more effective re-banding during follow-up sessions. Future prospective studies are needed to define the optimal inter-session interval [figure1].

Bleeding-free survival for patients based on inter-banding interval

881

ENDOSCOPIC CORRELATION OF INCIDENTAL THICKENING OF THE COLON ON CT
Jommejoy Biswas, M.D., James Lusby, M.D., Michael Gavin, M.D.*. Scott & White Memorial Hospital; Texas A&M Health Science Center College of Medicine, Temple, Texas.

Purpose: Thickening of the colon and rectum on CT is a common finding often leading to endoscopic evaluation. The goal is to study endoscopic correlation of incidental thickening of the colon found on CT scans in adults over age 50.

Methods: A computerized database from our institution was queried for existing patients who had thickening of the colon on CT with contrast (radiologically defined as greater 5-6 mm), and had endoscopy within 6 months. Significant findings were defined as any endoscopic findings that could potentially change patient management. Thickening due to diverticulitis without radiological signs of diverticulitis (i.e. inflammatory stranding) were not classified as significant. During a 48-month period, 69 adult patients over age 50 met the criteria. Of this group, 4 had history of Crohns disease and were excluded. Of the remaining 65 patients, 69% (46) were female and 31% (20) were male. The average age was 72 years old (range 52 to 94yrs).

Results: Significant findings as defined by endoscopy were found in 34 of the 65 patients (52%) with incidental thickening of the colon on CT. Of this subset of patients, the most common locations of these findings were sigmoid-35% (12/34), ascending- 26% (9/34), descending- 24% (8/34), cecum- 6% (2/34), pancolonic-6% (2/34) and rectum-3% (1/34). In the left colon, diverticulitis and ischemic colitis represented the majority of endoscopic findings whereas in the right colon, ischemic colitis and colorectal cancer were the most common findings (see table below). Two patients had diffuse thickening throughout the colon and were found to have pseudomembranous colitis and ulcerative colitis. The likelihood of endoscopic findings being found in either the right or left colon did not differ significantly (52% vs. 50% respectively).

Conclusions: In patients over age 50, thickening on CT of the colon was associated with significant endoscopic findings more than 50% of the time. The most common findings were ischemic colitis and diverticulitis. Although more cancers were found in the right colon vs. the left colon, the number of cases was limited (4 vs 2). Patients older than 50 with thickening of the colon on CT warrant endoscopic follow up.

Location | Endoscopic Findings
--- | ---
Lt. Colon | Diverticulitis (10/42), Ischemic Colitis (7/42), Cancer (2/42), Polyp (1/42), Normal (22/42)
Rt. Colon | Ischemic Colitis (6/21), Cancer (4/21), Infectious Colitis (1/21), Normal (10/21)

882

CRYOABLACTION OF BARRETTS ESOPHAGUS (BE): THE IDEAL ABLATIVE THERAPY? A PILOT STUDY
Mark H. Johnston, M.D.*, John A. Eastone, M.D., Eric Frizzle, M.D., John D. Horwath, M.D. National Naval Medical Center, Bethesda, Maryland and Walter Reed Army Medical Center, Washington, District of Columbia.

Purpose: To evaluate the safety and efficacy of a novel, ambient pressure, open tipped, electrically warmed, cryo catheter (CryoMed Inc., Lutherville, MD) passed through the accessory channel of an upper endoscope for the ablation of specialized intestinal metaplasia (SIM) in the esophagus of patients followed prospectively in a BE registry.

Methods: Ten patients from our registry (mean duration of BE = 7.3 yrs) were enrolled into the protocol. All had histologically confirmed SIM ranging from 1–8 cm (Mean = 4.5 cm) in length. The patients were placed on rabeprazole 40 mg PO TID two weeks prior to baseline esophageal manometry and 24H pH confirming elimination of all acid reflux. They were maintained on this dose throughout the study. The patients then underwent standard endoscopy with spray of liquid nitrogen through the cryocatheter via the accessory channel of the endoscope under direct visualization. The spray was applied in a semi-circumferential pattern to the proximal 4 cm of BE, maintained for 20 seconds followed by rapid thaw, and then re-sprayed in the same location for 20 seconds. Patients were assessed at one-week post-cryo and then at monthly intervals for signs or symptoms of complications related to the treatment using a standard post-procedure questionnaire.
Patients were re-scoped monthly, with cryo applied to the remaining areas of BE until resolved.

**Results:** Ten patients have undergone cryotherapy. The procedure was recorded with digital video, took approximately 15 minutes, and was technically easy to perform. All patients have had reversal of their BE (10/10). Eighty percent of patients who have had biopsy follow-up demonstrated complete histologic reversal of their BE (4/5). The mean length of BE was reduced from 4.5 cm to 0.5 cm. One of five patients had one surveillance biopsy positive for evidence of sub-squamous SIM. There were no complications; however, one patient developed chest discomfort 24 hours post procedure that resolved in 24 hours without intervention.

**Conclusions:** This simple, low pressure, low technology device has proven to be remarkably safe, efficacious, and easy to use in the ablation of this precancerous lesion and holds potential for the treatment of early esophageal cancer and other mucosal lesions of the gastrointestinal tract.

### BE Ablation Results

<table>
<thead>
<tr>
<th>Pt#</th>
<th>Pre-cryo (cm)</th>
<th>Post-cryo (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

### 883

**PATIENT ACCEPTANCE OF PER ORAL UNSEDATED THIN CALIBER GASTROSCOPY**

Nirme S. Maim, M.D.*, Joseph W. Leung, M.D. VA Medical Center, UC Davis, Martinez, California.

**Purpose:** Conscious sedation for endoscopic procedures increases the cost of the procedure because of time and personnel required to recover the patient. We evaluated the patient acceptance of unsedated per oral EGD performed with a thin caliber gastroscope.

**Methods:** The procedure was explained to the patient in detail and informed consent was obtained. The throat was thoroughly anesthetized with liberal use of topical anesthetic. Using Olympus GIF-XP160 scope which has a diameter of 5.9 mm, 2.0 mm biopsy channel, 120o field of view, 103 cm working length, and angulation of 180o/90o (up/down) and 100o/100o (right/left), EGD was performed in the left lateral position. The scope was passed orally. The procedure time was noted as also the diagnoses. After the procedure, the patients were asked to rate the degree of discomfort on a scale of 1-5 (5 being the most uncomfortable); they were also asked if they were willing for similar repeat procedure in future.

**Results:** There were 42 patients; there were two women (4.7%). The mean age was 61.6 years range (30-83). Mean procedure time was 4.4 minutes (range 2-11). The mean degree of discomfort was 2.2 (range 1-5). Only 2/42 (4.7%) said they would not undergo the procedure again. There were no complications. The following diagnoses were made. Esophagitis + Gastritis in 13/42 (30.9%), esophagitis alone 5/42 (11.9%); gastritis alone 10/42 (23.8%) other 4/42 (9.5%) normal 10/42 (23.8%).

**Conclusions:** Per oral unsedated EGD performed with a thin endoscope has a high degree of patient acceptance.

### 884

**POTENTIAL COMBUSTIBLE GAS PRODUCTION FROM AGENTS USED FOR COLON CLEANSING**


**Purpose:** Hydrogen and methane gases are produced by colonic fermentation of poorly digested carbohydrate substrates, some which could result from sugars used in colon cleansing preparation regimens. This investigation was designed to examine gas production related to cleansing additives.

**Methods:** Study subjects had normal baseline exams and lab results of hemogram, electrolytes, renal function, calcium and phosphorus and were enrolled in this randomized, cross-over comparison of colonic gas production as reflected by breath testing after challenge with test articles. Sulfate-free electrolyte lavage solution 4L (SF-ELS, NuLyteLY, Braintree Laboratories, Inc., Braintree, MA) was used as a negative control. Lactulose 20g orally was a positive control. Gatorade (Gatorade, Chicago, IL) 64oz and AccuPrep (Fleet Pharmaceuticals, Lynchburg, VA) were the test challenges. The AccuPrep system utilized two 45 ml doses of oral sodium phosphate divided into 3 pre-measured units, each taken with 8oz of ginger ale. Breath samples were collected at 6PM, prior to each challenge, after ingestion of lactulose, Gatorade, or SF-ELS at 60-minute intervals for 6 hours, and at 8AM the next morning, a time when a procedure like colonoscopy would be performed (pre-Csc). Oral sodium phosphate subjects collected baseline breath samples at 6PM and then consumed the first dose of study medication. Breath samples were collected the following morning at 8AM, after which time the second dose of study medication was ingested. Following this, samples were collected at 60-minute intervals for 6 hours. Another breath sample was collected 6 hours later (pre-Csc). Samples were analyzed for hydrogen (H2) and methane (CH4) using a Quintron model SC analyzer (Quintron Instruments, Milwaukee, WI) which corrected H2 and CH4 results with CO2 normalization.

**Results:** There were 10 study subjects, 5 men and 5 women. Mean age was 39 years. The gas data are expressed in ppm as means of cumulative results by adding baseline and post-challenge data (Cum H2 or CH4) and as the result collected at a time when a procedure might be performed (pre-Csc).

**Conclusions:** Relative to both the positive and negative controls, Gatorade and AccuPrep administration resulted in formation potentially combustible colonic gases. Use of poorly digestible carbohydrates in colon cleansing regimens should be avoided.

<table>
<thead>
<tr>
<th>Cum H2</th>
<th>Cum CH4</th>
<th>Pre-Csc H2</th>
<th>Pre-Csc CH4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF-ELS</td>
<td>21.8</td>
<td>122.9</td>
<td>2.3</td>
</tr>
<tr>
<td>Lactulose</td>
<td>43.9</td>
<td>148.7</td>
<td>3.9</td>
</tr>
<tr>
<td>AccuPrep</td>
<td>54.8</td>
<td>63.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Gatorade</td>
<td>26.1</td>
<td>123.7</td>
<td>2.9</td>
</tr>
</tbody>
</table>
Purpose: While endoscopic injection of epinephrine and cautery are widely used in the USA for management of GI bleeding, mechanical hemostasis is rarely used. In contrast to cautery, endoscopic hemostasis with endoclipping is associated with minimal tissue injury; in addition, clipping provides an opportunity to clamp not only the bleeding lesion, but also its feeding vessel, thereby providing an opportunity to diminish rebleeding.

Aims: We describe 5 cases where endoclipping of the bleeding lesion and its feeding vessel was found to be useful in control of active bleeding and in the prevention of rebleeding.

Methods: Endoscopy data base was reviewed from June 2001 to June 2004 for cases that were managed by endoscopic clipping of the feeding vessel to provide a descriptive analysis of our experience with this technique: endoscopic clipping of feeding vessel in the management of GI bleeding.

Results: During May 2001 to 2004, endoclipping of the bleeding and feeding vessel was successful in the management of five patients with acute GI bleeding:

A. Recurrent bleeding from gastric ulcer despite three prior endoscopic hemostatic attempts (epinephrine injection and cautery) and embolization of gastroduodenal artery.
B. Recurrent bleeding from a duodenal diverticulum despite prior endoscopic hemocliping of the bleeding lesion.
C. Recurrent bleeding from colonic Dieulafoy’s lesion despite three prior endoscopic hemostatic attempts (cautery).
D. Acute bleeding from a gastric Dieulafoy’s lesion.
E. Acute bleeding from a cecal AVM that was fed by a large feeding vessel.

Technique of Endoclipping of the Feeding Vessel: The feeding vessel was seen very clearly at endoscopy (B,D,E), demonstrated in a fold leading to the bleeding lesion on high frequency ultrasound probe sonography (C), and in one patient no feeding vessel could be seen (A). Endoscopic hemocliping was applied to the feeding vessel starting with the first clip away from the bleeding lesion and subsequent clips were placed towards the bleeding site; three to four clips were applied to the feeding vessel.

Outcome: Endoclip application was successful in all 5 patients with no precipitation of bleeding during therapy. There was no rebleeding during a follow-up of 3–18 months. There were no complications related to endoclip placement.

Conclusions: Endoclipping of the feeding vessel is useful in the management of refractory bleeding - control of active GI bleeding and prevention of rebleeding.

887

CLOSURE OF GASTROINTESTINAL FISTULAS WITH ENDOCLIPS - EVIDENCE BASED MEDICINE REVIEW OF LITERATURE

Gottumukkala S. Raju, M.D., FR.C.P., F.A.C.G.∗. University of Texas Medical Branch, Galveston, Texas.

Purpose: Although a number of randomized controlled trials are available demonstrating the efficacy of endoclip application in the management of gastrointestinal bleeding, information on the role of endoclips in treating gastrointestinal perforations is limited. The aim of this study is to present an evidence based medicine (EBM) review of literature on the role of endoclips in the management of gastrointestinal perforations, fistulas, and leaks.

Methods: A MEDLINE search of English language publications was performed from 1966 to June of 2003 related to endoclipping by using the keywords “endoclip” or “hemoclip.” An overall quality assessment of the available publications was done according to EBM.

Results: First Report: Binmoeller et al reported successful endoscopic closure of a gastric perforation using metallic clips after snare excision of a gastric leiomyoma in 1993. Case Reports: 38 cases of gastrointestinal perforations, fistulas, and anastomotic leaks treated by the endoscopists with endoclips without a need for laparotomy have been published in peer-reviewed journals.

Randomized Controlled Trials: None.

Closure of Perforations, Fistulas, and Leaks: The endoclips were successful in the closure of perforations, fistulas, and leaks of the esophagus, stomach, duodenum, and colon.

a. Esophageal Perforations: Endoclipping was successful in the closure of esophageal perforations resulting from endoscopy, bougieing of esophageal stricture, balloon dilation of anastomotic strictures, pneumatic balloon dilation of achalasia, fish bone ingestion, metal hook ingestion, Mallory-Weiss tear, Boerhaave’s syndrome, and empyema.

b. Gastroduodenal perforations resulting from endoscopic ultrasound examination, snare polypectomy of gastric tumors, endoscopic mucosal resection of early gastric cancer, biliary sphincterotomy, ampullectomy, and biliary stent migration have been successfully closed by endoclipping.

c. Colonic perforations from colonoscopy and endoscopic mucosal resection of colonic neoplasia, colo-cutaneous fistulas following a PEG placement and rupture of periappendical abscess, and colo-vesical fistula from diverticulitis have been successfully closed with endoclips.

Nature of Defect Closed: Fresh perforation to a chronic fistula of 2 to 3 months and defect of 0.5 cm to 2.5 cm. Details of each case report will be presented in a tabular form for the poster.

Evidence for endoclip closure of gastrointestinal fistulas: Grade B.

Conclusions: Endoclips are useful in the closure of perforations, fistulas, and anastomotic leaks.
Purpose: While capsule endoscopy (CE) is being embraced as the imaging of choice for evaluation of small bowel, developmental work is being undertaken to expand its role in imaging esophagus and colon as well. One of the prerequisites for colon imaging is a clean colon. Although drinking Golytely cleans the colon and provides excellent imaging at colonoscopy, it is unclear whether this preparation would be adequate for CE, since the CE, unlike the cable endoscopy, lacks the ability to clear any debris by suction. Aim: To evaluate the quality of CE imaging of the stomach, small intestine and colon after a drink of one gallon of golytely.

Methods: This is a retrospective review of 50 capsule endoscopies of patients that drank 1 gallon of Golytely the night before undergoing capsule endoscopy. Five minute capsule endoscopic video segments from proximal and distal stomach, proximal duodenum, terminal ileum, and three segments in between the duodenum and terminal ileum, and colon were evaluated for the quality of imaging (excellent, fair, and poor) in a randomly assigned fashion by a single observer. Interobserver agreement was determined with 2 experienced endoscopists which both independently reviewed 96 random segments - good (k.622; k.528; k.534). Statistics: Standard Z-tests were used to compare the proportion of satisfactory preparations in the colon to the segments of the small intestine.

Results: Quality of CE imaging of the colon was unsatisfactory in the majority of patients (96%). Althougthe quality of imaging of the small intestine was satisfactory after Golytely preparation, there was a trend for an increase in unsatisfactory examinations towards the distal small bowel. The proportion of satisfactory preparations in the colon was significantly less compared to segments of the gastrointestinal tract visualized proximal to it (p < .0001).

Conclusions: Capsule endoscopic imaging of the colon is poor after cleaning it with a gallon of Golytely. Further work is needed to improve the quality of imaging either by the use of better agents to clean the colon or by the incorporation of mechanisms in the capsule to clear the debris.

LEVEL OF ADHERENCE TO GUIDELINES FOR NONVARICEAL UPPER GASTROINTESTINAL BLEEDING PRIOR TO THEIR PUBLICATION

Karen Bensoussan, M.D., Carlo A. Fallone, M.D.*, Alan N. Barkun, M.D., Myriam Martel, B.Sc., RUGBE Investigators. McGill University Health Center, Montreal, Quebec, Canada.

Purpose: There are few recent consensus guidelines on nonvariceal upper gastrointestinal bleeding (NVUGIB). In 2003, the Banff Conference produced a set of 20 guidelines. The aim of this study is to quantify the level of adherence to these guidelines in Canada prior to their publication.

Methods: Data obtained between 1999-2002 from the Canadian Registry of patients with Upper Gastrointestinal Bleeding and Endoscopy (RUGBE) was used to assess adherence to guidelines, and was complemented by a questionnaire sent out to the 18 RUGBE sites.

Results: Few RUGBE sites had an explicit written protocol for NVUGIB. Only 40% had support staff available after hours. The Blatchford prognostic scale was not used routinely, and only 1 site used the Rockall score for risk stratification. Half of patients were tested for Helicobacter pylori, mostly by histology, and only half of those who tested positive were treated while in hospital.

Outcomes in Low and High-Risk Patients

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Low-Risk (age &lt;60)</th>
<th>Low-Risk (all ages)</th>
<th>High-Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient number</td>
<td>58</td>
<td>186</td>
<td>749</td>
</tr>
<tr>
<td>Mean Length of Stay (days)</td>
<td>3.0</td>
<td>3.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Time to endoscopy (hours)</td>
<td>16.6</td>
<td>18.1</td>
<td>14.7</td>
</tr>
<tr>
<td>Rebleed (patient%)</td>
<td>7/12%</td>
<td>24/13%</td>
<td>144/19%</td>
</tr>
<tr>
<td>Surgery (patient%)</td>
<td>4/7%</td>
<td>10/5%</td>
<td>34/5%</td>
</tr>
<tr>
<td>Mortality (patient%)</td>
<td>0</td>
<td>2/1%</td>
<td>32/4%</td>
</tr>
</tbody>
</table>

Low-Risk factors: hemoglobin > 90 g/L, platelets > 50 x 10^9 g/L, INR < 1.5, pulse < 100 beats/min, systolic blood pressure > 100 mmHg, no high-risk lesion on endoscopy

High-Risk factors:

a) absolute high-risk lesion on endoscopy, age ≥ 60, comorbidities
b) factors of increased risk hemoglobin ≤ 90 g/L, platelet ≤ 50 x 10^9 g/L, INR ≥ 1.5, pulse ≥ 100 beats/min, systolic blood pressure ≤ 100 mmHg

Routine Second Look: not recommended by the guidelines

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Patients</th>
<th>Whole population %</th>
<th>Second endoscopy %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endoscopy</td>
<td>1240</td>
<td>100%</td>
<td>–</td>
</tr>
<tr>
<td>Second endoscopy</td>
<td>312</td>
<td>25%</td>
<td>100%</td>
</tr>
<tr>
<td>Routine second look</td>
<td>287</td>
<td>23%</td>
<td>92%</td>
</tr>
<tr>
<td>Rebleed after 1st endoscopy</td>
<td>25</td>
<td>2%</td>
<td>8%</td>
</tr>
<tr>
<td>Second endoscopy treatment in rebleeding patients</td>
<td>11</td>
<td>0.9%-44% of</td>
<td>–</td>
</tr>
</tbody>
</table>

Routine second-look endoscopy: Second endoscopy without clinical rebleeding (hematemesis, melena, hematochezia, shock or 20 points drop in hemoglobin) after the first endoscopic diagnosis was made regardless of whether or not patients had endoscopic treatment.

Conclusions: Adequate dissemination of recent published guidelines should improve adherence to the statements, which will hopefully improve patient outcomes.

THE NATURAL HISTORY OF SUBMUCOSAL MASSES EVALUATED BY ENDOSCOPIC ULTRASOUND

Vivek Tyagi, M.D., Olga Maimon, M.D., Rony Avaida, M.D., Kaumudi Somnay, M.D., Scott Tenner, M.D.*. Downstate Medical Center, SUNY, New York, New York.

Purpose: Endoscopic Ultrasound (EUS) is the most accurate method of imaging submucosal masses in the gastrointestinal tract. Over the last decade, the frequency in which submucosal masses are evaluated by EUS has greatly increased. The majority of these lesions are less than 3 cm, and have imaging characteristics consistent with either lipomas or leiomyomas. The need for repeat evaluation after a period of time (surveillance) has not been clarified. We present the results of EUS surveillance in a cohort of patients with submucosal masses in the esophagus and stomach.

Methods: Consecutive patients with submucosal masses were invited to participate. To be included in the study, the original mass had to meet the EUS criteria for benign (homogenous, clear delineation of origin, absence of adenopathy). Patients had to have undergone at least two evaluations by EUS separated by a minimum of 3 months between exams. Maximal diameter,
area, origin, homogeneity and location of the mass was documented at each examination.

Results: 46 patients with submucosal masses identified on endoscopy were followed. Following standard EUS criteria, there were 19 lipomas, 27 leiomyomas. The mean maximal diameter was 2.1 cm, range 0.4–4.8 cm. Mean follow-up examination was performed at 9 months, range 3–31 months. Overall, the maximal diameter of the lesions remained unchanged at 2.2 cm (range 0.4 cm–5.4 cm) (p = 0.23). On follow-up examination, 45/46 masses continued to have benign signals. In one patient, there was significant growth (4.8 cm–5.4 cm) over 19 months. There was loss of homogeneity, sarcomatous transformation confirmed at the time of surgical resection.

Conclusions: Submucosal masses of the upper gastrointestinal tract typically do not increase in size and remain benign. However, malignant transformation does occur and may be related to the initial size of the mass. The follow-up strategy may be different in patients with submucosal masses greater than 3 cm.

DRAWDACKS AFTER ENDOSCOPIC ENDOULMINAL GASTROPACIFICATION: COULD FUNCTIONAL STUDY INFLUENCE THE TECHNIQUE AND AFFECT THE OUTCOME?  

Pietro Dusio, M.D., Emma Gay, M.D., Fulvio Cappelletti, M.D.*.  
Ospedale Evangelico Valdese, Torino, Italy.

Purpose: Different pre-operative functional patterns and endoscopic findings are found among patients who undergo endoluminal gastropachification (ELPG) for gastroesophageal reflux disease (GERD). Lost or loose of plications is common during the follow-up after the procedure and the ideal configuration and number of plications is still discussed. Aim of this work was to evaluate if pre-operative LES pressure, acid exposure and hiatal eria size could affect the outcome after ELPG and give technical suggestions.

Methods: 29 GERD patients (19 fem., 10 mal., mean age 34) were investigated. GERD was confirmed by 24 h pH-monitoring. Hiatal eria size > 3 cm. and Barrett were excluded. All patients showed good response to PPI therapy. Endoscopy, manometry and 24 h pH-monitoring were performed few weeks before ELPG (Endo Cinch Bard). Different number and configurations of plications were used: 2 longitudinal (3 cases), 2 circumferential (13), 3 circumferential (5), and 2 longitudinal with 1 another 90-120° apart (8). An endoscopic, functional and clinical follow-up (mean 12 months, range 9-16) was performed in all patients.

Results: At the endoscopy in 18 pat. the sutures were in situ and tightly held, 1 showed no sut., 3 had 1 dislodged plic. with the remaining tightly held, 3 had 1 lost and 1 loosely held, 4 had 2 loosely held plications. Lost or loose sut. were found in circ. configuration (both with 2 or 3 plic.) In the pat. with 2 long. + 1 circumferential plic., the majority of 2 long.sut. was tightly held (6/8). All the 2 long.sut. were tightly held. In both groups (successful \ drawbacks) no significant differences in pre-operative De Meester’s score (range 17.1–87.4) and hiatal eria size (0–3 cm.) were found. In particular in 3 out 4 of pat. with no eria and De Meester score < 25 who received only 2 sut., the plic. were dislodged or loosely held. A slight but not significant increase of LES pr. was found after the procedure in all pat. 85% of pat. with lost or loose sutures showed recurrence of symptoms.

Conclusions: The amount of esoph. acid exposure, LES pr. and hiatal eria size not influence the endoscopic and clinical results after ELPG. It appears useful in any treated case, despite the size of hiatal eria and reflux score, to place at least 3 plications possibly with 2 in a longit. position. The ideal configuration is still to define. Repeated endoscopic controls and clinical follow-up after the procedure appear more useful than functional studies. Severity of GERD does not influence ELPG outcome.

CAPSULE ENDOSCOPIC DIAGNOSIS OF EXTRA-INTESTINAL BLEEDING  

Samir K. Nath, M.D., Ph.D., Bincy Abraham, M.D., Sharon Boening, MSN, Gottumukkala S. Raju, M.D., F.R.C.P., F.A.C.G.*. University of Texas Medical Branch, Galveston, Texas.

Purpose: Although capsule endoscopy (CE) was developed primarily for evaluation of the small intestine for obscure GI bleeding, it provides imaging of the stomach and colon as well, thereby providing an opportunity for a second look of overlooked lesions at prior EGD and colonoscopy.

Aim: Review our experience with CE in the diagnosis of extra-intestinal bleeding.

Methods: CE reports and hospital charts of patients with obscure gastrointestinal bleeding (2002-2004) were reviewed to establish site of bleeding, etiology of bleeding, and capsule endoscopic indicators of bleeding and the outcome of these patients.

Results: CE images of 50 patients (pts) (mean age: 67; range 39-90 years, M:F 23/27) who underwent CE for diagnosis of obscure GI bleeding (overt n = 20; occult with Hgb < 8g/dl: n = 3, & Hgb 8-11 g/dl: n = 27) were reviewed.

I. Site of Bleeding The bleeding source was diagnosed in 15 of the 50 pts. In 4 pts the source of bleeding was present outside the small small intestine: three in the stomach and one in the colon.

II. Etiology of Bleeding: a) Small Intestine: AVMs (n = 7), tumor (n = 2), NSAID ulcer (n = 1), celiac sprue (n = 1). b) Stomach: Gastric antral vascular ectasia (GAVE) (n = 1), Dieulafoy’s lesion (n = 2) c) Colon: Cecal AVM (n = 1).

III. CE Diagnosis of Extra-intestinal Bleeding: Flecks of heme or blood clots in the stomach (n = 2), fresh blood in the duodenum with normal stomach (n = 1), & blood in the cecum without any blood in the small intestine provided clues for extraintestinal source of bleeding.

IV. Specific Diagnosis: i. GAVE. At EGD, it was initially mis-diagnosed as hemorrhagic gastritis. Capillary blanching and refilling along with active bleeding from the pylorus as the capsule exited the stomach confirmed the diagnosis of GAVE. ii. Gastric Dieulafoy’s Lesions: Of the two pts, in one CE identified the lesion. In the other, presence of old blood in the duodenum lead to suspicion of a gastric source of bleeding & on repeat endoscopy actively bleeding Dieulafoy’s lesion was identified. iii. Cecal AVMs: Bleeding from the cecum was identified on a 3rd CE; & cecal AVMs were identified at colonoscopy after injection of naloxone. IV.

V. Outcome: Endoscopic therapy controlled bleeding in all the 4 pts

Conclusions: CE is useful in the diagnosis of extra-intestinal causes of bleeding from stomach and colon - a complete review of CE is crucial and subtle signs (flecks of heme or old blood) outside small intestine should direct thorough endoscopic search of these areas for bleeding lesions.

OBSCURE CAUSE OF GI BLEEDING  

Adel F. Ahmed, M.D., Abdulwahab M. Gabal, M.D.*. King Fahad Hospital, Medina, Saudi Arabia.

Case Report:
Hemobilia rather uncommon to be recognize easily and remain obscure cause of GI bleeding. In our case, the right hepatic artery was eroding into a choledochal cyst. This is a 29 year old male, admitted as a case of GI bleeding mainly melena and jaundice. EGD was not conclusive. Additionally, ERCP performed and revealed blood flowing from the ampulla of Vater and showed choledochal cyst. We proceeded to CT scan and angiography which revealed abrupt occlusion of the right hepatic artery by the choledochal cyst compressing the artery. Surgical intervention was the procedure of choice in such case and revealed direct communication between right hepatic artery and the choledochal cyst.

Conclusions: Complicated choledochal cyst is a cause of GI bleeding. Compresing effect of choledochal cyst and pulsation of hepatic artery can lead to pressure erosion of both the cyst wall and the arterial wall with subsequent perforation and direct communication between hepatic artery and biliary tract.

CT, angiography and ERCP are essential for the diagnosis and surveillance which should decrease hospital length of stay.
ENDOSONOGRAPHY OF OBSTRUCTIVE ESOPHAGEAL CANCER: SAFETY AND EFFICACY OF TTS BALLOON DILATION AND CLINICAL IMPACT OF COMPLETE STAGING


Purpose: Endoscopic ultrasound (EUS) is the most accurate method for T- and N-staging of primary esophageal tumors. Malignant esophageal strictures may hinder passage of the echoendoscope during EUS staging which will require structure dilation. We determined how complete EUS staging after esophageal stricture balloon dilation impacted the management of esophageal carcinoma in terms of resectability and neoadjuvant therapy. A secondary aim was to provide safety data of esophageal balloon dilation of malignant strictures.

Methods: We reviewed 137 consecutive procedures from a 6 year period (4/1/98 – 3/19/04) who were referred for staging EUS for esophageal carcinoma. We recorded the percentage of patients requiring esophageal malignant stricture dilation prior to EUS, size of balloon dilatation required, and complications. Tumor characteristics recorded included tumor/stricture length, TNM staging by EUS and record of any change in management (T4 or M1) after complete staging. All patients dilated underwent through-the-scope balloon dilation.

Results: Among 137 consecutive EGD/EUS examinations, 41 (30%) patients required dilation for symptomatic dysphagia and to advance the echoendoscope beyond the stricture. All patients were dilated to ≥ 12 mm, with maximum diameter of 20 mm, and an average dilatation increment of 5.4 mm. Average tumor/stricture length requiring dilation was 4.9 cm. No complications requiring hospitalization occurred as a direct result of any of the dilations performed. Tumor staging by EUS after dilatation was T1 (2.4%), T2 (7.3%), T3 (61.0%), and T4 (29.3%). Nodal staging was N0 (4.9%), N1 (87.8%), and N2 (7.3%). 19.5% of patients had evidence of M1 disease with liver metastasis, celiac node metastasis, or invasion into local vasculature. 16 patients (39.0%) were found to be unresectable (T4 or M1), which had not previously been identified, thereby changing management.

Conclusions: Staging is essential in management of esophageal carcinoma and can change treatment outcome if complete EUS staging is performed. More than 1/3 of patients had a change in management by discovering T4 or M1 disease, which would not have been identified if stricture dilation had not been performed. Although the traditional “rule of three” was not employed, gradual, serial dilatation using through-the-scope esophageal balloon dilators to at least 12 mm to allow the echoendoscope to pass through malignant strictures is safe and effective, prior to TNM staging by EUS.

ENDOSCOPIC EVALUATION OF HEMATOCHIZEA IN PERSONS BETWEEN 30-50 YEARS

Giancarlo Spinzi, M.D.*, Marco Dal Fante, M.D., Franco Barzaghi, M.D., Federico Buffoli, M.D., Edorado Colombo, M.D., Marco Dinelli, M.D., Renato Fasoli, M.D., Giovanna Fiori, M.D., Enzo Masci, M.D., Marco Pereg, M.D., Giuseppe Repaci, M.D., Giorgio Minoli, M.D., H Valduce, Como; S Pio X, Milano; H Busto Arsizio, Busto Arsizio, Varese; H Poliambulananza, Brescia; H Vimecare, Vimecare, Milan; H S Gerardo, Monza; H Abbiategrasso, Abbiategrasso, Milano; Istituto Oncologico Europeo, Milano; H S Raffaele, Milano; IRCCS, Pavia; H Magenta, Magenta, Milano.

Purpose: Hematochezia is common in Western countries. Few data are available comparing the yield of colonoscopy (COL) for bright red bleeding in different age groups. The aim of our study was to investigate the prevalence of underlying disease in pts less than 50 years undergoing outpatient COL for hematochezia.

Methods: In a multicentre prospective study we evaluated with COL persons under age 50 years with hematochezia. Pts with a history of IB, colonic polyps, CRC, AVms, ischemic colitis, radiation proctitis, abnormal barium studies, FAP, or CRC risk, were excluded.

Results: We evaluated 626 pts (233F/393M) with COL. In the group 30-40 years there were 305 pts (115F/190M); 321 (118F/203M) in the group 41-50. Two rectal cancers and 1 in the descending colon were found in the 41-50 group (0.9%). Overall, 141 polyps were identified in 88 pts (14%). 40 polyps were found in 29 pts (9.5%) in group 30-40 years and 101 polyps in 59 pts (18.4%) in group 41-50 years (p = 0.002). 50 polyps were adenomatous, with villous features; 23 with high grade dysplasia. We identified one granular cell tumor in the 41-50 years group and 2 distal malignant polyps in the 30-40 years group (0.7%). Among the 88 pts with polyps, 19 (21.8%) had the most distal polyp proximal to the splenic flexure. Other sources of bleeding included: hemorrhoids in 85%, anal fissures in 4%, diverticulosis in 10%, IBD in 3.7%, AVms in 0.8%.

Conclusions: Colonic neoplasms are identified in young pts with hematochezia, although are significantly lower in pts under age 40. We found 3 CRC in pts age 41-50 and two malignant polyps in pts under 40 (all lesions in left colon). Many of the proximal neoplasms are not associated with adenomas distal to the splenic flexure. We suggest a COL for persons age 41-50, and possibly in younger pts as well.
ENTERYX®: WORLDWIDE PIVOTAL STUDIES IN 237 PATIENTS

Lawrence B. Cohen, M.D., F.A.C.G.; James Aisenberg, M.D., T. Raymond Foley, M.D., Robert A. Ganz, M.D., David A. Johnson, M.D., E.A.C.G., Glen A. Lehman, M.D., F.A.C.G., Brigitte Schumacher, M.D., Horst Neuhaus, M.D.*; Marianne Ornter, M.D., Rene Laugier, M.D., Thierry Ponchon, M.D., Jeffrey H. Peters, M.D., F.A.C.G., Gregory B. Haber, M.D., M.A.C.G., Jacques Deviere, M.D., M. Sinti Hospital, New York, New York; Lancaster General Hospital, Lancaster, Pennsylvania; Minnesota Clinical Research Center, Minneapolis, Minnesota; Eastern VA School of Medicine, Norfolk, Virginia; Indiana University Medical Center, Indianapolis, Indiana; Evangelisches Krankenhaus Düsseldorf, Düsseldorf; Humboldt Universität, Berlin, Germany; Hôpital de la Timone, Marseille; Hôpital Edouard Herriot, Lyon, France; USC University Hospital, Los Angeles, California; Lenox Hill Hospital, New York, New York.

Purpose: We investigated safety and effectiveness of Enteryx, a biocompatible copolymer designed for endoscopic injection into the lower esophageal sphincter (LES), in two prospective, open-label, international, multicenter clinical trials that followed an identical study protocol.

Methods: Proton pump inhibitor (PPI)-dependent patients with GERD (N = 237) underwent endoscopic Enteryx implantation under fluoroscopic guidance using moderate sedation. PPI usage, GERD health-related quality of life (GERD-HRQL) score, and esophageal pH were recorded during the 12 mo follow-up.

Results: At 12 mo, PPI use was eliminated in 69.8% (CI, 62.8–76.2%) and was reduced by ≥ 50% in an additional 15.1% (CI, 10.4–21.0%) of 192 evaluable patients. A GERD-HRQL total score of ≤ 11 was attained by 73.2% (CI, 66.3–79.3%) of 190 evaluable patients. GERD-HRQL component heartburn score improved by a median of 61.4% (CI, 55.4–67.1%) and regurgitation score by 78.6% (CI, 73.3–85.7%). Esophageal acid exposure (total time pH < 4) was improved from baseline in 54.2% (CI, 46.0–62.3%) of 156 evaluable patients. Morbidity was transient and mild. Retrosternal chest pain was the most frequent (71.7%) device-related adverse event.

Conclusions: These data extend past findings that Enteryx is safe and effective in the treatment of GERD symptoms. At 12 mo post-implantation, there was significant improvement in PPI use and GERD-HRQL scores, along with reduction in esophageal acid exposure. The safety profile for Enteryx remains excellent. Enteryx provides patients with an alternative to chronic PPI treatment.

RABEPRAZOLE (RAB) PROVIDES A FASTER AND MORE SUSTAINED REFLUX SYMPTOM RELIEF THAN OMEPRAZOLE (OME) IN OESOPHAGITIS PATIENTS

Fabio Pace, M.D., Vito Annese, M.D., Alberto Prada, M.D., Alessandro Zambelli, M.D., Stefania Casalini, Biol., Patrizia Nardini, M.D., Gabriele Bianchi Porro, M.D.*. Sacco Hospital, Milan; Casa Sollievo Sofferenza, San Giovanni Rotondo; Salvini Hospital, Rho; Major Hospital, Crema and Janssen-Cilag, Cologno Monzese, Italy.

Purpose: The main outcome of an effective antisecretory treatment for GERD is a fast and sustained symptom relief and a high endoscopic healing. This trial aimed to compare RAB 20 mg od to OME 20 mg od in obtaining such goals.

Methods: 560 patients, with Savary-Miller grade I-III oesophagitis and day-time (DHB) and/or night-time heartburn (NHB) for at least 3–4 weeks and of moderate to severe intensity, were enrolled in the curative phase of a multicenter, double-blind, parallel group trial. They received RAB 20 mg od or OME 20 mg od for 4 to 8 weeks (depending on endoscopic and symptom response). Patients, endoscopically healed and relieved for reflux symptoms, entered a maintenance open phase with RAB 10 mg od for 48 weeks.

Results: At baseline, 97.8% and 74.9% of 549 evaluable patients (374 M, mean age 47.4 ± 14.5 yrs) presented DHB and NHB, respectively. The oesophagitis was a first episode for 70.3% and a relapse for 29.7% of patients; the grade was 1.1% O, 69.2% I, 24.2% II and 5.5% III. RAB and OME groups were comparable. At the log-rank test and the Cochran-Mantel-Haenszel statistics (ITT population), RAB group achieved DHB plus NHB relief (intensity ≤ mild) in much less time than OME group (mean days 2.8 vs 4.7, p = 0.0045); data were also statistically significant for DHB (p = 0.0195) or NHB (p = 0.0090) relief, separately. More RAB patients reported no DHB plus NHB for each day of the first week: 32.2% vs 18.9% of OME group (p = 0.0010); the same trend occurred also when considering NHB alone (53.9% vs 42.8%, p = 0.0195). After only 4 weeks, the endoscopic healing rate was 91.0% (RAB) and 89.9% (OME) in the PP population at Blackwelder test (p = 0.0001). The baseline endoscopic grade did not statistically affect the figures at endpoint (after 4 to 8 weeks 97.9% and 97.5% of RAB and OME patients healed, respectively), even if a numerical superiority was seen for RAB in the more severe grade (91.7% vs 86.7% of grade III baseline patients had no lesions at the end of the curative phase).

Conclusions: Rabeprozole was faster and more consistent than omeprazole in relieving reflux symptoms. Both drugs were highly effective in healing oesophagitis just after 4 weeks. Research supported by Janssen-Cilag, Italy.

METABOLIC AND HEMODYNAMIC CHANGES FOLLOWING ADMINISTRATION OF SODIUM PHOSPHATES ENEMAS

Robert M. Jacobson, M.D.*, William O. Thompson, Ph.D. Baylor University Medical Center, Dallas, Texas and Medical College of Georgia, Augusta, Georgia.

Purpose: To evaluate metabolic and hemodynamic changes that result from the use of two sizes of sodium phosphates (NaP) enemas (133 mL and 250 mL).

Methods: Healthy adult male and female volunteers age 50–80, who gave consent to participate in this trial were given one of two enemas (Enema Casen® 250 mL, Laboratorios Casen-Fleet, S.A., Spain, 40 g monobasic NaP, 20 g dibasic NaP, Fleet® Enema 133 mL, C.B. Fleet Co., Inc., USA, 19 g monobasic NaP, 7 g dibasic NaP). For each enema size, 20 volunteers were recruited, balanced by gender and two age groups—50 to 65, and 65 and over. The study sample had 10 subjects with a diagnosis of hypertension and 5 who were diabetic (3 had both conditions). Enemas were administered by a health professional in a clinic setting in an open label trial. Blood samples were drawn at baseline and at 10, 60 and 120 minutes post evacuation. Blood pressures for orthostatic hypotension were taken at hourly intervals.
Results: Serum phosphorus increased at 10 minutes post enema evacuation in all but one subject. The amount of increase was related to the retention time of the enema fluid but not the enema size. Twelve of the 40 subjects (6 in each group) had mild hyperphosphatemia (4.5–7.0 mg/dL) which peaked at 10 minutes after evacuation. Serum calcium, potassium, sodium, BUN and creatinine were within normal clinical limits for all subjects throughout the study period. Orthostatic hypotension was not observed in any subject after the administration of either enema size. No adverse events were observed.

Conclusions: The study confirmed that mild hyperphosphatemia occurs in some people using sodium phosphate enemas, but the increase is not associated with other changes in metabolic parameters, orthostatic hypotension, or adverse events. Phosphate absorption was related to retention time, but not enema volume. Both sizes of sodium phosphate enemas were safe, and since every subject experienced at least one bowel movement, the enemas were also effective.

900 THERAPEUTIC ERCP IN THE PEDIATRIC POPULATION: A SINGLE CENTER EXPERIENCE
Rob Thornberg, M.D., Ashok N. Shah, M.D., Parvez S. Mantry, M.D.*. University of Rochester, School of Medicine, Rochester, New York.

Purpose: We retrospectively decided to review the indications, complications and success rate of ERCPs done in the pediatric population at a tertiary referral center.

Methods: We reviewed the charts of 18 children who underwent 22 ERCPs by adult GIs over the last 10 years and studied their demographics, indications, therapeutics performed, complications and overall outcome. An adult-side viewing duodenoscope was used 90% of the time. In the case of diagnostic ERCPs we compared the ERCP results to other imaging tests in terms of accuracy and reliability.

Results: Age ranged from 9-17 years (mean: 14 y). Male female ratio was 0.64:1. 9 patients were Caucasian, 5 African-American, and 4 were Hispanic in origin. They ranged in weight from 22 to 115 kg. 12 of 18 were outpatients. Indications: Common bile duct (CBD) stones (7), Pancreatitis (5) (including acute gallstone pancreatitis, chronic and recurrent pancreatitis), Pancreatic and bile duct injuries (4), Sclerosing Cholangitis (2). Therapeutics performed: 10 sphincterotomies of which two patients had a precut fistulotomy to gain access. There were 3 stent placements. The remaining 9 procedures were diagnostic.

Complications: There were no episodes of bleeding or pancreatitis. There were no perforations or deaths. The average length of stay for the inpatients that underwent this procedure was 9.7 days. Of the remaining, 4 patients were sent home the same day and 2 were observed for 24 and 48 hours respectively.

Success rate: Cannulation was achieved at the 1st attempt in 21 of the 22 procedures. In one patient with a suspected bile leak, the CBD could not be cannulated. Further imaging studies were normal and no further interventions were required. Therapeutic procedures were successful in all except one patient with chronic pancreatitis who had a pancreatic duct stricture at the junction of the head at the body, which could not be stented and needed surgery.

Comparison with other imaging studies: Of the 18 patients, 17 had imaging studies (MRCP, CT, Ultrasound) available for comparison with ERCP. We found that ERCP findings were concordant with those of MRCP, CT and Ultrasound in all the studies.

Conclusions: In our experience we found therapeutic ERCP to be a safe and effective procedure with a low risk of complications in the pediatric age group. We found diagnostic ERCP to be equivalent in accuracy to other radiologic imaging studies, of which MRCP is the most reliable. This study conforms to the findings of other referral centers performing therapeutic ERCP on children.

901 EFFICIENCY IN AN ENDOSCOPY UNIT IN A TEACHING HOSPITAL - DELAYS, PROLONGED PROCEDURES AND INPATIENT WAITING TIMES

Purpose: The need to improve efficiency in endoscopy units is receiving attention because of increased demand for screening colonoscopy. One solution is to increase the volume of endoscopic services available by efficiently utilizing existing resources. The purpose of this study was to assess efficiency in the endoscopy unit of a large tertiary care teaching hospital.

Methods: A research assistant collected data prospectively over 3 months in the endoscopy unit of a 650 bed acute-care teaching hospital. The data collected on inpatient and outpatient procedures included time intervals between endoscopic procedures and procedure durations. Procedure delays (defined as time interval between procedures of >15 minutes) were determined and the reasons for them recorded. For inpatients, the number of additional days spent waiting in hospital for endoscopic procedures was also recorded.

Results: From May 16 - September 5, 2003, 675 endoscopic procedures were observed in 625 patients of whom 207 (33%) were inpatients. The most common procedure performed was colonoscopy (42.1%) followed by esophagastroduodenoscopy (36%). Overall, in 193/625 patients (30.9%), the procedures were delayed (>15 minutes between procedures). Of these, the time interval between procedures was >30 minutes in 24.4%. The delays were physician-related in 54.4% (physician was not available to start the procedure). Procedure duration was prolonged in 22% of procedures. 86/207 (41.5%) inpatients waited at least one day in hospital for their procedures.

Conclusions: Procedure delays were considerable and physician unavailability contributed to these delays. Strategies to reduce procedure delays could have a favorable impact on the volume of procedures performed in the unit, thereby improving utilization of existing resources. The generalizability of these findings is not known although it is widely perceived that the delivery of endoscopic services in large tertiary care teaching hospitals may not be as efficient as in other settings. Our results support this observation. We encourage other groups to assess the efficiency in their endoscopy units.

902 CAPSULE ENDOSCOPY IN THE EMERGENCY ROOM FOR ACUTE NON HEMATEMESIS GASTROINTESTINAL BLEEDING
Ritu M. Sachdev, M.D., Patricia L. Hibbend, M.P.H., Mark Pearlmutter, M.D., David R. Cave, M.D.*. Caritas St Elizabeth’s Medical Center and Tufts-New England Medical Center, Boston, Massachusetts.

Purpose: For more than 30 years, the first step in the management of acute gastrointestinal bleeding (AGIB) has been upper endoscopy (EGD) and colonoscopy (COL). In the majority of patients bleeding has already stopped by the time the procedure is performed thereby reducing diagnostic accuracy. We conducted a pilot study to obtain preliminary information on whether CE can improve management of AGIB.

Methods: The study was performed prospectively in a community teaching hospital with 30,000 emergency room visits per year. 24 patients were randomized to either early [CE in the emergency room before conventional investigations] or late [CE after conventional work up completed] in a 2:1 ratio. Diagnostic information from the early CE was provided to the attending physician as soon as possible. Additional work up was performed at the discretion of the attending physician.

Results: Of the 138 patients screened over a 6-month period, 24 met our inclusion criteria (non-hematemesis acute gastro-intestinal bleeding) and signed consent. On presentation to the ER, the two groups were similar in age, sex, initial blood pressure, hematocrit, and use of antiocoagulants, aspirin and non-steroidal anti-inflammatory drugs. 21/24 (88%) patients were on antiocoagulants/anti-platelet agents. Within 24 hours of enrollment, 12/16 (75%)...
patients in the early CE group had a presumptive source of bleeding detected by CE (10/16). EGD (1/8), COL (1/4) vs. 3.8 (38%) patients detected by EGD (3/4), CE (0/0), COL (0/1) in the CE late group (p = 0.099). Excluding CE, patients in the early group had 18 (1.13 procedures per subject), patients in the late group had 13 (1.63 procedure per subject). Median time to presumptive diagnosis by any modality was 19 hours in the early CE group vs. 35 hours in the CE late group (p = 0.06). Overall, active bleeding was detected by CE in 13/24 (54%) patients, 2/17 (11%) by EGD and 0/13 (0%) by COL. CE provided minimal or no useful data in 4/24 (17%) because of failure to swallow the capsule (1) or gastric retention (3).

Conclusions: In this pilot study, there was a trend to both a significant increase in detection and decrease in time to detection of a presumptive source of bleeding when CE was done early in the work-up for AGIB. The mean number of conventional procedures per subject was reduced by performing CE early in the evaluation of AGIB.

903
LOWER REBLEEDING RATES IN HIGH RISK PATIENTS TREATED WITH IV PANTOPRAZOLE THAN IV RANITIDINE AFTER ENDOSCOPIC HEMOSTASIS IN A RANDOMIZED CONTROLLED US STUDY

Dennis M. Jensen, M.D., Samuel C. Pace, M.D., F.A.C.G., Elaine F. Soffer, B.A., Michael E. Mack, Ph.D., Gail M. Comer, M.D., F.A.C.G.*. CURE Digestive Research Center, Los Angeles, California; North Mississippi Medical Center, Tupelo, Mississippi and Wyeth Research, Collegeville, Pennsylvania.

Purpose: There are no published papers comparing ulcer rebleeding rates for high dose IV PPIs compared with IV H2RAs after endoscopic hemostasis in high risk patients. In such patients, we tested the hypothesis that ulcer rebleeding would be lower with IV pantoprazole (PAN) than with IV ranitidine (RAN).

Methods: This was a multicenter, randomized, double-blind, US study. Patients with bleeding peptic ulcers and stigmata of recent hemorrhage had endoscopic hemostasis with heater or multipolar probes ± epinephrine injection. Subjects were then randomly assigned to IV PAN 80 mg plus 8 mg/hr or IV RAN 50 mg plus 6.25 mg/hr for 72 hours and later received an oral PPI. Patients with signs of rebleeding had repeat endoscopy.

Results: Because of slow enrollment, the study was stopped early; 149 patients received study drug (PAN 72; RAN 77). Most patients were white men with a history of NSAID use. The demographics, Apache II scores, ulcer type/location, stigmata, and hemostasis types were similar. The 30 day mortality (none bleeding) was 4.0%. The rebleeders were more likely to have large DU’s and be H. pylori negative with a history of NSAID use. Two RAN subjects had surgery or angio. SAEs were more common in the RAN group (19 [24.7%]) vs the PAN group (9[12.5%]), p = 0.063. No eye events were reported.

REBLEEDING RESULTS

<table>
<thead>
<tr>
<th></th>
<th>IV Pantoprazole</th>
<th>IV Ranitidine*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebleeding Episodes</td>
<td>(n = 72)</td>
<td>(n = 77)</td>
</tr>
<tr>
<td>Early (≤72 h)</td>
<td>3 (4.1%)</td>
<td>6 (7.7%)</td>
</tr>
<tr>
<td>4-7 days**</td>
<td>2 (2.8%)</td>
<td>6 (7.7%)</td>
</tr>
<tr>
<td>8-30 days</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>5 (6.9%)</td>
<td>12 (15.6%)**</td>
</tr>
</tbody>
</table>

*1 subject bled twice: early and late; **4 subjects were discharged before rebleeding; ***p = 0.097

Conclusions: 1. IV pantoprazole provided additional benefit over IV ranitidine in subjects at high risk for ulcer rebleeding after endoscopic hemostasis. This difference did not reach statistical significance due to the early termination of the study and an inadequate number of subjects. 2. Almost half of rebleeding episodes occurred beyond 72 hours. Therefore, high risk patients may require longer treatment and observation periods to reduce early rebleeding.

904
DURABILITY AND LONG-TERM SAFETY OF ENTERYX® IMPLANTATION FOR GERD: 24-MONTH FOLLOW-UP OF A PROSPECTIVE MULTICENTER TRIAL

David A. Johnson, M.D., F.A.C.G., James Aisenberg, M.D., Lawrence B. Cohen, M.D., F.A.C.G., T. Raymond Foley, M.D., Robert A. Ganz, M.D., Glen A. Lehman, M.D., F.A.C.G.*. Eastern VA School of Medicine, Norfolk, Virginia; Mount Sinai Hospital, New York, New York; Lancaster General Hospital, Lancaster, Pennsylvania; Minnesota Clinical Research Center, Minneapolis, Minnesota and Indiana University Medical Center, Indianapolis, Indiana.

Purpose: To assess the effectiveness, durability, and long-term safety of Enteryx®, a biocompatible copolymer implanted into the region of the lower esophageal sphincter for the treatment of GERD symptoms.

Methods: Subjects were part of an FDA-mandated Post Market Study designed to follow 300 patients for 3 years after Enteryx treatment. To date, 64 patients completed 24 mo of follow-up in this multicenter trial. Study patients had well characterized GERD symptoms and were PPI-dependent. Exclusion criteria included esophageal varices, particularly related to portal hypertension, and patients determined to be poor candidates for endoscopy and/or anesthesia. The primary study endpoint was the patient proportion at 12 and 24 months who eliminated PPI use or reduced PPI dose by ≥ 50%. Secondary objective was GERD health-related quality of life (GERD-HRQL) score assessment. Follow-up occurred at month 1, 6, 12, 24, 36. Safety information was collected quarterly.

Results: In 64 patients followed for 24 months post Enteryx implantation, 46 patients (71.9%; CI, 60.9–82.9%) reduced PPI use by ≥ 50%, of which 43 patients (67.2%; CI, 54.3–78.4%) completely eliminated daily PPI use. GERD-HRQL heartburn score was also improved by a median of 79.8% (CI, 71.2–87.4%) at 24 mo compared with baseline off PPIs, and median regurgitation score improvement was 87.5% (CI, 78.6–91.7%). There were no new device-related adverse events reported at any point tracking back to the baseline treatment date. The observed clinical benefits were relatively stable at 6, 12, and 24 months.

Conclusions: Enteryx effectiveness remains durable at 24 months and appears consistent with the success rates evident at 6 and 12 months. The extended safety data remains excellent. This extended follow-up shows no significant waning of benefit or new safety concerns. The preliminary support for the short term (6 and 12 month) efficacy and safety of Enteryx is supported by this longer term follow-up study.

905
ENDOSCOPIC IMPLANTATION OF ENTERYX® FOR THE TREATMENT OF GERD: A RANDOMIZED CONTROLLED TRIAL

Jacques Deviere, M.D., Guido Costamagna, M.D.*, Horst Neuhaus, M.D., Winfried Voderholzer, M.D., Hubert Louis, M.D., Andrea Tringali, M.D., Brigitte Schumacher, M.D. Erasme University, Brussels, Belgium; Rome, Italy; Medizinische Klinik, Düsseldorf and Humboldt University, Berlin, Germany.

Purpose: To evaluate the safety and effectiveness of the Enteryx® procedure for the treatment of GERD symptoms in a randomized, controlled study of patients responding to and requiring daily PPIs.

Methods: Multi-center, randomized, controlled trial of Enteryx with “crossover” option starting at 3 months post procedure. Sixty-four proton pump inhibitor (PPI)-dependent patients with well established GERD symptoms of heartburn and regurgitation were randomized using individually sealed envelopes into 2 groups of 32 patients. Control patients received an esophagogastroduodenoscopy (EGD) only. The primary endpoint was PPI usage at 3 months. Secondary endpoints included GERD health-related quality of life
(GERD-HRQL) symptom score, 24 hr pH-metry, and manometry. PPI wash-out occurred prior to randomization and at the 3 month unlubricating point. “Cross-over” qualification at 3 months was GERD-HRQL > 15 off-PPIs.

**Results:** Interim 3-month data were available for 84% (54/64) of randomized patients. Twenty-seven patients were randomly assigned to undergo the Enteryx procedure; 27 patients were randomly assigned to the control group. At 3 months, 17 (63%) patients in the Enteryx group demonstrated GERD symptom relief, as measured by a GERD-HRQL score ≤ 15 off-PPIs, compared to 22% in control arm. The median improvement in GERD symptom scores from baseline was 15 (range 7 to 23) in the Enteryx group compared to 4 (range -4 to 13) in the control group. Seventeen (63%) Enteryx patients had completely eliminated daily use of PPIs compared to 33% in the control group.

**Conclusions:** At 3 months, patients in the Enteryx group appear more likely to achieve GERD symptom relief and completely eliminate daily PPI use compared to patients in the control group. These data are strongly supportive that the effectiveness of Enteryx in the unblinded prospective trials reported to date is not a “placebo response” at 3 months follow-up.

906

ELEVATED LEVEL OF NERVOSITY AND EMOTIONAL STRESS BUT NOT PAIN DURING COLONOSCOPY CORRELATE WITH PATIENTS’ DISSATISFACTION

Houssam E. Mardini, M.D., Luis R. Pena, M.D.*, Nicholas Nickl, M.D.
University of Kentucky College of Medicine, Lexington, Kentucky.

**Purpose:** Despite conscious sedation, up to 25% of pts may be dissatisfied with sedation during colonoscopy, leading to poor tolerance or procedure avoidance. We sought to assess whether aversive endoscopic experience/dissatisfaction is due primarily to physical factors such as discomfort and pain or to emotional and mental stressors such as nervousness and expectations or both during routine outpatient colonoscopy.

**Methods:** Two questionnaires were given to pts pre- and post-procedure respectively. The first questionnaire elicited demographics, education level, prior endoscopic experience, history of drugs or alcohol use, and levels of anxiety and nervousness before the test. After endoscopy, procedure tolerance and willingness to repeat the examination were determined. The primary outcome of adverse endoscopic experience was defined as a score of 5 or greater on the post-procedure overall level of satisfaction (0 = completely satisfied; 10 completely dissatisfied) or unwillingness to repeat the endoscopy. Except for willingness to repeat procedure, Likert scales (0-10) were used to measure different variables.

**Results:** 113 unsampled pts who underwent colonoscopy alone (100) or in combination with EGD (13) in our unit between March and October 2003 were surveyed. Among the 113 pts (43 male and 70 female) 10 (9%) reported an aversive endoscopic experience. Pts who had aversive experience reported higher levels of nervousness and perceived level of suffering compared to those who did not (mean scores 3.3 & 3.1 vs 1.6 & 1.4; p = 0.011 & 0.018 respectively). Furthermore, pts who had aversive experience reported lower scores of “how much their emotional and physical needs during procedure were met” (mean score 5.4 and 6.3 vs 9.2 & 9.3; p = 0.009 & 0.001 respectively). The 2 groups were similar in terms of pain scores during the procedure (2.5 vs 1.8), procedure duration (23.1 vs 23 min), fentanyl doses (160 vs 168 mcg) or midazolam doses (6 mg both).

**Conclusions:** Aversive experience during colonoscopy is due mainly to emotional stressors such as nervousness, perceived suffering during procedure and unmet emotional and physical needs. Pain is not a major determinant of aversive experience. Measures to minimize nervousness before and during procedure (such as emotional support and the use of anxiolytics rather than narcotics) should be considered.

907

PRIOR AVERSIVE ENDOSCOPIC EXPERIENCE DOES NOT INFLUENCE FUTURE ENDOSCOPES

Houssam E. Mardini, M.D., Luis R. Pena, M.D.*, Nicholas Nickl, M.D.
University of Kentucky College of Medicine, Lexington, Kentucky.

**Purpose:** Despite conscious sedation, up to 25% of patients may be dissatisfied and report aversive experience with colonoscopy. Our aim was to determine if prior aversive endoscopic experience influences future endoscopies and leads to poorer tolerance.

**Methods:** Two questionnaires were given to patients pre- and post-procedure respectively. The first questionnaire elicited demographics, education level, prior endoscopic experience, history of drugs or alcohol use, and levels of anxiety and nervousness before the test. After endoscopy, procedure tolerance and willingness to repeat the examination were determined. The primary outcome of adverse endoscopic experience was defined as a score of 5 or greater on the post-procedure overall level of satisfaction (0 = completely satisfied; 10 completely dissatisfied) or unwillingness to repeat the endoscopy. Except for willingness to repeat procedure, Likert scales (0-10) were used to measure different variables. Chi-square or Fisher’s exact test and two independent samples t-test were used to assess differences between groups.

**Results:** 148 unsampled subjects completed the study. 13 pts (9%) had an adverse endoscopic experience. 34 pts (23%) reported prior aversive endoscopic experience (group 1) while 114 (group 2) did not. The 2 groups had similar characteristics in terms of gender (females 67% vs 62%), age (< 60 years 77% vs 83%), pain as procedure indication (15% vs 24%), mean pre-procedure levels of nervousness (3.2 vs 3.5), expected level of pain (2.7 vs 2.3), expected level of suffering (2.9 vs 2.2), procedure duration (20 vs 19 minutes), and conscious sedation medications used (midazolam: 5.6 vs 5.7 mg; fentanyl 160 vs 155 mcg). Aversive experience was reported in 4 pts (12%) of group 1 and 9 pts (8%) of group 2 (p = 0.48). Mean satisfaction scores and rates of willingness to repeat procedure were similar in both groups (1.4 & 91% in group 1 vs 1.1 and 97% in group 2; p = 0.53 & 0.11 respectively).

**Conclusions:** Prior aversive endoscopic experience does not influence future endoscopic experience and does not preclude satisfaction with future procedures.

908

ENDOSCOPIC SEDATION: A SURVEY OF PATIENT ATTITUDES AND EXPECTATIONS DURING COLONOSCOPY


**Purpose:** Compared to the combination of a narcotic and benzodiazepine, the use of propofol for endoscopic sedation is associated with faster induction, reduced procedural awareness, and shortened recovery. In order to assess the potential impact of propofol on patient satisfaction, we surveyed patients about their expectations and attitudes toward colonoscopy.

**Methods:** Five hundred consecutive patients undergoing routine colonoscopy were prospectively requested to anonymously complete a questionnaire. Patient demographics as well as questions pertaining to expectations and attitudes about colonoscopy and sedation were included in the survey.

**Results:** The response rate for survey completion was 482/500 (96.4%). The mean age of respondents was 58.7 yrs. More than 95% of patients indicated that the exam should be safe and thorough, 60% indicated a desire for a brief procedure. Responses to questions pertaining to sedation and recovery are shown in Table. A preference not to feel any discomfort was reported by 85%, and 60% wanted to be asleep/twilight during the examination. Rapid recovery was important to 71% of respondents, and 48% indicated the importance of resuming work/usual activities quickly. A painless procedure was more important to female than male respondents (p = 0.04). Patient age, prior experience with colonoscopy, level of education, and procedural anxiety did not affect patient responses to questions concerning sedation or recovery.

**Conclusions:** The ideal agent for sedation during colonoscopy should provide patients with (1) little or no procedural discomfort, (2) twilight/asleep during the procedure, (3) brief recovery time, and (4) quick return to work/normal activities.
THE APPLICATION OF COMPUTER SIMULATION IN LEARNING COLONOSCOPY TECHNIQUES
Richard M. Warneke, M.D., Karen Szauter, M.D.* University of Texas Medical Branch, Galveston, Texas.

Purpose: There has been a trend in medical education toward development of procedural skills through sophisticated computer-based models prior to interaction with patients. The validity of such models, however, compared to bedside training is not fully understood. The aim of this validation study was to determine if performance on a computer-based colonoscopy simulator (CBCS) appropriately differentiated skill levels based on actual colonoscopy experience.

Methods: GI fellows, GI faculty, and Internal Medicine (IM) faculty from our institution were recruited between July 2003 and January 2004. A CBCS (AccuTouch Endoscopy Simulator, Immersion Medical) requiring both technical and interpretive skill was used for the study. Each subject performed one case to familiarize himself with the simulator equipment, followed by three cases for the study. Parameters measured included total procedure time, insertion time, withdrawal time, percent of mucosa visualized, patient discomfort, volume of air insufflated, and identification of luminal pathology. Comparisons were performed between the groups and the least and most experienced gastroenterologist (first year fellows vs. GI faculty) using the Kruskal-Wallis one-way (ANOVA) followed by the Wilcoxon signed rank test for pairwise comparisons.

Results: Performance parameters of fellows (n = 11), GI faculty (n = 10), and IM faculty (n = 10) were reviewed. Results from one case were excluded because of complications that resulted in early termination of the case for many subjects. Significant differences were seen when comparing IM faculty to GI fellows and GI faculty for total procedure time (p = 0.003; p < 0.001), insertion time (p < 0.001; p < 0.001). When comparing the least and most experienced gastroenterologist, differences were noted for total procedure time (p = 0.003), withdrawal time (p = 0.002), patient discomfort (p = 0.03), and volume of air insufflated (p = 0.02).

Conclusions: The CBCS performance differences were most apparent when comparing physicians with little or no endoscopic experience to those with intermediate to great experience levels. The CBCS did not differentiate between upper level GI fellows and GI faculty. Such differences suggest that the basic technical skills of endoscopy are employed while using the simulator. If additional validation studies support this finding, the simulator will have a role for learning skills required for technical competence, enabling trainees to acquire procedural skills prior to performing colonoscopy on actual patients.

EASE OF INSERTION AND SAFETY OF A SHAPE LOCKING DEVICE FOR COLONOSCOPY

911 RELATIONSHIP OF TIME BY CAPSULE ENDOSCOPY TO DEPTH OF INSERTION OF PUSH ENTEROSCOPY
Rita M. Sachdev, M.D., David R. Cove, M.D.* Caritas St Elizabeth’s Medical Center, Brighton, Massachusetts.

Purpose: To establish a relationship between the time interval from the pylorus during capsule endoscopy (CE) and the ability to reach a bleeding site with push enteroscopy (PE). There is no published data in the literature on this relationship to date.

Methods: This was a retrospective chart review of patients who underwent both PE (Olympus SIF-100 without overtube) and video capsule endoscopy from 8/2001 to 03/2004 at Caritas St Elizabeth’s Medical Center for obscure gastrointestinal bleeding. [n = 25]. Patients with evidence of active bleeding or melena on CE who subsequently had PE were included [n = 11].

Results: Mean age was 74 years [Range 59-82 years]. 5/11 patients were female. 8 of 11 patients (See table) had an active bleeding site localized by PE. Mean time to the site of bleeding was 5 minutes 49 seconds by CE. [Range: 2 seconds to 22 minutes]. Mean distance from incisors was 126 cm. Hemostasis was achieved in all 8 patients. 3 of 11 patients had no active bleeding noted on PE. The scope was inserted to 105, 130 and 150 cm from the incisors respectively. Mean time to bleeding site by CE was 37 minutes [Range: 9-81 minutes].

Conclusions: The most distal active bleeding site reached by PE was 22 minutes from the pylorus by CE.
Results

<table>
<thead>
<tr>
<th>ID</th>
<th>CE Finding</th>
<th>Time from pylorus on CE (min)</th>
<th>Distance of lesion/distal most point reached from incisor (cm) on PE</th>
<th>PE finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Active Bleed</td>
<td>00.00:02</td>
<td>105 (jejunal AVM)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Active Bleed</td>
<td>00.00:37</td>
<td>125 (jejunal punctate bleeding site)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Active Bleed</td>
<td>00.01:56</td>
<td>100 (jejunal punctate bleeding site)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bleed</td>
<td>00.03:28</td>
<td>120 (jejunal punctate bleeding site)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Bleed</td>
<td>00.01:00</td>
<td>120 (jejunal punctate bleeding site)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Clot</td>
<td>02.00:20</td>
<td>170 (3 non bleeding spots cauterized)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Melena</td>
<td>00.05:53</td>
<td>150 (Non bleeding mid jejunal AVM)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Active bleed with proximal AVM</td>
<td>00.11:33</td>
<td>120 (Angiodysplasia)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Active bleed</td>
<td>00.09:00</td>
<td>105 (Normal)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Active bleed</td>
<td>01.21:00</td>
<td>130 (Normal)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Melena</td>
<td>01.21:00</td>
<td>150 (Normal)</td>
<td></td>
</tr>
</tbody>
</table>

912

A PROSPECTIVE STUDY OF QUALITY OF PREPARATION FOR COLONOSCOPY IN A LARGE TERTIARY REFERRAL CENTER

Purpose: Although we acknowledge that poor quality of preparation (poor prep) interferes with the quality of colonoscopic examination, there is very little information in the published literature on the incidence of poor prep and the factors influencing it in clinical practice.

Aim: To report the results of a one year prospective study on the incidence of poor prep and the factors influencing it at our center.

Methods: Based on the lecture of Peter Cotton at the NIH ERCP conference in 2002, we have developed an “Endoscopic QA Sheet” in February 2002 to monitor the quality of care provided at our center for every single patient undergoing endoscopy. Using the “Endoscopy QA Sheet,” data from every single patient scheduled to undergo a procedure was entered into a computer database daily. After obtaining approval from the IRB for this study, data from January through December 2003 was reviewed to assess the incidence of poor prep and the factors influencing it.

Statistics: Chi-square was used for comparison.

Results: Between January & December 2003, 3923 colonoscopies were performed at our center (mean age: 58.9 ± 13.3 years, Males: females: 2 : 1.9).

I. Incidence of Poor Quality of Prep: 9%.

II. Factors Influencing the incidence of “Poor Quality Prep”:

i. Seasonal variation: 1st quarter of the year: 12%, 2nd quarter: 12%, 3rd quarter: 7%, 4th quarter: 8%.

ii. Diurnal variation: Colonoscopy schedule before Noon: 9%, & colonoscopy scheduled in the afternoon: 10%.

iii. Effect of Age: < 60 years: 10% and ≥60 years: 9%.

iv. Effect of Gender: Males: 11%, Females: 8% (p < 0.01).

v. Effect of Origin of Patients: Inpatients: 21%, Inmates: 17%, Outpatients: 7% (p < 0.001).

vi. Effect of type, dosing, and timing of purgative intake: PM Phosphosoda: 6%, Split dose (PM & AM) Phosphosoda: 7%, and PM Golytely: 18% (p < 0.001).

III. Findings on Repeat Colonoscopy: Cancer 1.5%, Advanced adenoma 2.1%, Tubular adenoma: 15%.

Conclusions: The incidence of poor prep for colonoscopy is worse in inpatients (21%) and inmates (17%) undergoing colonoscopy, which would translate into a higher number of repeat procedures, increased morbidity from repeat preparation and procedures, and higher cost of care from prolonged hospital stay. Measures to decrease the poor prep in hospitalized patients i.e., development of a dedicated colon prep protocol for hospitalized patients and education of the hospital nurses in assessing the quality of stool output before sending the patients to endoscopy are being investigated at our center.

913

EJECTION BIOPSY FORCERCES: TWO NOVEL FORCECRES WITH DISTAL SPECIMEN EJECTION MECHANISMS
Naomi L. Nakao, M.D., F.A.C.G.*

Purpose: Unnecessary exposure to sharps must be avoided at all costs. Instruments for IV catheter introduction and other medical devices have been designed accordingly in order to protect the staff from transmission of infection due to needle-sticks. When an endoscopic biopsy is performed, it is often necessary for the assistant to use a sharp in order to extricate the specimen. Biopsies obtained to rule out H. Pylori are placed on a slide for testing at the bedside, and to that end sharps are used even more often. In some centers needles have been replaced by toothpicks, providing but a crude solution. The problem was brought to our attention when one of the nurses at our institution was injured by a needle while trying to extricate a specimen of an AIDS/HCV patient. Shortly thereafter, Lindsay Sattler, ex-president of the SGNA related a similar experience in an article published in the SGNA Journal.

Methods: These events prompted the creation of two types of ejection biopsy forceps with and without spike, invented and designed by Naomi Nakao and manufactured by MedSource Technologies. The non-spike ejcctor is designed whereby the tissue sample ejecting means comprises a small prong extension on the cup hinge. Located outside of, and displaced from the cups while they are closed to sever the tissue sample, the prongs pivotally move to pass through openings in the central section in the cups to contact and dislodge the specimen when the cups are moved to a fully opened position. The sample ejecting mechanism is remotely activated by control means in the handle assembly. The spike ejector comprises a movable needle attached to a wire linking member and thereby to a control handle located at the proximal end of the forceps. As the wire is withdrawn proximally, the needle is likewise withdrawn to bring the specimen/s into contact with the contacting surface, thereby causing specimen ejection.

Results: We compared our devices to the Olympus forceps during 35 procedures and a total of 50 biopsies and have found specimen size, maneuverability and function to be comparable. While the Olympus forceps required 3-5 shafts in the preservative, the use of a sharp in 11% of the non-spike forceps, and 38% of the spiked forceps, our devices required 1-2 shafts, and no need for sharps to extricate the specimen.

Conclusions: A biopsy forceps designed to avoid the use of sharps should be a requirement to the manufacturers of these devices. Our designs addressing this requirement are simple, functional, do not add cost to manufacturing, and have proved efficacious.

914

MULTI-SIZED SNARE: A NOVEL DEVCIE FOR HOT OR COLD POLYPECTOMY SUITEABLE FOR RESSECTION OF SMALL, MEDIUM OR LARGE MUCOSAL LESIONS
Naomi L. Nakao, M.D., F.A.C.G.*

Purpose: The wide variation of polyp sizes and configurations necessitates that differently sized snares be available for each procedure. The Multi-sized snare, invented and designed by Naomi Nakao has been conceived in order to provide a snare that may be effectively used regardless lesion size.

Methods: The snare loop is fashioned whereby the two loop sections possess two inwardly facing notches. The notches, disposed 30-40% of the way from the proximal to the distal end of the loop extend towards one another while the loop lies in a single plane, the notches being located in that plane. The notches have a size and geometry adapted to releasably catch on the mouth rim of the catheter, thereby preventing the loop from sliding uncontrollably either in an inward or outward direction. This catching facilitates an effective use of the distal end portion of the snare as a separate auxiliary loop. The geometry of the notches is defined by the respective subtended angles: each notch takes on a substantially V shape with a pair of linear segments connected to one another by an arcuate bight, the segments being preferably disposed at an angle of 90-110° relative to one another. It is through this disposition that the
small auxiliary loop is formed. The snare may be formed by a braided wire or by a 0.006 to 0.008" in diameter spring biased monofilament stainless steal wire suitable for use during cold polypectomy. When addressing a larger polyp, the entire loop is ejected and polypectomy is performed as usual. The auxiliary loop is used for the diminutive polyp whereby a proximal portion of the main loop is disposed in a collapsed configuration inside the catheter. Upon encirclement of a lesion the auxiliary loop is drawn into the catheter over the “energy hump” presented by the notches and resection ensues.

Results: We used the device in 24 patients and a total of 33 polypectomies, 26 at 1cm in diameter or smaller and 7 at 1.5-2.8cm in diameter. All 26 diminutive polyps were successfully removed by the cold method using the auxiliary loop. All of the larger polyps were successfully resected using cautery, with no resultant bleeding or other complications.

Conclusions: In our experience the multi-sized snare device proved to be safe and efficacious in 24 patients during cold and hot mucosal resection. Further studies are necessary to confirm our results.

915
ENDOSCOPIC SUTURING OF THE DISTAL ESOPHAGUS IN A PORCINE MODEL
Todd P. Jessup, M.D., Wahid Wassef, M.D.*. UMass Memorial Medical Center, Worcester, Massachusetts.

Purpose: Gastroesophageal reflux disease (GERD) is a significant medical problem. Medical GERD treatment often requires expensive chronic proton pump inhibitor therapy, and surgery carries the risks of general anesthesia and post-operative side effects. The goal of this study was to assess the safety and feasibility of endoscopic suturing of the distal esophagus in a porcine model using the Endoscopic Suturing Device (ESD) by Wilson-Cook.

Methods: Seven female pigs were fasted for 48 hours prior to having an upper endoscopy on day 0. Using the ESD, two to three sutures were endoscopically placed approximately 5cm proximal to the GE junction in each animal. The animals were then recovered, and their activity and behavior was monitored for six days post-procedure with weights on day+2, day+4, and day+6. The animals were sacrificed on day+6, and the suture sites were inspected for any gross evidence of inflammation, abscess, or hemorrhage.

Results: There were no significant complications, and none of the animals had any obvious difficulty eating post-procedure. Two animals had transient lethargy. There was no statistically significant difference between the mean weights of the animals in kg on day+2 (48.0), day+4 (48.7), and day+6 (48.3) compared to baseline on day 0 (47.9) with P-values of 0.93, 0.48, and 0.61, respectively. Inspection of the suture sites at the time of sacrifice revealed that 9 of 16 sutures (56%) remained in place and did not reveal any gross evidence of inflammation, abscess, or hemorrhage.

Conclusions: Endoscopic suturing of the distal esophagus using the ESD from Wilson-Cook seems to be safe and feasible. More experience with the device will likely result in higher rates of suture retention. Further animal experience with the Wilson-Cook seems to be safe and feasible. More experience with the device will likely result in higher rates of suture retention. Further animal

916
NURSE ADMINISTERED PROPOFOL SEDATION: SAFETY RECORD AMONG INDIVIDUAL NURSES AND PHYSICIANS IN 3 CENTERS
Douglas K. Rex, M.D., F.A.C.G.*, Ludwig T. Heuss, M.D., John A. Walker, M.D. Indiana University Medical Center; Indianapolis, Indiana; University Hospital, Basel, Basel-Stadt, Switzerland and Gastroenterology Consolidated PC, Medford, Oregon.

Purpose: Nurse administered propofol sedation (NAPS) is currently controversial with regard to safety. Although NAPS has been safe in the available published experience there is concern that dissemination of the approach will be accompanied by serious or fatal events. We sought to examine the safety record of individual nurses and supervising endoscopists to see how often there are outlier performances with regard to safety.

Methods: The primary endpoint was cases requiring assisted ventilation. Databases were created prospectively at 3 endoscopy centers employing NAPS. At 2 centers these included all cases from the inception of the program. At 1 center cases were recorded after an initial 6000 cases were performed in which there no events.

Results: The total number of cases at the 3 centers was 28,697 and the number of events was 42 (0.14%). Table 1 shows the breakdown by nurses and doctors at the 3 sites. There was no single physician or nurse at any of the sites whose event rate differed from the overall rate for the center. There were no events requiring endotracheal intubation or resulting in death or neurologic sequelae. At 2 centers the event rate was lower for colonoscopy compared to EGD (Center 1:0.08% vs 0.24%; Center 3: 0.04% vs 0.5%)

Conclusions: NAPS was safe in over 34,000 patients. Among 38 nurses and 35 MDs trained in NAPS there were no outliers with regard to safety, suggesting that large numbers of nurses and MDs could be trained to perform NAPS safely.

917
EVALUATION OF THE IMPACT OF ENDOSCOPIC ULTRASOUND ON CLINICAL DECISION MAKING IN PATIENT'S WITH PANCREATICO-BILIARY DISORDERS
T. G. Van Dinter, M.D., S. Faruqi, M.D., G. S. Raju, M.D., P. J. Pasricha, M.D., W. H. Nealon, M.D., M. S. Bhutani, M.D., F.A.C.G.*. University of Texas Medical Branch, Galveston, Texas.

Purpose: This study assesses the impact of endoscopic ultrasound (EUS) and endoscopic ultrasound guided fine needle aspiration (EUS-FNA) on clinical decision making in patients with pancreaticobiliary disorders.

Methods: Forty-six patients with pancreaticobiliary disorders were referred for EUS evaluation. The clinical course of each patient was analyzed before and after EUS. The primary outcome in this study was the need for ERCP before and after EUS.

Results: The most common indication for EUS was an abnormal imaging study (CT or MRI) in 85% (39/46) of patients. Thirty three percent (15/46) had EUS-guided fine needle aspiration (EUS-FNA). The final diagnosis in patients who underwent EUS-FNA included malignancies in 40% (6/15) of patients, and suspicious findings in 7% (3/15) of patients. Prior to EUS, 87% (42/46) of patients did not have ERCP, and following EUS, 83% (38/46) of patients did not require ERCP. Four percent (2/46) of patients had ERCP both before and after EUS. When ERCP was performed following EUS based on EUS and EUS-FNA results, ERCP was only performed for therapeutic reasons, rather than for diagnostic purposes.

Conclusions: In patients with pancreaticobiliary disorders, performing EUS with or without EUS-FNA can obviate the need for ERCP in the majority of patients (83%). When ERCP is attempted after EUS, it is likely to be for therapy (e.g. stent placement or stone extraction) rather than for diagnosis.

918
CHANGES OF PEPTIC ULCER AND COLORECTAL CANCER IN ENDOSCOPIC PRACTICE 2000-2003
Joel Auslander, M.D., David A. Lieberman, M.D., Amnon Sonnenberg, M.D.*. Department of Veterans Affairs, Portland, Oregon.

Purpose: The occurrence of various gastrointestinal diseases appears to be influenced by time trends and seasonal variations. The purpose of the present analysis was to assess 1) time trends in the occurrence of peptic ulcer and colorectal cancer; 2) seasonal variations in the diagnosis of peptic ulcer or colorectal cancer; 3) relations between seasonal disease variation and an
underlying variation in the performance of endoscopic procedures, such as esophagogastroduodenoscopy (EGD) and colonoscopy.

Methods: The Clinical Outcomes Research Initiative (CORI) uses a computerized endoscopic report generator to collect endoscopic data from 78 diverse practice sites throughout the United States. We utilized data entered into the CORI database between January 2000 and December 2003. The data comprised the date-specific frequency of colonoscopy and EGD, as well as the endoscopic diagnoses of gastric ulcer, duodenal ulcer, and colorectal cancer. Time trends were analyzed by non-linear regression, autocorrelation, and a 3-year moving average. Two numbers or frequency rates were considered statistically significant if their corresponding 95% confidence intervals did not overlap.

Results: Between 1/2000 and 12/2003 the number of new EGDs per month submitted to the CORI database increased from 2433 (2337-2530) to 6197 (6043-6352). During the same time period the number colonoscopies increased from 2908 (2803-3014) to 11779 (11566-11991). The time trends of both procedures were characterized by smooth curves without any seasonal or other monthly variations. The rate of duodenal ulcer fell from 21.2 (15.6-27.5) to 19.0 (15.8-22.8) per 1000 EGDs. The rate of gastric ulcer fell from 42.6 (33.3-50.1) to 33.4 (29.5-38.7) per 1000 EGDs. The rate of colorectal cancer fell from 109.9 (98.3-122.8) to 72.2 (67.4-77.2) per 1000 colonoscopies. During the 4-year time period, the frequency of endoscopic diagnoses of peptic ulcer or colorectal cancer did not reveal a seasonal variation or any other cyclic patterns.

Conclusions: The decline in the diagnostic rate of peptic ulcer from 2000 to 2003 may reflect its continued decline in the general population. The decline in the diagnostic rate of colorectal cancer may reflect a relative increase in the number of screening colonoscopies as compared to diagnostic colonoscopies in symptomatic patients. There was no observed seasonal variation in the prevalence of either peptic ulcer or colorectal cancer diagnoses at endoscopy.

ENDOSCOPIC RETRACTOR: A NOVEL NEW DEVICE FOR ENHANCEMENT OF ENDOSCOPIC VISUALIZATION AND INTERVENTION
Naomi L. Nakao, M.D., F.A.C.G.∗.

Purpose: The retractor is an indispensable surgical tool without which no surgeon would attempt to perform an operation that requires tissue retraction for full visualization of the surgical field. No such device exists for the gastrointestinal endoscopist faced with the challenge of treating endoluminal lesions. Acutely bleeding ulcers with pumping visible vessels, large sessile polyps sprawled along the thin colon wall, pedunculated polyps endowed with thick vascular stalks, Mallory Weiss tears, or the flat and difficult Barrett’s with carcinoma are examples. Then, there are those lesions that the endoscopist of the future will treat as interventional endoscopy continues to evolve. These include suture line disruption following surgical anastomosis, closure of enteric fistulae, colonic perforations and endoscopic transmural intra-abdominal surgery. At present, the only means to enhance visualization of a lesion is air insufflation, providing only a fleeting “retraction” that is often insufficient for providing proper visualization. Lesions that are hidden behind a fold or a bend in the intestine may be further obscured by a contraction that frequently occurs just at the point of intervention, rendering the operative field blurry at best.

Methods: We describe here our first experience using an endoscopic retractor on the in-vitro porcine model. The endoscopic retractor, invented and designed by Naomi Nakao and manufactured by Advanced Polymers, consists of a 0.5mm in diameter PET balloon fashioned into two delicate circular bodies vertically interconnected by three legs. When inflated, it transforms into a rigid, transparent “cage,” taking on the shape of an internal segment of colon or esophagus.

Results: A fresh porcine colon into which several polyps were sewn was placed in an Endo X Trainer model (Medical Innovations). The retractor, pre-loaded in a collapsed form into a Teflon catheter was introduced through the working channel of the double lumen Pentax colonoscope. Upon reaching the surgical site it was inflated, opening the colonic lumen and fully revealing the lesion. The polypectomy snare was then introduced through the second working channel and the polyp was removed. Once completed, the retractor was deflated and removed along with the endoscope.

Conclusions: Animal studies are required to prove efficacy before clinical application, but from our experience it appears that the endoscopic retractor may prove useful during endoluminal surgery.

TREATMENT OF AN ILEOCUTANEOUS FISTULA BY PLACEMENT OF AN ENDOLUMINAL STENT
Joseph A. Williams, M.D., Kevin Franklin, M.D.∗, Kevin Watkins, M.D., Brooke Army Medical Center, Fort Sam Houston and Wilford Hall Medical Center, Lackland Air Force Base, Texas.

Purpose: Over the last several years, endoluminal enteral stenting with self expanding metallic stents (SEMS) has become common practice for the palliation of non-operable malignant bowel obstruction, as well as a bridge to surgery for both malignant and benign bowel obstruction. However, use for benign indications remains controversial. We present the first case of enteral stenting in the management of a small bowel enterocutaneous fistula.

Methods: The patient is a 66 year old male who presented with a recurrent pelvic liposarcoma 11 years after initial resection. He underwent resection of a left retroperitoneal tumor with en-block left hemicolectomy. One week
later, the patient was noted to have feculent wound drainage. He returned to the operating room where formation of a diverting loop ileostomy was performed. Subsequently he developed a high output ileocolonic fistula 8 cm proximal to the ileostomy, which was draining into an open abdominal wound. The fistula failed to heal despite conservative measures. Accordingly, fecal diversion was completed using a covered SEMS placed through the ileostomy and overlapping the fistula.

**Results:** The patient subsequently had minimal fistula drainage into his wound and tolerated a low residue diet. The wound was easily managed as an outpatient, and the stent was successfully removed at the time of ileostomy revision.

Enterocutaneous fistula formation is a complication seen with intra-abdominal surgery and inflammation. This is further complicated when the fistula is located within a surgical wound. While many fistulas will heal with conservative measures, some will not. Although several different approaches to this dilemma have been reported, the use of SEMS for the treatment of enterocutaneous fistula has not been reported. This case is unique in that it is the first to describe the use of enteral stenting to treat an enterocutaneous fistula and the first to describe placement of a SEMS within the ileum.

**Conclusions:** The potential uses of enteral stents continue to expand. This case demonstrates that stenting is a possible treatment option, when technically feasible, for enterocutaneous fistulas. Further investigation is warranted.

---

**COMBINED CAUTERY AND RETRIEVAL SNARE FOR GASTROINTESTINAL POLYPECTOMY**

*Naoi N. Nakao, M.D., F.A.C.G.*

**Purpose:** Despite the currently available methods for specimen retrieval, the non-retrieval rate of colonoscopically resected polyps is reported at 5-16%. This problem is magnified by a further percentage of polyps that are harvested only after an arduous search, often resulting in a fragmented and distorted specimen. The various devices available for retrieval such as grasping forceps, nets and suction traps are not always adequate to recover a carefully preserved specimen for proper pathologic evaluation.

**Methods:** We describe here our experience using the cautery retrieval device invented and designed by Naomi Nakao. The instrument comprises an elongate electrically conductive wire and an inner and outer loop both connected to the distal end of the wire, housed inside a Teflon catheter with a proximal handle assembly. The inner and outer loops are substantially co-planar with the proximal aspect of the netting is slidably attached to the larger outer loop, which is covered by an insulating Teflon heat-shrink. The proximal aspect of the netting is tethered with a fine suture to the catheter’s interior distal end, enabling the net to slide up and down the snare to avoid crushing of the specimen. The smaller inner loop constitutes the cautery snare. Upon visualization, the polyp is snared by the inner loop while the outer naturally follows. As cautery is activated and the inner cutting loop is retracted into the catheter, the outer loop with the netting closes upon the specimen. Because the loop with net is larger than the cutting wire it does not retract completely into the catheter, thus gently nesting the retrieved specimen. The endoscope is withdrawn with specimen and surrounding colon in full view. Once the specimen has been deposited in the preservative solution, the device may be re-used in the same patient for additional polypectomies.

**Results:** We have used the cautery retrieval snare for 48 polypectomies, with polyp sizes ranging from 1.8 to 2.6 cm in diameter. 100% of the specimens were completely retrieved and no complications occurred.

**Conclusions:** The cautery retrieval device should be reserved only for the polyp large enough to merit removal of the entire colonoscope in order to preserve the specimen in its entirety and note its location in the colon. It should not be used for multiple polypectomies during the same intubation, nor is it necessary for the diminutive polyp. Our results demonstrate the safety and efficacy of this device. Further studies are necessary to confirm our results and point out potential shortcomings.

---

**ENDOSCOPIC ULTRASOUND FEATURES OF RECURRENT TRANSITIONAL CELL BLADDER CANCER METASTATIC TO THE GI TRACT**

*Tony E. Yacoub, M.D., Michael J. Levy, M.D.*, Maurits J. Wiersma, M.D.

**Mayo Clinic, Rochester, Minnesota and GI Consultants, Inc., Forte Wayne, Indiana.**

**Purpose:** Recurrent transitional cell bladder cancer (TCBC) uncommonly metastasizes to the gastrointestinal tract. This is the first known report describing the endoscopic ultrasound (EUS) findings in three such patients. The aim of this study was to 1.) determine the number of patients referred for evaluation of a primary gastrointestinal (GI) luminal cancer in which EUS instead established the diagnosis of metastatic recurrent TCBC, and 2.) describe the EUS features of recurrent metastatic TCBC.

**Methods:** We conducted a retrospective review of patients referred for an EUS to evaluate a suspected primary GI luminal cancer from July 1st 2000 through April 1st 2004. In patients with an established diagnosis of recurrent metastatic TCBC, a retrospective review of EUS images was performed to identify characteristic features.

**Results:** Of 2216 patients undergoing EUS to evaluate a suspected primary GI luminal cancer, 3 (0.14%; 95% CI 0.02%-0.29%) patients (3 males; mean age 67 years, range 54-73 years) were found instead to have recurrent metastatic TCBC involving the duodenum (n = 1) and rectum (n = 2). Patients presented a mean of 33 months following diagnosis of the primary TCBC with change in bowel habits (n = 1) and symptoms of bowel obstruction (n = 2). In each patient initial endoscopy revealed circumferential luminal stenosis and mucosal erythema with normal mucosal biopsies. EUS demonstrated hypoechoic, symmetric, circumferential wall thickening, loss of deep wall layers, and pseudopodia-like extensions into the perointestinal tissues. In the two patients with rectal involvement, no evidence of direct infiltration from the bladder bed was seen. EUS FNA was diagnostic of metastatic TCBC in all patients.

**Conclusions:** While most cases of hypoechoic bowel wall thickening and stenosis result from a primary GI neoplasia, recurrent TCBC should be considered in persons with a history of such tumors. Establishing the correct diagnosis is important to allow proper selection of therapeutic interventions. Although firm EUS criteria of TCBC cannot be firmly established based on three patients, certain features may prove useful and EUS FNA can confirm the diagnosis.

---

**NURSE-ADMINISTERED PROPOFOL: A ONE YEAR COMPARISON OF RECOVERY TIME, COST AND PATIENT SATISFACTION COMPARED TO VERSED IN A COMMUNITY BASED SURGERY CENTER**


**Lowndes County Ambulatory Surgical Center, Valdosta, Georgia.**

**Purpose:** To identify the potential advantages or disadvantages to the use of propofol as an agent for conscious sedation during endoscopy.

**Methods:** From May of 2003 until May 2004 propofol was used as an agent for conscious sedation in a community based surgery center. This data was compared to May 2002 –May 2003 utilizing versed for conscious sedation. Patient populations were comparable in age, sex and procedures done. A 10% random chart audit was done to identify recovery time; cost and patient satisfaction were based on 1 year’s data.

**Results:** Recovery time was decreased by 14 minutes with versed averaging 64.9 minutes, propofol averaged 50.9 minutes. The cost of propofol was $104,379 versus $78,379 for versed. Patient satisfaction survey was similar 95.3% for versed and 95.1% for propofol.

**Conclusions:** Propofol has offered several advantages including improved recovery time. Patients have significant improvement in post procedure
memory when compared to versed. Physician satisfaction, which was not measured by this study, also favored propofol.

No improvement was seen in patient satisfaction surveys, but this may be due to the overall high satisfaction results for both years. There is a significant cost disadvantage to propofol, but this must be considered in light of improved recovery time, more efficient use of the surgical center, and physician satisfaction with improved sedation.

925

IS THERE A DIFFERENCE IN MOTILITY IN HOSPITALIZED PATIENTS AND OUTPATIENTS WITH CAPSULE ENDOSCOPY?

S. Devi Rampertab, M.D., Nakechand Pooran, M.D., Seth Gross, M.D., Gerard Mullin, M.D., Ira Schmelkin, M.D.*. North Shore University Hospital, Manhasset, New York.

Purpose: Capsule endoscopy is in its infancy and little data exists regarding gastrointestinal motility. Moreover, there is currently no information comparing transit times of hospitalized patients to outpatients. It is hypothesized that hospitalized patients have slower transit times due to decreased ambulation. The aim of our study was to determine if gastric emptying (GE) time, small bowel transit (SBT) time and probability of reaching the cecum differ between hospitalized patients and outpatients.

Methods: We retrospectively reviewed 30 capsule endoscopy reports of 28 hospitalized patients (12M, 16F) who underwent capsule endoscopy using the M2A capsule from 6/1/03-11/15/03 at North Shore University Hospital in New York. We also reviewed the capsule endoscopy reports of 79 patients (34M, 45F) presenting to a private gastroenterologist’s office in New York during this same time period. GE time (initial gastric image to the first small bowel image) and SBT time (initial small bowel image to the first cecal image) for each of the two groups were recorded. The number of studies allowing visualization of the cecum was noted in each group as well.

Results: The average age of the 34 hospitalized patients was 69.3 ± 14.7 years and that of the outpatients was 71.8 ± 11.4 years (p = 0.35). There were 36.6% males in the hospitalized group whereas the outpatient population was comprised of 43% males (p = 0.55). There was no statistical difference in GE time in hospitalized patients compared to outpatients (32.4 ± 36.7 min v 39.5 ± 35.3 min; p = 0.39). Likewise, SBT time did not differ between the two groups (258.2 ± 85.3 min in hospitalized patients v 224.7 ± 92.9 min in outpatients; p = 0.14). The percentage of studies in which the capsule reached the cecum was lower in hospitalized patients when compared to the outpatient group (60% v 88.6%; p = 0.001).

Conclusions: Our study shows that there is no statistical difference in GE time or SBT time in hospitalized patients when compared to outpatients. However, the capsule did not reach the cecum in 40% of hospitalized patients. Such data suggests that the addition of a promotility agent may be beneficial when performing capsule endoscopy in hospitalized patients.

Motility in Capsule Endoscopy in Hospitalized Patients v Outpatients

<table>
<thead>
<tr>
<th></th>
<th>Hospitalized Patients</th>
<th>Outpatients</th>
<th>’p’ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GE time (min)</td>
<td>32.4 ± 36.7</td>
<td>39.5 ± 35.3</td>
<td>0.39</td>
</tr>
<tr>
<td>SBT time (min)</td>
<td>258 ± 85.3</td>
<td>224.7 ± 92.9</td>
<td>0.14</td>
</tr>
<tr>
<td>Cecum reached (%)</td>
<td>60</td>
<td>88.6</td>
<td>0.001</td>
</tr>
</tbody>
</table>

926

LIESEGANG RINGS: ENDOSCOPIC ULTRASOUND APPEARANCE AND FINE NEEDLE ASPIRATION CYTOMORPHOLOGY

Tony E. Yasuf, M.D., Michael J. Levy, M.D.*. Mayo Clinic, Rochester, Minnesota.

Purpose: Liesegang rings (LRs) are rare, acellular, spherical to elongated, concentrically laminated ring-like structures ranging in size from 5-800 mi-

927

PROPOFOL/MEPERIDINE VERSUS MIDAZOLAM/MEPERIDINE A ONE YEAR COMPARISON IN A COMMUNITY BASED SURGERY CENTER


Purpose: To compare the safety of nurse-administered propofol/meperidine to midazolam/meperidine in a community based surgery center.

Methods: One calendar year of patients was administered either propofol alone or a combination of meperidine/propofol. This was compared to the previous year in which midazolam and midazolam/meperidine was used. Intensive training of both physicians and nurses was instituted prior to
928

VIBRATION ASSISTED NEEDLE ASPIRATION (VASNA), A NOVEL TECHNIQUE AUGMENTING ENDOSCOPIC ULTRASOUND GUIDED FINE NEEDLE ASPIRATION (EUS/FNA): IN VITRO STUDY

Vinod K. Parasher, M.D.* Peninsula Regional Medical Center, Salisbury, Maryland and Helen Graham Cancer Center, Christiana, Delaware.

Purpose: EUS/FNA has become valuable in the diagnosis of various malignancies. However, a satisfactory tissue acquisition remains problematic. Factors contributing to a lower yield include hard desmoplastic tumors (pancreatic and stromal cell tumor), number of passes, needle type, and lack of an on site cytopathologist. Therefore, techniques are needed to consistently obtain satisfactory tissue ideally requiring single pass and no onsite cytopathologist. As the process of FNA requires dislodging cells by the cutting action of the needle tip, conceivably, the tissues acquisition could be increased (more cells disrupted/dislodged) by mechanically vibrating the needle tip.

The purpose of this study was to observe whether rapid mechanical vibrations of the EUS/FNA needle tip could enhance tissue yield as defined by acquisition of sufficient cells to perform a satisfactory cell block.

Methods: A device was constructed which when attached to the handle of a standard EUS/FNA needle provides rapid high speed vibrations of the needle tip. Fresh swine liver (acquired within two hours of sacrifice) was used for the study purpose. FNA samples were acquired for 10 seconds by inserting a #22 gauge EUS/FNA needle (ECHO-TIP Wilson-Cook) in the swine liver in the following sequence: A) Manually by forward and backward movements (to and fro movements) as done during standard EUS/FNA), B) FNA by rapid vibration of the needle without to and fro movements, C) FNA by rapid vibration and to and fro movements. One pass was made for all the three variables. Cell blocks were prepared in a standard fashion and the adequacy was read by an experienced blinded cytopathologist.

Results: Satisfactory materials for cell block were obtained by methods B and C only and none by method A. No cell destruction was present and the quality of the specimen was excellent.

Conclusions: Vibration assisted needle aspiration (VASNA) significantly enhances tissue yield.

929

THE DAVE PROJECT (DIGITAL ATLAS OF VIDEO EDUCATION): A NEW INTERNET BASED DIGITAL VIDEO ATLAS FOR EDUCATIONAL PURPOSES

Brenna C. Bounds, M.D., William R. Brugge, M.D., Peter B. Kelsey, M.D.*. Massachusetts General Hospital, Boston, Massachusetts.

Purpose: Endoscopy is a visually oriented discipline. Video clips, by virtue of their dynamic nature, provide greater visual detail of gastrointestinal anatomy and pathology than static photographic images.

Methods: Endoscopic procedures (EGD, EUS, ERCP, DACP, enteroscopy, VCE, and colonoscopy) were digitally captured in real time, interpreted and correlated with corresponding pathology, radiology and surgery for each procedure. A clinical narrative with salient didactic points was dictated for each completed clip. The edited video endoscopic clips with audio (EVE-CAs) were rendered in MPEG-2 format and subsequently converted to RealMedia for on-demand viewing as streaming video via the internet. The user interface is server generated dynamic HTML pages, with a relational database system backend. The DAVE project is intuitively searchable by keyword, index or homunculus. A clinical highlights section features Grand Rounds, Clinical Journal Clubs, and Clinical Case Presentations from selected centers of excellence. Contributions have been received from scholars in Gastroenterology worldwide. A quickstart feature enables users to download the videos, JPEG images and PubMed search abstracts for use in lectures. Integrated links to a comprehensive textbook of gastroenterology complete the site.

Address: http://dave1.mgh.harvard.edu

Results: The DAVE project framework is complete. The editor interface for EVE-CA uploading and indexing is detailed, rapid, and easily modified. The user interface search function is intuitive and versatile. The internet interface is seamless and the video clip resolution is excellent.

Conclusions: The DAVE project represents the first internet based, fully digital, educational video atlas of gastroenterology which integrates multiple endoscopic imaging modalities with relevant surgical, pathologic, and radiologic data. While many excellent photographic atlases of endoscopic findings exist, the substitution of video clips for still images will provide greater educational benefit. Online submissions are anticipated to significantly augment the scale of the project. The DAVE project may represent an educational milestone for the dissemination of knowledge to the practicing physician, trainee, and student.

930

ANASTOMOTIC STRICTURES FOLLOWING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS FOR MORBID OBESITY - MANAGEMENT & GUIDELINES

David Gottein, M.D., Pavlos K. Papasavas, M.D., Daniel Gagne, M.D., Sarfraz Ahmad, M.D., Philip F Caushaj, M.D., F.A.C.G.* The Western Pennsylvania Hospital, Pittsburgh, Pennsylvania.

Purpose: Anastomotic stricture following LRYGBP presents with dysphagia, nausea and vomiting. Diagnosis is made by endoscopy and/or radiographic studies. Therapeutic options include endoscopic dilation and surgical revision. We propose clinical guidelines for managing gastrojejunal strictures following laparoscopic Roux-en-Y gastric bypass (LRYGBP).

Methods: Of 369 consecutive LRYGBP performed, 19 patients developed anastomotic stricture (5.1%). One additional patient was referred from another facility. Pneumatic balloons were used for initial dilation for all patients. Savary-Gilliard bougies were used for some of the subsequent dilations.

Results: Flexible endoscopy was diagnostic in all 20 patients allowing dilation in 18 (90%). Two patients did not undergo endoscopic dilation due to anastomotic obstruction and ulcer. The median time to stricture development was 32 days (range: 17-85). Most patients (78%) required >2 dilations. The complication rate was 1.6% (one case of microperforation). At a mean follow-up of 13.4 months, all patients were symptom-free. Post-LRYGBP gastrojejunalostomy strictures can be endoscopically graded as follows:

Grade I (Mild: allowing passage of a 10.5mm endoscope): usually managed by a single pneumatic dilation up to 18mm;
Grade II (Moderate: allowing passage of an 8.5mm pediatric endoscope): managed by pneumatic dilation up to 15mm and subsequent dilations;
Grade III (Severe: allowing passage of a guidewire): managed by initial dilation with pneumatic balloon dilators up to 10mm and subsequent dilations; Grade IV (Total/near-total obstruction): managed by surgical revision.

Conclusions: Gastrojejunalostomy stricture following LRYGBP is associated with substantial morbidity and patient dissatisfaction. We propose guidelines for grading and managing these strictures.
CAPSULE ENDOSCOPY: WHO IS QUALIFIED TO INTERPRET? AN INTEROBSERVER ANALYSIS OF 50 CAPSULE ENDOSCOPIES BY A FIRST-YEAR GASTROENTEROLOGY FELLOW, A SECOND-YEAR GASTROENTEROLOGY FELLOW AND A SENIOR ATTENDING GASTROENTEROLOGIST

Thomas L. Martin, D.O., Erin E. Cox, D.O., Hymie Kavin, M.D.*
Lutheran General Hospital, Park Ridge, Illinois.

Purpose: The aim of this study is to assess the interobserver variability in reporting capsule endoscopy (CE) findings by comparing three evaluators with different levels of experience in gastrointestinal endoscopy.

Methods: A first-year and second-year gastroenterology fellow were trained in the methodology of CE by a senior gastroenterologist (SG). The first-year fellow had completed 178 endoscopies and the second-year fellow had completed 697 endoscopies at the start of the study. The fellows independently recorded the findings of 50 consecutive CE which had been interpreted previously by the SG. Clinically relevant findings (CRF) used as descriptors were angiodysplasia, blood, erosion, ulcer, polyp proposing ileum, mass and stricture. The CRF and the time at which they were seen were recorded by each observer. The fellows were blinded to each other’s findings and to those of the SG.

Results: There were a total of 171 CRF from the 50 CE studies recorded by at least one of the three observers (mean 4.73 ± 2.17 CRF per CE). Some CE had no findings. Frequencies (%) were reported for agreement of a reported CRF but with a different descriptor (general), and if a CRF was reported with the same descriptor (specific).

Conclusions: The amount of prior endoscopic experience does not significantly affect the ability to identify gastric and small bowel pathology on CE. There is relative agreement in the ability to identify a CRF. However, there is less interobserver agreement in the specific type of CE. We report a lower interobserver agreement than similarly designed CE studies. This is the most comprehensive interobserver CE study to date.

Interobserver Agreement on CRF

<table>
<thead>
<tr>
<th>CRF</th>
<th>n = number of findings</th>
<th>CRF-General</th>
<th>CRF-Specific</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-year/Second-year</td>
<td>155</td>
<td>70 (45)</td>
<td>59 (38)</td>
<td>0.261</td>
</tr>
<tr>
<td>Second-year/SG</td>
<td>152</td>
<td>73 (48)</td>
<td>53 (35)</td>
<td>0.212</td>
</tr>
<tr>
<td>First-year/SG</td>
<td>124</td>
<td>56 (45)</td>
<td>42 (34)</td>
<td>0.168</td>
</tr>
<tr>
<td>Total findings</td>
<td>171</td>
<td>55 (32)</td>
<td>40 (23)</td>
<td></td>
</tr>
</tbody>
</table>

*Data where no findings were seen by either observer were excluded from the analysis

**Kappa coefficient is a measure of agreement ranging from 0 to 1, with 0 meaning no agreement and 1.0 meaning complete agreement.

ENDOSCOPIC ASSESSMENT OF GASTROJEJUNOSTOMY SIZE IN POST GASTRIC BYPASS RECIDIVISM

Darlene S. Negbenebor, M.D., Mitchell S. Roslin, M.D., Nicholas M. Gualtieri, M.D., Armand G. Cacciarelli, M.D., Thomas K. Haddad, M.D., Anthony A. Starpoli, M.D.*.
St. Vincents Catholic Medical Center-Manhattan and Lenox Hill Hospital, New York, New York.

Purpose: Obesity, as defined by a body mass index (BMI) of 30 kg/m2 or more, is a rapidly growing problem. Obesity affects more than 30% of adults in the United States. The Roux-en-Y gastric bypass (RYGB) procedure has been met with the most favorable results and is now the most commonly performed surgical procedure for morbidly obese patients. Weight loss is thought to occur on the basis of the gastrointestinal bypass and reduced caloric intake, secondary to both the small gastric pouch and the limited gastrojejunal (GJ) anastomotic diameter of 1.0-1.5cm. RNYGB is associated with a mean 65-75% excess weight loss with an associated 10% morbidity and 1% mortality. Patients with the inability to meet goal weight and weight gain following RNYGB (recidivism) are considered treatment failures. Proposed factors contributing to recidivism have included both an enlarged gastric pouch and a dilated gastrojejunal anastomosis (DGJ).

Weight Table by Subject

<table>
<thead>
<tr>
<th>Patient</th>
<th>Preprocedure Weight (lbs)</th>
<th>Current Weight (lbs)</th>
<th>Weight Gain</th>
<th>Orifice Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>324</td>
<td>210</td>
<td>219</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>340</td>
<td>170</td>
<td>225</td>
<td>55</td>
</tr>
<tr>
<td>3</td>
<td>280</td>
<td>160</td>
<td>196</td>
<td>36</td>
</tr>
<tr>
<td>4</td>
<td>254</td>
<td>213</td>
<td>213</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>270</td>
<td>148</td>
<td>187</td>
<td>39</td>
</tr>
<tr>
<td>6</td>
<td>325</td>
<td>215</td>
<td>240</td>
<td>25</td>
</tr>
<tr>
<td>7</td>
<td>370</td>
<td>270</td>
<td>270</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>364</td>
<td>237</td>
<td>242</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>340</td>
<td>210</td>
<td>245</td>
<td>17</td>
</tr>
</tbody>
</table>

Methods: Nine patients with a high degree of recidivism or inadequate weight loss underwent endoscopic assessment of the gastrojejunal anastomosis. Diameter sizes were assessed using endoscopic snare with predetermined diameters. These were then compared to the known average post-operative GI sizes.

Results: Of the 9 patients with known recidivism or inadequate weight loss, all had gastrojejunoanostomoses that were greater than the documented immediate post-procedure values. With the exception of patient number one, there was a linear correlation between size of the gastrojejunoanostomy and percent weight gain.

IN VIVO EVALUATION OF DIFFERENT MODES OF ARGON PLASMA COAGULATION IN A PORCINE COLON

Christopher J. Goulet, M.D., John C. Fang, M.D., Lyska Emerson, M.D., James A. Disario, M.D.*. University of Utah, Salt Lake City, Utah.

Purpose: Argon plasma coagulation (APC) is a noncontact form of monopolar electrocautery whose endoscopic applications include tissue ablation and hemostasis. Advantages of APC include theoretical limits to depth of injury due to arcing of the transmitted current to untreated, non-desiccated areas, potentially minimizing the risk of perforation. Experiments on exteriorized porcine colons have shown that previous generation APC commonly causes damage to the muscularis propria. The purpose of this study was to characterize the depth of injury in vivo in porcine colons using standard colonoscopic techniques with several modalities of a new generation APC unit.

Methods: Eight adult swine underwent bowel preparation and subsequent colonoscopy under general anesthesia. In the left colon, injuries were made using Pulsed APC modes (ERBE VIO 300). Power settings of 10, 20, 40, and 60W were used for durations of 1, 3, and 5 seconds. For each combination of APC modality, power, and duration, 10 lesions were made. The animals were sacrificed 24-48 hours later, and the colons harvested and fixed for histopathologic analysis. Lesions were analyzed by a gastroenterologist and gastroenterology pathologist blinded to the parameters associated with each lesion. Depth of injury was determined as mucosal only, submucosal, or inner circular and outer longitudinal of the muscularis propria. Discrepancies in scoring of injury were resolved using a multi-headed microscope. There were no perforations.

Results: A total of 304 lesions were analyzed. Muscularis propria injury occurred in 22% of lesions with 10W, 62% of lesions with 20W, 86% of lesions with 40W, and 80% of lesions with 60W. Muscularis propria injury occurred in 42% of lesions at 1 second, 66% of lesions at 3 seconds, and 69% of lesions at 5 seconds. Muscularis propria injury occurred in over 50 percent of all injuries and correlated with time (p = 0.001), power (p < 0.0001), and total energy delivered (p = 0.03, r = 0.7).

Conclusions: Muscularis propria injury occurs commonly with all modes of APC delivery. However, the frequency of deep injury increases with time, power, and total energy delivered. The lowest power settings (10-20W) and shortest durations have the lowest risk of deep injury.
Conclusions: The endoscopic assessment of post-RNYGB patients demonstrated that there is a correlation between DGI and recidivism and failure to meet goal weight following RNYGB. Perhaps dilation of the gastrojejunoan stomy may allow for increased volume of oral intake and may ultimately contribute to suboptimal weight loss and recidivism. Areas of further research could include endoscopic procedures to remodel the gastrojejunal anastomosis to its original post-surgical size, thereby reducing recidivism rates.

934

DOES NG INSERTION CONTRIBUTE TO THE MANAGEMENT OF UPPER GASTROINTESTINAL BLEEDING: EXPERIENCE IN AN INNER CITY HOSPITAL
Rajalakshmi V. Iyer, M.D., Melchor Demetria, M.D., Bashar M. Attar, M.D., F.A.C.G.* John H. Stroger Hospital of Cook County and Rush Medical College, Chicago, Illinois.

Purpose: To define the role of nasogastric tube (NGT) insertion in the evaluation of patients with upper gastrointestinal bleeding (UGIB) in the higher risk population of an inner city hospital.

Methods: All patients presenting to our ER between Jan 1, 2004 to May 31, 2004 with symptoms of UGIB who had a NGT insertion followed by an EGD within 24 hours were included in the study. Data on vitals at admission, CBC, BMP, coagulation profile, color of nasogastric aspiration (NGA) and endoscopy findings were collected. The Chi^2 test was used to determine significance.

Results: Of a total of 129 patients, 22.4% had blood, 14.7% had coffee-ground (CFG) and 62.7% had clear NGA. The etiology of the UGIB was found to be gastritis/gastric ulcer 42.6%, esophageal/gastric varices (EV/GV) or portal hypertensive gastropathy (PHG) 19.3%, Mallory Weiss tear 11.6%, erosive esophagitis/esophageal ulcer 9.3%, duodenal ulcer/duodenitis 5.4%, angioectasia 3.8% and others in 2.7%. The EGD was normal in 5.4%. Blood or blood products were transfused in 51.9% and 41% of patients with clear aspirate. The age of the patient, BP on admission, platelet count and INR did not predict a difference in the need for ETI between CFG and clear NGA (<0.01). Interestingly, the NGA was not a predictor of mortality with 3 deaths in 29 patients with bloody NGA, 1/19 patients with CFG and 2/81 patients with clear aspirate. The age of the patient, BP on admission, platelet count and INR did not predict a difference in the need for ETI between the groups, but we found that patients with UGIB who had a BUN/Cr ratio of <11 were more likely to have lesions consistent with portal hypertension i.e. EV, GV or PHG (<0.01). In patients with melena alone, the NGA was significantly more likely to be clear (p <0.001) as compared to patients presenting with hematemesis or CFG. A complaint of hematemesis per se is the best predictor of the need for endoscopic therapeutic intervention.

935

HEALTH CARE WORK INCIDENT TO AMBULATORY ENDOSCOPY – A MULTI-CENTER ANALYSIS OF WORK AND COST

Purpose: A large industry has developed around the practice of endoscopy in recent years. Although broad guidelines exist for establishing endoscopy practices, regulations for ambulatory endoscopy vary dramatically among different settings resulting in variable ancillary service requirements and staff resource utilization. Ideally, procedure guidelines and related ancillary work should improve quality or safety at a reasonable cost. We searched the medical literature and could not find previous research as to whether such ancillary work achieves the above objectives. As such, we sought to investigate, characterize, measure, and compare the ancillary work associated with ambulatory endoscopy among various institutions with the ultimate hope of determining whether it improves quality and safety efficiently.

Methods: We compared the work incident to endoscopy at five health care institutions in the New York City area, including a municipal hospital, a large academic medical center, two community hospitals, and an unregulated physician’s private practice. At each site, we observed staff completing forms required for an endoscopy procedure as a measure of ancillary activities and services and then reviewed completed forms in patient charts to investigate and quantify the documentation requirements.

Results: In the regulated facilities, the time commitment by staff to provide ancillary services ranged from about a half hour to as much as two hours, compared to five minutes at a physician’s private office. The number of forms and items that required completing was also fewest at the physician’s office, fairly consistent among the community hospitals and the academic medical center, and highest at the municipal hospital, with the amount of items to be filled out varying by over 80 fold (see Table). In general, we noted two types of problems: redundancy, which was most evident at the municipal hospital, and irrelevancy, which was more widespread and comprised work of questionable value in promoting safety or improving care.

Conclusions: The ancillary work of ambulatory endoscopy is highly variable across different settings. We found that much of this work is also of seemingly dubious value.

936

ENDOSCOPIC TRANSGASTRIC OOPHORECTOMY AND PARTIAL TUBECTOMY IN A PORCINE MODEL
Mihir S. Wagh, M.D., Benjamin F. Merrifield, M.D., Christopher C. Thompson, M.D.* Brigham and Women’s Hospital and Harvard Medical School, Boston, Massachusetts.

Purpose: The development of new endoscopic devices has enabled peroral transgastric abdominal exploration. Abdominal organs have been manipulated via this route, however to date there are no published reports of transgastric organ resection. This study was undertaken to test the feasibility of oophorectomy and partial tubectomy using the per-oral transgastric technique.

Methods: Female pigs weighing 30 kg were kept without food for one day prior to surgery. Perioperative intravenous antibiotics were administered. After induction of anesthesia, the esophagus was intubated and a sterile overtube was placed. Antibacterial gastric lavage was performed and the endoscope withdrawn. A second sterile dual-channel endoscope was passed through the overtube. Endoscopic ultrasound was used to locate a site suitable for the gastric incision. Subsequently, a transgastric incision was made with a needle-knife and the opening was balloon dilated to 15 mm. The endoscope was then introduced into the peritoneal cavity and the Fallopian tubes and ovaries were identified by abdominal exploration. An Olympus Endo-Loop was placed around the left Fallopian tube and a snare was then used to perform partial tubectomy. The ipsilateral ovary was similarly removed and the specimens successfully retrieved. The contralateral tube and ovary served as a control. The gastric incision was then closed with endoscopically placed clips. The animals were observed overnight and fed a regular diet the following morning.
Results: The abdominal cavity was accessed uneventfully. Fallopian tubes and ovaries were easily identified and oophorectomy with partial tubectomy performed. No immediate postoperative complications were observed. The animals ambulated freely and tolerated a regular diet the next day. Necropsy verified unilateral oophorectomy and partial tubectomy. There was no evidence of intra-abdominal abscesses, hematoma, adhesions or damage to surrounding structures.

Conclusions: This is the first report of endoscopic transgastric abdominal organ resection. Our study demonstrates that this method is technically feasible. Additionally this approach eliminates abdominal incisions and may avoid related complications such as wound infection, herniation, pain, and adhesions. Further long-term studies are warranted to determine the role of this promising new endoscopic technique.

937

DEEP SEDATION OCCURS FREQUENTLY DURING ELECTIVE ENDOscopy WITH MEPERIDINE AND MIDAZOLAM


Purpose: Sedation and analgesia (S/A) represents a continuum from minimal sedation through general anesthesia. Practice guidelines recommend continuous assessment and monitoring of level of consciousness, ventilatory and oxygen status, and hemodynamic variables with S/A. With deep sedation (DS), an independent individual is required for patient monitoring. Although moderate S/A is intended during gastrointestinal endoscopy, unrecognized levels of DS may occur. There is no data on the occurrence of DS during moderate S/A for elective endoscopy. The aim of this study was to prospectively evaluate the incidence of DS during elective endoscopy with meperidine and midazolam intended to reach moderate S/A.

Methods: 80 patients (43 M/37 F, mean age 61 yrs, ASA class 1-2) were studied using a balanced cohort of procedures (20-EGD; 20-Colon; 20-ERCP; 20-EUS). Intravenous meperidine and midazolam were administered. Hemo-
dynamic parameters and levels of sedation were assessed and recorded by a single observer at 3-minutes intervals. Modified Observer’s Assessment of Alertness/Sedation (MOAA/S) scale is a subjective sedation assessment scale used to assess sedation levels. MOAA/S ranges 1-5 (1 = unresponsive; 2 = responsive to shaking only; 3 = responsive to loud verbal command; 4 = lethargic, but responsive to normal verbal command; 5 = alert and awake). Occurrence of DS, defined by MOAA/S 1-2, was recorded.

Results: Deep sedation (MOAA/S score 1-2) occurred in 54 patients (67.5%; p-value = 0.003). Mild to moderate sedation (MOAA/S score 3-4) occurred in 26 patients (32.5%). DS occurred at least once intra-procedurally in 60% (EGD), 45% (Colon), 85% (ERCP), and 80% (EUS). DS was reached 204±785 (26%) of total sedation assessments. The frequency of DS per procedure was 26% of EGD, 11% of colonoscopy, 35% of ERCP, and 29% of EUS.

Conclusions: Deep sedation occurs frequently during elective endoscopy with meperidine and midazolam intended to reach moderate sedation and analgesia. Future implications: As per practice guidelines, continuous and uninterrupted patient monitoring by an independent individual and more accurate monitoring devices are needed with deep sedation. In addition, providers of sedation and analgesia should be credentialed in ACLS and be proficient in airway rescue techniques.

938

OUTCOME OF ENDOscopic THERAPY IN RECURRENt VARICEAL BLEEDING AFTER INITIAL ENDOscopic VARICEAL LIGATION (EVL)

Kevin J. Peifer, M.D., Gary R. Zuckerman, D.O., Chandra Prakash, M.D., M.R.C.P.*, Washington University School of Medicine, St. Louis, Missouri.

Purpose: Acute variceal upper gastrointestinal bleeding (UGIB) carries a high mortality in the absence of definitive management. We reviewed our data to determine the outcome of therapy of recurrent bleeding after successful EVL.

Methods: All patients with recurrent variceal UGIB within 30 days of successful initial EVL were eligible. Recurrent bleeding was diagnosed if patients with successful hemostasis during the initial endoscopic procedure developed recurrent hematemesis or melena requiring repeat endoscopy for bleeding control. Inpatient charts were reviewed to confirm the source of recurrent UGIB and determine clinical outcome.

Results: Over a 3-year period, 149 distinct episodes of acute variceal UGIB were treated with EVL in 131 patients. Recurrent bleeding occurred in 38 instances in 36 patients (29%), 82% during the initial hospital stay. Two patients died before further intervention. The study group consisted of 34 patients (age 56.0 ± 2.3 years, 11F/23M) who underwent endoscopy for 36 episodes of recurrent bleeding after a mean of 6.4 ± 0.8 days after EVL. On endoscopy, ulcers at band ligation sites were identified as the cause of recurrent bleeding in 9 instances (25%), managed conservatively without further recurrence. Further therapy consisted of repeat EVL in 13 of the remaining 27 instances (48%), sclerotherapy in 3 instances (11%), and transjugular intrahepatic portosystemic shunt (TIPS) placement in 11 instances (41%). A third EVL was performed in 2 instances. TIPS was performed in one instance each for failed EVL and failed sclerotherapy. EVL was overall successful in 73% (as compared to 81% for initial bleeds, p = ns), and comparable numbers were obtained for TIPS (Table). Overall mortality after recurrent bleeding was 33%, significantly higher compared to patients without rebleeding after initial EVL (12%, p = 0.009). Coagulopathy (INR > 1.7, platelets < 75,000) demonstrated a trend (p = 0.08) for higher mortality in patients with recurrent bleeding on univariate analysis, while MELD score, CPT score and variceal size did not predict mortality.

Conclusions: Repeat EVL for recurrent bleeding results in bleeding control comparable to EVL for initial variceal bleeding. Rebleeding appears to be a marker for higher mortality, and since coagulopathy may predict higher mortality, aggressive measures to correct coagulopathy could be important in recurrent variceal bleeding.

Comparison of EVL and TIPS for recurrent variceal bleeding

<table>
<thead>
<tr>
<th></th>
<th>Successful outcome</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVL</td>
<td>73%</td>
<td>23%</td>
</tr>
<tr>
<td>TIPS</td>
<td>69%</td>
<td>31%</td>
</tr>
</tbody>
</table>

939

A CLINICAL, ENDOscopic AND PATHOLOGIC SCORING SYSTEM IS EQUIVALENT TO EUS IN PREDICTING DISEASE EXTENT IN ESOPHAGEAL CANCER (EC)


Purpose: Determine whether EUS is superior to clinical, endoscopic (non-EUS) and pathologic information in predicting EC disease extent, defined as limited to wall (pT1-T2, N0, M0) vs. advanced beyond wall (pT3-T4, or N1, M1). Methods: Data generating set: 258 pts with EC underwent clinical evaluation, endoscopy and biopsy, followed by esophagectomy and pathologic classification (no chemoradiation). A logistic regression model was developed to identify clinical, endoscopic and pathologic factors correlated with advanced disease. Coefficients from the model were next used to create a scoring system (CEP score) for advanced disease: presence of dysphagia = 13 points; tumor length > 4 cm = 30 points; tumor involving GE junction = 12 points; non-traversable tumor = 20 points; poor histologic grade = 24 points. An ROC curve was constructed to determine an optimum CEP cut-off score to predict advanced disease.
S308 Abstracts

940
FEASIBILITY AND ACCURACY OF “STRING” CAPSULE ENDOSCOPY (SCE) IN THE DIAGNOSIS OF ESOPHAGEAL VARICES

Purpose: To determine: 1) feasibility and accuracy of SCE for esophageal varices, 2) procedure-associated discomfort and 3) patient’s acceptability when compared to the gold standard EGD.

Methods: SCE was swallowed with water, in the sitting position and no sedation. Once a 50 cm mark was reached, SCE was slowly pulled across the LES into the lower esophagus and up to the UES. The process was repeated 3 times. The SCE was retrieved from the patient’s esophagus, the strings disposed and the capsule underwent high level disinfection (2% gluteraldehyde for 45 min) and re-used. An independent endoscopist unaware of the patient’s diagnosis reviewed the pictures and determined whether esophageal varices were present or not and then graded their size as 1 small, 2 = small-medium, 3 = medium, 4 = medium-large, and 5 = large. The corresponding EGD grading (I - IV) was defined as follows: I = 1 and 2; II = 3; III = 4 and IV = 5. The grading system kept in mind that grades III and IV on EGD definitively require therapeutic intervention (for primary or secondary prophylaxis). Patients graded their difficulty experienced during the procedure and were asked their preference between SCE and conventional EGD.

Results: 30 cirrhotic patients (ETOH and/or HCV: 93.1%) underwent EGD and SCE. All were men, mean age = 54.4 years, mean Child-Pugh score = 6.2. Eleven patients were for screening and 19 for surveillance. No capsule was lost during any of the procedures. The agreement for the presence/absence of varices was 96.7% (1 patient had Grade 1 varices on EGD but no varices on SCE). Size of varices was in agreement in 16/21 (76%) patients with varices. In the remaining 6, 3 were undersized and 2 oversized by SCE. Twenty-five patients (86.2%) preferred SCE to EGD, 2 had no preference and 2 EGD to SCE. The mean recording time was 5.78 minutes. Patient’s discomfort is shown in Table.

Conclusions: 1) SCE was well tolerated, safe and easy to perform; 2) Agreement of SCE for presence/absence of esophageal varices was over 95% in patients with cirrhosis; 3) SCE is an alternative to EGD in the screening/surveillance of esophageal varices and may be more cost-effective than EGD.

941
YIELD OF CAPSULE ENDOSCOPY (CE) COMPARED TO OTHER MODALITIES IN PATIENTS WITH OBSCURE GI BLEEDING (OGIB): A META-ANALYSIS

Purpose: Due to its superior ability to examine the entire small bowel mucosa, CE has revolutionized the diagnostic evaluation of patients with OGIB. Studies have shown its superior performance compared to other modalities.

Methods: Recursive literature search of prospective studies comparing the yield of CE to other modalities in patients with OGIB. Data on yield among various modalities were extracted, pooled and analyzed using RevMan 4.2.3 software; heterogeneity was tested by the chi2 method. Incremental yield (IY) (yield of CE – yield of comparative modality) and 95% confidence intervals (CI) of CE over comparative modalities was calculated using a fixed effect model (FEM) for analyses without and a random effect model (REM) for analyses with heterogeneity. Funnel plot analyses were performed to look for publication bias.

Results: Fourteen studies compared the yield of CE with push endoscopy (PE) for OGIB. The yield for CE and PE was 66% and 34%, respectively (n = 375; IY = 33%; CI 26-39%; P < 0.0001; FEM) and for significant findings was 49% and 30%, respectively (n = 149; IY = 19%; CI 8-29%; P < 0.0001; FEM). Three studies compared the yield of significant findings of CE to small bowel radiology (SBR). The yield for CE and SBR for any finding was 68% and 8%, respectively (n = 88; IY = 61%; CI 43-80%; P < 0.0001; REM). One study each compared yield of significant findings on CE to intra-op enteroscopy (IOE) (n = 42; IY = 0%; CI 43-80%; P = 1.0), CT enterography (CTE) (n = 8; IY = 63%; CI 27-98%; P < 0.001), angiogram (n = 17; IY = 60%; CI 39-82%; P = 0.73) and MR enterography (MRE) (n = 8; IY = 50%; CI 40-86%; P < 0.001). No publication bias was noted on the funnel plot analyses.

Conclusions: In patients with OGIB, CE is superior to PE, SBR, CTE and MRE for the diagnosis of small bowel pathology. The yield of CE is comparable to the gold standard of IOE. We plan subgroup analysis of yield among various modalities for vascular, inflammatory and neoplastic lesions as well as in patients with occult and overt OGIB.

942
OUTCOMES OF AND FACTORS PREDICTING POOR COLONOSCOPY PREPARATION

Purpose: One of the major limitations of colonoscopy is quality of colon preparation (prep). When faced with a poorly prepared colon, the endoscopist must decide whether or not to proceed with the exam. The purpose of our study was to determine which factors correlated best with the quality of the
Develop a simple model to reliably predict:

Georgia Institute of Technology, Atlanta, Georgia.

Modern machine learning methods, such as artifical neural networks (ANN) and support vector machines (SVM) with learning capabilities, have been utilized to predict clinical outcomes. Upper and lower GI tract endoscopic data was utilized to confirm the source of bleeding and whether poor prep colonoscopy would lead to missed high risk lesions.

**Methods:** A retrospective study was performed using the Olympus Image Manager 6.3 colonoscopy database. We randomly selected poor and good prep colonoscopies between 1/03 and 4/04, and also poor prep colonoscopies between 1996 and 2000 to see if they returned for repeat exam. Data regarding demographics, comorbidities, medication use, inpatient status, prep type and pathologic findings were obtained. Statistical analysis included Chi Square, Spearman nonparametric correlation and Student T-Test.

**Results:** 175 patients with poor prep colonoscopy were compared with 340 patients with good prep. On univariate analysis, the number of comorbidities correlated with risk for poor prep (p = 0.88, p = 0.03). 53% of patients with >2 comorbidities had a poor prep. Patients were 5.6 times as likely as outpatients to have a poor prep (p = 0.003). Antidepressants, opiates and calcium channel blockers correlated with a poor prep (p < 0.01). 23% of patients receiving sodium phosphate and 40% of patients receiving polyethylene glycol (PEG) had a poor prep (p = 0.002). BMI, age and gender did not correlate with risk for poor prep. Patients with good prep colonoscopy (9%) did not have significantly more high risk lesions (adenoma>9mm, villous adenoma, HGD/CA) found than those with poor prep (7%). Patients with poor prep did not require greater sedation or procedure time (p>0.01). Of the 110 patients who had a poor prep colonoscopy from 1996 to 2000, 3 had cancer found in the initial exam, only 43 had a repeat exam within 5 years and only 30 had a good prep on repeat exam. 2 of them had significant lesions on the follow-up exam that were not seen initially.

**Conclusions:** Poor prep patients were more likely to have greater comorbidity, inpatient status or certain medications. Patients taking PEG were more likely to have a poor prep; however, they were also more likely to be inpatients. Patients at risk for poor prep need an aggressive cleansing regimen. Those who present with a poorly prepared colon should have the examination completed (even if a repeat colonoscopy is to be recommended), since the risk of missed lesions is low while the risk of not returning is high.

**ARTIFICIAL INTELLIGENCE HELPS PREDICT THE SOURCE, SEVERITY, NEED FOR URGENT ENDOSCOPY AND DISPOSITION IN PATIENTS WITH ACUTE GASTROINTESTINAL BLEEDING**

Atul Kumar, M.D., Bruce Kalmin, M.D., Michail Lougdakis, Ph.D., Bhawna Halwan, M.D.*. Emory University School of Medicine and Georgia Institute of Technology, Atlanta, Georgia.

**Purpose:** Develop a simple model to reliably predict: a) source, b) need for urgent endoscopy, and c) disposition in patients with acute GI bleed.

**Methods:** Modern machine learning methods, such as artificial neural networks (ANN) and support vector machines (SVM) (with learning capabilities analogous to human learning), have been utilized to predict clinical outcomes. Training these models allows classification functions that generalize for all possible inputs, which can then be utilized to predict output for any given input. Relevant clinical data was collected on 117 patients representing acute upper and lower GIB. Endoscopic data was utilized to confirm the source and to ascertain if the patient would benefit from an urgent endoscopy. Criteria for an urgent endoscopy were: a) active & fresh bleeding, b) findings of high risk stigmata on upper endoscopy, and c) history of cirrhosis. Both endoscopic and clinical data were utilized to ascertain disposition. Performance of ANN was compared to clinicians.

**Clinical Data**

- Presentation
  - Hematemesis/Coffee Grounds
  - Hematochezia/Melena
- Demographic
  - Age
- Comorbidities
  - CVD/COPD
- Risk of Stress Ulcer

**Results:** ASA/NSAID use

**Clinical Exam**

- BP, HR, Orthostasis
- NG Lavage

**Laboratory Data**

- Drop of Hct
- Platelet count
- Creatinine, BUN/Cr ratio

**Results:** We utilized the SVM/Torch package and Matlab coding of a standard ANN with backpropagation to implement the classifiers. Extensive evaluation through multi-fold cross-validation was not performed due to a limited dataset. 78 randomly selected patients were used for training, and 39 patients were used for testing. Table 2 summarizes the results for each prediction variable and for each classifier. Both models yielded similar performance; the SVM model was slightly better.

**Conclusions:** Although clinical tools may not replace experience and clinical acumen, they may play an important role to help guide therapy, standardize clinical care, improve outcomes, optimize healthcare costs, and prevent adverse complications. The application of such tools in patients with GI bleeding needs further development and validation in prospective randomized studies. If successful, this application may serve as a model for use of artificial intelligence in a variety of conditions.

**944**

**THE INTERACTION BETWEEN CAPSULE ENDOSCOPY AND IMPLANTABLE PACEMAKERS/DEFIBRILLATORS**


**Purpose:** The M2A Capsule Endoscopy (Given Imaging, Ltd., Yoqneam, Israel) is a valuable tool for detecting small bowel disorders. The capsule transmits digital images to an external detector via radiofrequency energy (100-472 kHz). Approximately 2.4 mil Americans have implantable pacemakers and, 460,000 have implantable cardioverter defibrillators (ICDs), which also utilize radiofrequency energy (100-175 kHz) to communicate with programmers. Concerns about serious interactions between the M2A capsule and implantable pacemakers and defibrillators and potential interaction with radiofrequency overlap have been raised. We performed in-vitro experiments to determine the interactions between M2A capsule endoscopy and pacemakers and ICDs.

**Methods:** We tested 3 current technology pacemaker pulse generators: models AT501 and KDR901 (Medtronic, Minneapolis, MN) and model 1296 Insignia (Guidant, St. Paul, MN); and 2 ICDs: model A155 Vitality A VT (Guidant) and model 7274 Marquis DR (Medtronic). Each of these was placed in an electrode gel bath along with the M2A capsule, while varying the distance of the capsule at 2, 6, 12, and 18 cm from the pacemakers and ICDs. We used a Virtual Interactive Patient model 9595 (Medtronic) to analyze pulse generator performance while simulating normal sinus rhythm. Atrial and ventricular electrograms and marker channels were observed for 30 seconds at each of the 4 distances and repeated in random sequence 3 times with the observer blinded to distance. This was repeated with the devices programmed to both nominal and most sensitive settings (0.15-2.8 mV). The pacemakers and ICDs were then attached to standard pacing and
defibrillation leads, and the experiment was repeated at nominal and most sensitive settings.

**Results:** All tracings were read in blinded fashion and in random order by a boarded cardiac electrophysiologist. There was no abnormal sensing on the atrial or ventricular electrograms or the marker channels in any device at any distance from the M2A capsule, even at the most sensitive programmable values. Similarly, there was no inappropriate pacemaker or ICD performance or spurious programming.

**Conclusions:** Based on the extensive testing at variable distances of exposure and potential overlap of frequency, the M2A capsule endoscopy can be used safely with implantable cardiac rhythm control devices. Pacemakers and ICDs should no longer be considered exclusion criteria to patients who have need of this technology.

**945**

**REDUCED DOSE SODIUM PHOSPHATE TABLETS (VISICOL) AND BISACODYL (DULCOLAX) COMBINATION FOR BOWEL PREPARATION PRIOR TO COLONOSCOPY: A RANDOMIZED SINGLE BLINDED STUDY**

Louis A. Chaptini, M.D., Eileen M. Janec, M.D., Ramsey Hazboun, M.D., Chinonyener Enyinna, M.D., Christopher Deitch, M.D., Steven R. Pelkin, M.D., Adam Elfant, M.D.*. Cooper Hospital/University Medical Center, Robert Wood Johnson Medical School, Camden, New Jersey.

**Purpose:** Fear of bowel preparation is the most frequently given reason by patients who avoid colorectal screening. Previous studies demonstrated that various regimens of Sodium Phosphate tablets (VISICOL) (40, 32 and 28 tablets) were effective for bowel cleansing prior to colonoscopy. The purpose of this study was to determine if a reduced dose of VISICOL (20 tablets) plus 20 mg of Bisacodyl would provide adequate bowel preparation.

**Methods:** One hundred consecutive subjects were randomized to receive 28 tablets of VISICOL plus 20 mg of Bisacodyl (n = 50) or 20 tablets of VISICOL plus 20 mg of Bisacodyl (n = 50) the night before the procedure. Subjects had chemistry profiles (BUN, creatinine, Na, K, Cl, CO2, Ca, Mg, Ph) within 3 months of and immediately prior to colonoscopy. Endoscopists (blinded to the preparation used) graded the quality of the bowel preparation on a previously validated 4-point scale. Subjects were queried on side effects (bloating, nausea, vomiting, abdominal pain), willingness to repeat the same preparation and compared the current regimen to previous (if any) bowel preparation regimens.

**Results:** The quality of bowel preparation was excellent or good in 90% of cases in the 20-tablet group and 88% of cases in the 28-tablet group. Side effects were not significantly different between the 2 groups. Mean differences between pre- and post-bowel preparation chemistries were similar in both groups except for phosphorus (mean increase of 0.71 in the 20 tablets group and 1.5 in the 28 tablets group, p = 0.0015). Among subjects who had undergone colonoscopy in the past with Polyethylene glycol (PEG) preparation, 93% and 88% rated the 20-tablet and the 28-tablet preparations better respectively. 66% and 50% of subjects rated the 20-tablet and 28-tablet preparations better than Sodium Phosphate liquid. 96% and 92% of subjects were willing to repeat the 20-tablet and the 28-tablet preparation.

**Conclusions:** Reduced dose VISICOL regimens using 20 or 28 tablets plus 20 mg of Bisacodyl are safe, effective and similar in terms of adequacy of bowel preparation, side effects, patient acceptance and satisfaction. Subjects preferred VISICOL to PEG and Sodium Phosphate liquid preparations.

**946**

**IS EUS/EUS-FNA USEFUL FOR MANAGING PATIENTS IN A COMMUNITY/PRIVATE PRACTICE SETTING? A PROSPECTIVE STUDY OF 201 PATIENTS**


**Purpose:** EUS is becoming more available in tertiary centers. However, in the community setting, a lack of local availability, as well as doubt from potential referring physicians regarding the clinical benefits and feasibility of EUS in a community hospital, has limited its use. **AIM:** Evaluate: 1) the impact of EUS+/−/−FNA on clinical management in a community setting and 2) the time use of an endoscopy room for EUS in a busy community hospital.

**Methods:** Consecutive patients referred for EUS were prospectively followed to evaluate indications, findings and clinical impact of EUS+/−/−FNA. If FNA was non-diagnostic, surgical specimens or other clinical follow-up were used to determine accuracy. The duration of room use was noted from the beginning of endoscopy set up to the end of the procedure. All studies were performed by a single trained endosonographer. FNA specimens were screened by a pathologist not in the room, and reported by a cytopathologist the next day. On EUS completion, the change in management, if any, was recorded.

**Results:** Between 04/02 and 06/04, 201 patients (mean age 60yrs, range 26-87yrs, M:F = 81:120) underwent EUS for the following indications: known malignancy (MGY) 16% (32), suspected MGY 26% (52), abnormal endoscopy 39% (79) and other 19% (38). EUS changed clinical management in 80% (160), was of equivocal use in 11% (23) and not useful in 9% (18) patients. EUS was most useful in patients with known MGY 96% (51/32) and suspected MGY 86% (45/52), but least useful in evaluating incidental submucosal lesions (<1cm diameter) 48% (37/77) and incidental/non-specific CT findings 43% (9/21). EUS-FNA (n = 57 patients) was diagnostic for MGY in 44% (25) and falsely negative in 3% (2) patients [sensitivity 93%, specificity 100%, PPV 100%, NPV 93%]. EUS-FNA was diagnostic in 46% (26) patients with benign lesions and non-diagnostic in 5% (3) with benign <1cm, submucosal lesions. The endoscopy room was occupied for a mean of 63 mins (range 15-130 mins) per EUS case.

**Conclusions:** 1. In the community setting, EUS affects clinical management in at least 80% of patients. Additionally, EUS-FNA can be performed with a high sensitivity, specificity, PPV and NPV.

2. EUS+/−/−FNA is clearly most useful in evaluating patients with suspected or known malignancy; community based cancer programs should have local availability of EUS.

3. EUS+/−/−FNA does not use up significant endoscopy room time, and is feasible in a busy community setting.

**947**

**PREMEDICATION WITH TEGASEROD DECREASES BOTH GASTRIC EMPTYING TIME AND SMALL BOWEL TRANSIT TIME IN PATIENTS UNDERGOING CAPSULE ENDOSCOPY**


**Purpose:** A single 6mg dose of Tegaserod has previously been reported to decrease small bowel transit time in 18 patients undergoing wireless capsule endoscopy (WCE). Gastric emptying time was not altered when Tegaserod was given at the time of capsule ingestion in these patients. We studied the effect of Tegaserod on gastric and small bowel motility, when Tegaserod was given 45 minutes PRIOR to capsule ingestion.

**Methods:** 52 consecutive patients undergoing WCE for various indications in a community based GI practice were pre-medicated with a 6mg dose of Tegaserod, 45 minutes prior to capsule endoscopy. Gastric emptying time, small bowel transit time and colonic entry were recorded, and compared with transit times in 18 patients previously reported, who received Tegaserod at the time of capsule ingestion, and a control group of 262 patients, in which no Tegaserod was used.

**Results:** In the pre-medicated group, mean gastric emptying time was 30.6 minutes (range 8 to 88 minutes). Small bowel transit time was 167 minutes (39 to 450 minutes). 2 patients were excluded, one due to retained capsule secondary to a Crohn’s stricture, one patient due to capsule failure. In 2 patients, the capsule did not reach the colon. This compares with previously reported 18 patients, where mean gastric emptying time was 45 minutes, small bowel transit time was 172 minutes, and all capsules reached the colon. In previously reported 262 control patients where NO Tegaserod was used,
Gastric Emptying Time was 41 minutes, small bowel transit time was 240 minutes, and the colon was not reached in 24 patients.

**Conclusions:** Tegaserod will shorten mean gastric emptying time, if it is given at least 45 minutes prior to capsule ingestion. A smaller study previously demonstrated that gastric emptying time was not altered when Tegaserod was given at the same time of capsule ingestion. In addition, this larger study of 52 patients confirms that Tegaserod decreases small bowel transit time when compared to controls. In over 96% of patients, the capsule reached the colon. The use of Tegaserod will lead to complete small bowel visualization in a higher percentage of patients undergoing WCE, and possibly decrease procedure reading time. The questions of missed lesions and capsule yield are currently being evaluated in ongoing studies.

**Table 1.**

<table>
<thead>
<tr>
<th>Group</th>
<th>Range CFU/ml</th>
<th>Median CFU/ml</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>6-300</td>
<td>118</td>
<td>Control</td>
</tr>
<tr>
<td>#2</td>
<td>4-50</td>
<td>10</td>
<td>0.003</td>
</tr>
<tr>
<td>#3</td>
<td>3-300</td>
<td>127</td>
<td>0.73</td>
</tr>
<tr>
<td>#4</td>
<td>0-10</td>
<td>2</td>
<td>0.0002</td>
</tr>
</tbody>
</table>

**949**

**FACTORS RESULTING IN PATIENT NO-SHOWS AT OPEN-ACCESS ENDOSCOPY**


**Purpose:** The failure of patients to show for scheduled outpatient endoscopy results in inefficient utilization of resources, longer endoscopy waiting times, and delay in disease diagnosis. The current literature reveals national no-show rates of 12-27%, yet the reasons for no-shows have not been studied. The aim of this retrospective study is to quantify no-show rates at our institution and to identify the reasons for these no-shows.

**Methods:** Mayo Clinic Scottsdale practices an open-access endoscopy system. In an attempt to improve no-show rates, all patients receive a written explanation of their procedure, direction to the endoscopy unit, and a contact phone number. In addition, a reminder phone call is performed 3-7 days prior to endoscopy. A no-show was defined as a failure to show or a cancellation the day of the endoscopy. When a patient fails to show, a patient-care assistant telephones the patient to identify and document the reason. We retrospectively reviewed a four-year record (1/2000-12/2003) to quantitate no-show rates at our institution and to identify the reasons for these no-shows.

**Results:** During the four-year study period, 1490 out of 36,480 (4.1%) patients scheduled for outpatient endoscopy failed to show. Of 1490 no-shows, 834 (56%) were for colonoscopy and 541 (36.3%) were for upper endoscopy. 625 out of 1490 (42%) no-show patients were successfully contacted and reasons for their nonattendance were identified. The most common reasons identified include facility-related scheduling problems (40.6%), failure of the patient to cancel the endoscopy (24.5%), patient illness or hospitalization (17.2%), and colon prep problems (9%).

**Conclusions:** The 4.1% no-show rate in this study is considerably lower than previously reported. The patient population, pre-procedural phone call reminders, and patient-provided educational literature may have resulted in these lower no-show rates. The most common reasons for no-shows at scheduled outpatient endoscopy include facility-related scheduling problems and failure of patients to cancel endoscopy in a timely fashion.

**950**

**OPTICAL COHERENCE TOMOGRAPHY (OCT) IN ILEAL POUCHES**


**Purpose:** Chronic pouchitis (CP) is often challenging for clinicians, sometime leading to pouch failure. CP is characterized by transmural inflammation, which cannot be assessed by endoscopy & mucosal biopsy. OCT provides high-resolution cross-sectional imaging, ideal for assessing sub-surface pathology. Our recent in vivo (Gastroenterology 2003; 124:A193) & ex vivo (CGH 2004 in press) studies on IBD showed that OCT can accurately detect tranmsural disease. AIM: Assess feasibility of *in vivo* & *ex vivo* OCT of ileal pouches.

**Methods:** 12 histology-correlated *ex vivo* OCT images were obtained from resected pouch specimens from 2 pts with CP & pouch failure. *28 in vivo* OCT images were obtained via a pouchoscope from 4 normal pouch pt and 1 acute pouchitis (AP) pt.
Conclusions: OCT showed intact layered wall structure, suggesting absence of transmural disease (Fig 1), with corresponding endoscopic features of nl mucosa (68%), edema (4%), erythema (4%), aphthous (14%) or small shallow (11%) ulcers. Of 12 histology-OCT image sets from CP in the ex vivo study, 6 tissue sections had transmural inflammation on histology, which all detected by OCT imaging featured with disrupted layered wall structure (Fig 2). The rest 6 tissue sections with histological mucosal inflammation had intact layered structure on OCT.

Results: All 28 in vivo OCT images from nl pouches or AP showed intact layered wall structure, indicating absence of transmural disease. CP with pouch failure characterized by transmural inflammation on histology can be detected by OCT. OCT of pouches may be useful to predict outcome of pouchitis.

Purpose: Endoscopic modalities including EMR are increasingly being used in patients with Barrett’s esophagus and dysplasia or early cancer who are either high-risk for surgery or who refuse this invasive option. We reviewed our clinical experience in patients who underwent EMR for superficial cancer or dysplasia in the setting of Barrett’s esophagus.

Methods: We performed a retrospective review of a prospectively collected database of all patients who underwent EMR at the University of Chicago for any indication between November, 2001 to June, 2004. Patients who had EMR for dysplasia or early cancer of the esophagus or gastroesophageal junction in the setting of Barrett’s were identified. Clinical parameters including patient age, American Society of Anesthesia (ASA) class, indication for procedure, complications, length of follow-up, other treatment modalities utilized, morbidity and mortality, and other parameters were recorded.

Results: Nineteen procedures were performed in 14 patients with documented Barrett’s with either dysplasia or superficial cancer, including 12 males and 2 females. The mean patient age was 67, ASA class 2.5, and number of procedures per patient was 1.4. Mean follow-up was 104 days. 11/14 patients had EUS staging prior to EMR. EMR technique included lift and cut 8/19, free-hand without submucosal injection 10/19, and cap 1/19. 6 patients underwent hemi-circumferential EMR to obliterate all abnormal tissue, while 8 had resection of nodules or abnormal appearing lesions. 10 patients had biopsies consistent with or highly suspicious for adenocarcinoma, 3 had HGD and 1 had LGD. There were no immediate complications. Long-term complications included esophageal stricture in one patient. Margins were free of dysplasia or cancer in 7, positive in 5 and indeterminate in 2. No patients progressed from HGD to cancer during the follow-up period. 8 patients had no HGD on most recent endoscopy, 3 underwent surgery, 2 were lost to follow-up, 1 had chemo-radiation and 1 died of unrelated causes.

Conclusions: EMR is a safe and viable alternative for treatment of patients with high-grade dysplasia or early esophageal adenocarcinoma who are either high risk for surgery or who refuse this invasive management option.

ENDOSCOPIC MUCOSAL RESECTION (EMR) AS TREATMENT FOR BARRETT’S ESOPHAGUS WITH DYSPLASIA OR CANCER

Purpose: Traditionally per-oral endoscopy has been limited to the intestinal lumen. Previous studies have reported transgastric endoscopy however there are no published reports of organ resection using this method. By avoiding abdominal incisions this approach may reduce post-operative abdominal wall pain, wound infection, herniation, and adhesions. We sought to demonstrate the feasibility of performing a per-oral transgastric partial hysterectomy.

Methods: Four-month old female domestic pigs had food withheld for 24 hours and were given antibiotics prior to surgery. After induction of anesthesia, the esophagus was intubated, a sterile overtube placed, and an antibacterial gastric lavage performed. Both written and video logs were kept. A sterile therapeutic endoscope was passed through the overtube into the stomach. Before incising the gastric wall an endoscopic ultrasound was performed to avoid blood vessels and intra-abdominal organs. Using a needle-knife, a 1cm incision was made in the gastric wall and the opening was dilated to 15 mm using a Microvasive CRE balloon. The gastroduodenoscope was pushed through the gastric wall and into the peritoneal cavity. The fallopian tubes, uterus, and ovaries were identified. Forceps were used to pull the uterus and portions of the fallopian tubes through an Olympus Endo-Loop. The loop was then tightly closed and secured. Subsequently, a snare was positioned just distal to the Endo-Loop and cautery was used to resect the uterus and portions of the fallopian tubes. The specimen was removed through the mouth via the gastric incision and was sent for pathology. The gastric incision was closed using endoscopically placed clips.

Results: Gastric incisions were performed without significant bleeding. The small intestine, fallopian tubes, uterus, and ovaries were readily identified and could be repositioned with standard endoscopic equipment. We were able
to perform the partial hystrectomy without visible bleeding. The animals remained stable throughout the procedure and no immediate postoperative complications were encountered. Necropsy confirmed partial hysterectomy with bilateral partial tubectomy. There was no evidence of intra-abdominal or gastric bleeding, hematoa, infection, or organ damage.

**Conclusions:** This study demonstrates the feasibility of per-oral transgastric organ resection, specifically partial hysterectomy. Although in early development, this approach may represent a less invasive alternative to traditional surgery.

---

**Efficacy and Safety of Nurse-Administered Propofol as an Adjunctive Agent of Conscious Sedation in Private Non-Academic Gastroenterology Practice Setting**

Nizam M. Meah, M.D.*, Pratik B. Parikh, P.H. The GI Center, Lake Jackson, Texas.

**Purpose:** This study evaluates the safety and efficacy of propofol (P) in a private non-academic setting. Special interest was paid in a subset of patients who take chronic psychotropic/pain medications (cpm) (i.e. antidepressants, anxiolytics, pain meds, etc.) and who generally tend to need higher doses of conventional medication.

**Methods:** All endoscopy nurses were given educational material designed by our ambulatory endoscopy center and were required to take a self-evaluation test. P was used as an adjacent to conventional sedation, namely midazolam (M), meperidine (MP), and fentanyl (F) and was administered by a R.N. supervised by board certified gastroenterologist. The endpoints measured were: 1) was there adequate sedation that led to a successful procedure? 2) what was the major (i.e. endotracheal intubation, bag-mask ventilation) versus minor (i.e. rash) complications? 3) can P be safely administered without an anesthesia specialist present in a private non-academic setting? 4) was a higher dose of P needed for adequate sedation in patients who are on cpm?

**Results:** P was used in combination with conventional agents in 254 patients who underwent endoscopy. All patients in this study were ASA I - III classification. The range of P, M, MP, and F used in all patients was 5 mg-90 mg, 1 mg-5 mg, 12.5 mg-75 mg, and 25 mcg- 100 mcg, respectively. The patients were divided into two groups, those on cpm (123 patients) and those who are not (131 patients). The results for those patients on cpm are as follows: the average dose of P, M, MP, and F is 22.28 mg, 3.35 mg, 45.25 mg, and 88.9mcg, respectively. The results for patients not on cpm are as follows: the average dose of P, M, MP, and F is 22.67 mg, 3.64 mg, 47.67 mg, and 88.9mcg respectively. There were no major complications and 1 minor complication (rash) complications. Both of which were bleeding (one requiring injection and bicap cautery, the other self-limited).

**Conclusions:** Therapeutic ERCP in the pediatric population is safe and effective. Familiarity with pediatric endoscopes and specialized accessories for children 10 years old or younger is necessary for adequate outcomes. Therapeutic techniques can be applied as needed with complication rates similar to what is seen in the adult population.

**Description and Frequency of Therapy used during pediatric ERCP**

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biliary sphincterotomy</td>
<td>24 (58.5%)</td>
</tr>
<tr>
<td>Balloon/basket sweep</td>
<td>16 (39%)</td>
</tr>
<tr>
<td>Biliary stent</td>
<td>3 (7.3%)</td>
</tr>
<tr>
<td>Needle knife precut</td>
<td>3 (7.3%)</td>
</tr>
<tr>
<td>Ampullary balloon dilation</td>
<td>2 (4.9%)</td>
</tr>
<tr>
<td>Pancreatic stent</td>
<td>2 (4.9%)</td>
</tr>
<tr>
<td>Pancreatic sphincterotomy</td>
<td>1 (2.5%)</td>
</tr>
</tbody>
</table>

---

**Endoscopic Findings in an Inner City Population Referred to GI for Involuntary Weight Loss**

Zahid A. Afzal, M.D., Courtney Langdon, M.D., Laura Alba, M.D., Christian Dang, M.D., Tahira Safiuddin, M.D.*. University of Missouri-Kansas City, Kansas City, Missouri.

**Purpose:** Many patients with involuntary weight loss (IWL) are referred to the GI service for evaluation. The purpose of this study was to examine the value of endoscopy in diagnosing the cause of IWL.

**Methods:** Medical records from patients undergoing endoscopy for evaluation of IWL from 1996-2002 were analyzed retrospectively. Recorded data included demographics, GI symptoms, ETOH and tobacco use, BMI, Hgb, MCV, Cr, TSH, psychiatric history, COPD, HIV, cancer, or IBD, visual endoscopic findings, and pathology diagnosis. Documented weight loss by medical records was often unavailable.

**Results:** Of the 223 charts reviewed, 90 patients (40%) had abnormal GI pathology which could account for IWL (Fig. 1). Demographics reached statistical significance (p = 0.02) only with age when GI diagnoses were separated by pathology (PUD, malignancy, IBD, Villous Atrophy (VA), and other). Patients with PUD and malignancy were often in the 55-65 year age group where patients with IBD and VA tended to be in the 30-40 year age group.
age group (Fig. 2). Patients with abnormal GI pathology had GI symptoms other than IWL. 91% of the time versus 59% of patients with normal GI tracts (p < 0.05). A trend toward a positive correlation was seen between hemoglobin/MCV and abnormal GI pathology and, between tobacco use and abnormal GI pathology. Given our inner city population of patients with sporadic compliance in keeping clinic appointments, a final diagnosis in patients with normal GI tracts was found in 27% of patients. The majority of these patients had psychiatric disorders, renal dysfunction, or a non-GI site of malignancy.

Conclusions: Patients with IWL who also have GI related symptoms, should undergo early endoscopy as part of their work up regardless of age or BMI.

Figure 1. GI Causes of IWL Based on Pathology Findings.

Figure 2. GI Disorder by Patient Age.

956
A CASE CONTROLLED STUDY TO COMPARE A CONVENTIONAL ELECTROSURGICAL GENERATOR TO ONE WITH ENDOCUT® IN PERFORMING SNARE POLYPECTOMY

Zahid A. Afzal, M.D.*, Haleem Khan, M.D.*, Tahira Saifuddin, M.D., Laura Alba, M.D., Christian Dang, M.D., Esmat Sadeddin, M.D., Alexandra Laya, M.D. University of Missouri-Kansas City, Truman Medical Center, Kansas City, Missouri.

Purpose: There are no previous studies comparing safety of electrosurgical generators (ESG) in performing snare polypectomy. Furthermore, there are no studies looking at the use of Endocut® in performing snare polypectomy. We conducted a retrospective case controlled study to compare a conventional ESG to a newer ESG with the Endocut® feature.

Methods: At our institution, a conventional ESG utilizing blended current was used for all snare polypectomies up to February 28, 2001. A retrospective case controlled chart review was performed of all patients undergoing colonoscopy from August 27, 1999 through September 9, 2002. The inclusion criteria encompassed all patients who underwent snare polypectomy during colonoscopy performed for the usually recommended indications. Data collection included patient demographics, number of polyps removed, polyp characteristics, immediate and delayed complications related to the polypectomy. The case controls consisted of 150 cases that underwent snare polypectomy using the conventional ESG prior to February 28, 2001. After this date, 150 consecutive cases that underwent snare polypectomy with the newer ESG utilizing blended current with the Endocut® feature were also analyzed. All polypectomies were performed using the same type of monopolar snare with standard manufacturer recommended settings.

Results: A total of 311 polyps were excised with the conventional ESG of which 255 were removed with snare. Average size of the polyps was 7.4 mm. In this group, there were 4 (2.67%) complications. All complications were post polypectomy bleeds; 2 immediate and 2 delayed. In the newer ESG with Endocut® group, 375 polyps were removed of which 263 were excised using snare. Average size of the polyps was 7.6 mm. In this group, there was 1 (0.67%) post polypectomy bleed. The groups did not differ significantly in their demographics, comorbid conditions or polyp characteristics.

Conclusions: In our study, the newer ESG with the Endocut® feature did not provide statistically significant clinical benefit in complication rates (P = 0.22). This can be explained by the limited sample size. The data does lean towards statistical importance warranting further study. A prospective randomized trial using larger number of patients may show statistically significant benefit in the complication rates of one ESG over the other.
advancement in the treatment of complex acid peptic strictures and should be adopted by all those who treat complex acid, peptic strictures.

PEDIATRICS

958

CONFUSION AND DOUBT: ANTI-REFLUX TREATMENT IN PYLORIC STENOSIS

Purpose: Congenital hypertrophic pyloric stenosis (CHPS) in early infancy can often be confused, particularly in its early stages of evolution, with severe gastro-oesophageal reflux. Previous studies have shown that a significant proportion of infants with CHPS have varying degrees of gastro-oesophageal reflux with an associated oesophagitis. Our aim was to evaluate the effects of empiric anti-reflux therapy on the clinical course and diagnosis of infants who developed CHPS.

Methods: We carried out a retrospective case-note review of all infants with a final confirmed diagnosis of CHPS at a district hospital over a nine-year (1995-2003) period.

Results: 48 infants (41 male, 7 female) were identified among whom 11 had received empiric anti-reflux treatment following an initial clinical diagnosis of gastro-oesophageal reflux (median treatment duration – 3 days; IQR: 2-12.5). The time period between physician contact and final diagnosis was significantly longer in the group of treated infants in comparison to the group that received no medication (3 versus 2 days; two-tailed p-0.047; Mann-Whitney). Anti-reflux therapy was associated with not only increased readmission rates (45.5% versus 10.8%; two-tailed p-0.021; Fisher exact test) but also a lesser degree of metabolic alkalosis, though the latter was not significant. Serum potassium and chloride levels as well as the ultrasonic measurements of pyloric canal length and muscle thickness were no different in the two groups.

Conclusions: Empiric anti-reflux treatment can be associated with a significant delay in diagnosis of CHPS. The increased readmission rate for those on anti-reflux treatment implies an increased rate of initial misdiagnosis in treated infants. Both these factors are likely to increase parental stress around the time of diagnosis. It may also alter the biochemical profile away from the typical hypochloremic metabolic alkalosis. Physicians should be aware of the increased potential for diagnostic confusion in the presence of anti-reflux treatment.

959

EFFECT OF EZETIMIBE ADMINISTERED FROM BIRTH ON HEPATIC CHOLESTEROL ACCUMULATION IN THE NIEMANN-PICK TYPE C (NPC) MOUSE
Eduardo Beltroy, M.D., James Richardson, D.V.M., Stephen Turley, Ph.D., John Dietschy, M.D.*. Univ. of Texas Southwestern Medical Center, Dallas, Texas.

Purpose: To investigate the potential of ezetimibe (ezet) for preventing hepatic accumulation of cholesterol (chol) in mice with NPC disease

Methods: In the first study, Hepatic chol content and liver enzymes were measured in matching npc1−/− and npc1+/+ mice at ages ranging from 1 to 56 d. In a second study, mice at 35 d of age were allocated to three dietary groups: npc1+/+ (chow only), npc1−/− (chow only), and npc1−/− (chow + ezet 20 mg/kg/d). Mice were fed their diets for 21 d.

In a third study, pups born to npc1−/− parents were given ezet (20mg/kg/d in MCT oil) by gavage from birth. After genotyping at 12 d of age, 10 npc1−/− mice were identified. At 19 d of age, these mice were switched to a powdered chow diet containing ezet (20mg/kg/d).

In the second and third studies, hepatic chol content and liver enzymes were measured at 56 d of age, and liver tissue aliquots were stained with H&E.

Results: In the npc1−/− mice, whole liver chol content increased almost linearly as a function of age from 0.80 ± 0.23 to 31.10 ± 1.58 mg compared to 0.35 ± 0.03 to 2.99 ± 0.09 mg in the npc1+/+ controls over 56 d. This was associated with an accumulation of amorphous material in hepatocytes and Kupffer cells, and elevation in liver enzymes.

Starting ezet treatment at 35 d of age prevented further accumulation of chol in the liver of the npc1−/− animals. Hepatic chol content in these mice remained unchanged at 20.81 ± 0.85 mg.

In the npc1−/− animals given ezet from birth, a greater reduction on hepatic chol accumulation was observed, with these mice having a hepatic chol content of 17.61 ± 1.03 mg at 56 d of age.

Ezet treatment not only reduced hepatic chol accumulation but also improved histological abnormalities and liver enzymes.

Conclusions: In the npc1−/− mouse fed a low chol diet, there is essentially a linear increase in whole liver chol content as a function of age. This is associated with an elevation in liver enzymes, and with accumulation of amorphous material in both the hepatocytes and the Kupffer cells. When the mice are fed ezet starting at 35 d, hepatic chol content falls, histological abnormalities improve, and liver enzymes decrease.

When ezet is given from birth, it further reduces chol accumulation in the liver. This is also associated with a greater improvement in both liver histology and enzymes.

While significant benefit of ezet is seen when treatment is started in late neonatal period, even greater benefit is achieved if started at birth.

960

CANDIDA ESOPHAGITIS IN INFANTS WITH GASTROESOPHAGEAL REFLUX AND FEEDING INTOLERANCE
C. Julian Billings, M.D., Amy M. Billings, M.D., Karen D. Crissinger, M.D., David A. Gremse, M.D., F.A.C.G.*. University of South Alabama, Mobile, Alabama and University of Nevada School of Medicine, Las Vegas, Nevada.

Purpose: The aim of this study was to examine the role of Candida esophagitis in infants with symptoms of gastroesophageal reflux disease (GERD) and significant feeding intolerance.

Methods: A clinical database was queried to identify all children diagnosed with both Candida esophagitis and GERD since 1999. 10 patients were identified, and data were collected regarding their dietary history, medications, growth, and response to prior therapies. All of these patients underwent esophageal gastroduodenoscopy (EGD) with biopsies and/or esophageal brushings.

Results: There were 10 infants, age 1 wk - 7 mo (0.32 yr ± 0.26), 70% male, 50% African American, 40% Caucasian, 10% Hispanic. All of the patients had vomiting, 80% had feeding intolerance, 60% had diarrhea, 50% had allergic colitis, and 30% had oral candidiasis. None had any history or clinical evidence of immunosuppression. All patients were below the mean for weight for age (z-score, -1.72 ± 0.14, mean ± SD, range -3.51 to -0.04).

Only one of the infants had received recent antibiotic therapy. There had been no improvement in the patients’ symptoms, weight, or feeding tolerance despite multiple formula changes, and appropriate empiric therapy with ranitidine, metoclopramide, or various proton pump inhibitors. After Candida esophagitis was diagnosed at EGD (biopsy and/or brushings), all patients were treated with fluconazole 5 mg/kg/d. All 10 patients demonstrated improvement in their symptoms following treatment. Follow-up data were obtained in 8 patients (range 1-8 months, mean 5.7 months). Among the patients for whom follow-up data are available, there was a significant improvement in the patients’ weight-for-age z-scores following treatment (−1.97 ± 1.10, range −3.51 to −0.78 versus −0.32 ± 0.70, range −1.44 to 0.44, p = 0.005, pre-treatment vs. final follow-up visit respectively).

Conclusions: Candida esophagitis should be included in the differential diagnosis of immunocompetent infants presenting with symptoms of GERD and feeding intolerance not responsive to appropriate therapy. EGD should be considered in the diagnostic evaluation of such patients. The absence of oral candidiasis does not exclude the possibility of Candida esophagitis.
WIRELESS CAPSULE ENTEROSCOPY IN A PEDIATRIC BONE MARROW TRANSPLANT PATIENT WITH CHRONIC DIARRHEA

Carl B. Routtree, M.D., Hillel Naon, M.D.*. Childrens Hospital Los Angeles, Los Angeles, California.

Purpose: Wireless Capsule Endoscopy (WCE) has been used in limited cases in adult patients post bone marrow transplant (BMT) as an adjunct to graft-versus-host disease (GVHD) grading.

Methods: The patient is a 9-year-old male with X-linked lymphoproliferative disease. He underwent a BMT, unrelated cord blood 6/6 match, in 11/02. He had persistent watery diarrhea, GVHD stage 1-4 based on stool volumes from 500 to 2000+ cc/day, and has developed sepsis with feedings. During the last 18 months, he has undergone 7 separate endoscopic evaluations for the cause of his diarrhea. He was found to have ulcers in the colon, ranging from small aphthous ulcers to larger ulcerations on colonoscopies. Multiple biopsies were taken which initially demonstrated Adenovirus Antigen. Repeat biopsies 1 month later demonstrated Epstein Barr Virus DNA. Initial biopsies did not reveal GVHD on histology. After four months of anti-viral therapy and GVHD therapy, biopsies revealed grade 1-2 GVHD based on apoptotic cells and rare crypt abscess on H&E staining. He has been receiving therapy for GVHD including steroids, cyclosporin, rituximab, and ramapune, as well as anti-viral therapy, without resolution of diarrhea. He has been NPO on TPN for many months without resolution of diarrhea or colonic ulcers. A Given M2A Endoscopic Capsule was passed via EGD in 5/04 to better visualize his small bowel mucosa and determine if enteral feeds can be initiated.

Results: Four small ulcers were seen in the proximal jejunum, which were consistent with grade 1 GVHD. No lesions were identified beyond the proximal jejunum, and the rest of the small bowel mucosa was normal in appearance. The patient tolerated the WCE procedure well, and there were no adverse results from the WCE. Following the study, oral feedings were commenced. TPN was discontinued, and the diarrhea resolved.

Conclusions: In adults, there are a few case reports describing WCE use post BMT for GVHD staging. This abstract represents the first pediatric case report of WCE in a patient post BMT for GVHD staging. As a result of WCE findings showing normal appearing mucosa in the majority of the small bowel, the patient was started on enteral feeds.

THE DETECTION OF LACTOFERRIN, ASCA, AND ANCA IN FECES IS USEFUL FOR ASSESSING PEDIATRIC IBD PATIENTS


Purpose: Diagnostic testing for inflammatory bowel disease (IBD) is increasingly common in clinical practice. Current assays include fecal lactoferrin (LF, a marker of intestinal inflammation), serum anti-Saccharomyces cerevisiae antibodies (ASCA, an indicator of Crohn’s disease), and serum anti-neutrophil cytoplasmic antibodies (ANCA, an indicator of ulcerative colitis). In our study, we evaluated a new diagnostic approach measuring LF, ASCA, and ANCA in fecal specimens for the assessment of pediatric IBD.

Methods: A total of 95 individual fecal specimens were collected over a 2 year period from 38 subjects with Crohn’s disease (CD), 41 subjects with ulcerative colitis (UC), 6 subjects with irritable bowel syndrome (IBS), and 10 healthy subjects with no history of gastrointestinal illness. The age range was 2 to 18 years, with a male to female ratio of 1.7. Diagnosis and disease activity were assessed clinically and by fecal lactoferrin. Fecal specimens were analyzed for LF, ASCA, and ANCA using enzyme-linked immunoassay (ELISA). LF levels (μg/mL feces) ≥ 7.25 μg/mL were considered elevated, and consistent with active disease. ASCA and ANCA ELISA absorbance values ≥ 0.200 and 0.140, respectively, were considered positive.

Results: A total of 60 out of the 79 subjects with IBD had a mean ± SE fecal lactoferrin of 2321.66 ± 492.80 indicating active disease. There were 10 subjects with CD that were ASCA-positive and 5 subjects with UC that were ANCA-positive. Three subjects with active disease were positive for both ASCA and ANCA (1 with CD and 2 with UC). The remaining 25 subjects, including 19 inactive IBD and 6 IBS, had a mean LF of 1.71 ± 0.45. LF in healthy subjects (3.55 ± 1.30) were not significantly different from those measured in inactive/IBS subjects.

Conclusions: Using a panel of fecal LF, ASCA, and ANCA assays, we were able to detect 64 (75.3%) of the subjects with IBD in our study population, and further distinguish 10 of these subjects as having CD and 9 as having UC. Our findings show the diagnostic utility of combining the measurements of LF, ASCA, and ANCA in feces for assessing pediatric IBD. These non-invasive assays are easy to perform and are designed for a panel analysis using a single fecal specimen.

ENDOSCOPIC CLOSURE OF GASTROCUTANEOUS FISTULA IN CHILDREN FOLLOWING GASTROSTOMY TUBE REMOVAL

Manoj Shah, M.D.*, Sally Rajcevich, R.N., Finesse Child, R.N. Loma Linda University, Loma Linda, California.

Purpose: Purpose of the study is to report our experience with endoscopic closure of gastrocutaneous (GC) fistula after removal of gastrostomy tube (GT) in four pediatric patients. Earlier, patients with GC fistula were managed by surgical resection and closure of gastrotomy.

Methods: Retrospective chart review was performed in four consecutive patients who had undergone endoscopic closure of GC fistula over last six months. GT was removed when patients maintained growth for more than three months without use of the GT. H2 blocker was given if GT site drained for more than a week. If GT site drained more than two weeks after removal of GT, then upper endoscopy (UE) was performed and gastric opening of the fistula was closed with Endoclip®. UE and Endoclip® were repeated in two weeks if drainage persisted or recurred. Supplemental treatment included cautery of external granuloma with silver nitrate, application of Flo-Seat® in or around the gastrotomy, and small volume feedings for two weeks.

Results:

Conclusions: 1. Persistent GC fistula, after removal of GT, may occur in patients in whom GT had been in place for more than 10 months.
2. Endoscopic application of clip (supplemented with external topical silver nitrate and Flo-Seat®) is successful in achieving closure of GC fistula, thus avoiding surgery.
3. More than one session of UE with clip application may be required for successful closure of GC fistula.

EPIDEMIOLOGICAL ASPECT OF ROTAVIRUS INFECTIONS IN AHWAZ, IRAN

Mahnaz Taremi, M.D., Alireza Samarbaghdad, Ph.D.*, Elham Mazzaher Tehrani, M.S., Manoochehr Makvandi, Ph.D. Research Center for Gastroenterology and Liver Diseases, Tehran and Institute of Microbiology, Ahwaz, Islamic Republic of Iran.
DIVERSITY OF CULTURABLE LACTOBACILLUS POPULATIONS FROM THE NEONATAL AND ADULT GASTROINTESTINAL TRACT

Purpose: In order to develop good polices regarding public health measures and vaccine use to prevent rotavirus induced gastroenteritis, the epidemiology of the illness in various regions of Iran is necessary. Accordingly, this study was to detect the frequency and types of rotavirus in one city in a tropical part of Iran. This is an epidemiological survey of pediatric gastroenteritis caused by rotavirus conducted in the city of Ahwaz, located in the Southern part of Iran.

Methods: We analyzed 200 in-patient (138) and out-patient (62) stool samples from children ages 1 to 48 months during 2002. Rotavirus detection was performed using polyacrylamide gel electrophoresis (PAGE).

Results: Rotavirus was isolated from 35/138 (25.4%) stool samples from hospitalized children and 24/62 (38.7%) from out-patients. The overall rotavirus frequency in this population was 29.5%. The highest rotavirus detection was found in children ages 7 to 12 months which demonstrates that the relationship between age and rate of rotaviral infection was statistically significant (P < 0.05). Rotaviruses were detected from October to March, with a peak incidence in December (44%), the coldest and driest month in the region. Electrophoretic analysis identified 4 different profiles: 77.6% and 20.7% were long and short patterns, respectively, compatible with group A rotavirus. Mixed infection was observed in one infant who was infected with both a long (Wa-like) virus and a short (DS-1 like) virus.

Conclusions: Rotavirus induced gastroenteritis is common in one tropical region of Iran, it is most common during dry, cold months of the year. Such analysis throughout Iran will assist in developing sound guidelines regarding its prevention.

966

ILEOSCOPY WITH VIDEOCAPSULE IN PEDIATRIC-JUVENILE AGE

Barbara Bizzarri, M.D., Fabiola Fornaroli, M.D., Carmine Del Rossi, M.D., Francesco Vincenzi, M.D., Valentina Maffini, M.D., Nicola de’ Angelis, Benedetta Ghidini, M.D., Barbara Magistri, M.D., Gian Luigi de’ Angelis, M.D.*. University of Parma and AO Pärna, Parma, Italy.

Purpose: The aim of our study was to prove the effectiveness and safety of ileoscopy with videocapsule in children.

Methods: We use the GIVEN Workstation®. We always request intestinal cleaning. After 8 hours, when the frequency of the signal is reduced, we interrupt the registration. Patients are asked to check all stools. From October 2001 to May 2004 we enrolled 58 patients (2 - 16 years; 22 females, 36 males). The clinical indications were acute or chronic anemia, suspected or follow-up of poliposis, Inflammatory Bowel Disease and suspected malabsorption.

Results: Only four patients did not spontaneously swallowed the videocapsule which was positioned in the antrum or in the proximal duodenum with the endoscope in general anaesthesia and no complications occurred. Only one videocapsule remained in the stomach for all the duration of the exam.

The videocapsule showed: a) in the patients with anemia: lesions suggesting IBD (5 cases), lately confirmed; ileal lymphoid macronodular hyperplasia (2 cases); jejunal isolated polyp (1 case) or diffuse polyps (1 case); non steroidal anti-inflammatory drugs ileal ulceration (1 case), ulceration in a stenotic anastomosis (1 case). Eight exams were negative.

b) in the patients with suspected or follow-up of poliposis we found ileal and/or colic and/or gastric polyps (13 cases); an ileal occult lesion (adenocarcinoma) in a girl with neurofibromatosis. Five exams were negative.

c) We found n 11 patients with known colic Crohn’s disease, ulcerative and stenotic ileal lesions, in 6 patient no lesions were found, in 1 patient the videocapsule remained in the stomach.

d) In 1 case with suspected celiac disease, no lesions were showed. All patients, except two, evacuated the capsule within 1 week. Surgery was necessary to remove the ileal occlusion due to an adenocarcinoma and an acquired blind loop with multiple bleeding ulcerations (patient with anastomosis).

Conclusions: In our experience the videocapsule is essential in the diagnosis and/or follow up of chronic anemia, poliposis and Inflammatory Bowel Disease also in paediatric age. Although ileoscopy cannot be considered an alternative to traditional endoscopy it is very useful and safe, since 37 exams (64%) show pathological findings. The sensitivity and specificity are improved by an accurate selection of patients.
NERD HISTOLOGICAL SCORE

1 - Mild Requires one of the following:
   a) basal cell zone ≥15%,
   b) papillary height >60% of mucosal thickness

2 - Moderate or Severe Requires two of the following:
   a) basal cell zone ≥15%,
   b) papillary height >60%,
   c) ≥5 to < 15 eosinophils/HPF or
   ≥3 neutrophils/HPF

*Score is highest of any biopsy reviewed

Methods: This multicenter, randomized, double-blind, multiple-dose study included symptomatic GERD subjects aged 5 to 11 years. Patients underwent EGD with biopsy at baseline and week 8. Eosinophilic esophagitis (EOS) was excluded by biopsy. Subjects were randomly assigned to 10, 20, or 40 mg pantoprazole daily for 8 weeks, with weekly symptom evaluations.

Results: 76 subjects enrolled, 23 did not meet entry criteria, including 3 with EOS. Of 53 subjects randomized, 4 (7.5%) had EE and 49 (92.5%) had NERD. Of the subjects with NERD, 80% had endoscopic evidence of erythema and 64.6% had moderate or severe eosinophilisis on biopsy at baseline. At week 8, there was significant symptom score improvement at all 3 doses (p < 0.02). After treatment 70.2% of endoscopies were normal and 71.7% of the biopsies were normal or showed mild eosinophilia. There were no SAEs.

Mean Composite Symptom Scores

<table>
<thead>
<tr>
<th>Dosage</th>
<th>Baseline</th>
<th>Week 8</th>
<th>Pan 10 mg (n = 18)**</th>
<th>Pan 20 mg (n = 15)</th>
<th>Pan 40 mg (n = 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>126.7</td>
<td>148.0</td>
<td>141.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28.1*</td>
<td>34.1*</td>
<td>44.5*</td>
</tr>
</tbody>
</table>

*Change from baseline p < 0.02; **1 withdrew due to lack of efficacy.

Conclusions: Strict morphologic criteria for esophagitis was a useful screening tool in children with NERD. Pantoprazole significantly reduced symptoms after 8 weeks of therapy.

FECAL LACTOFERRIN IS A SENSITIVE AND SPECIFIC NON-INVASIVE SURROGATE MARKER FOR THE DIAGNOSIS AND MANAGEMENT OF PEDIATRIC INFLAMMATORY BOWEL DISEASE


Purpose: Fecal lactoferrin (FLA) is a neutrophil-derived surrogate marker of intestinal inflammation. Elevated FLA levels have been demonstrated in adult patients with inflammatory bowel disease (IBD). Aims: 1) Determine the ability of FLA to reflect disease activity in pediatric patients with inflammatory and non-inflammatory gastrointestinal disease. 2) Determine the correlation between FLA levels and existing biochemical markers of intestinal inflammation.

Methods: Fecal specimens were collected from 148 subjects including 79 with Crohn’s disease (CD), 62 with ulcerative colitis (UC), and 7 with irritable Bowel Syndrome (IBS). FLA was measured by ELISA (IBD-SCAN™; TECHLAB®, Inc) and reported as mcg/ml feces. Disease activity was assessed using Harvey Bradshaw (HBAI) and Pediatric Crohn’s Disease Activity Indices (PCDAI). Disease activity was also assessed by Global Physician Assessment (GPA), a derived dichotomous measure that characterizes disease activity based on whether or not a clinician feels the need to alter a subject’s medical therapy.

Results: Fecal lactoferrin levels were greater in subjects with IBD 1780 ± 326 vs. those with IBS 2.08 ± 0.9 (mean ± SE). The sensitivity and specificity of FLA to distinguish symptomatic subjects with IBD from those with IBS was 95% and 100%, respectively. FLA faithfully discriminated subjects with active IBD, CD, or UC from those with inactive disease (p < 0.002) using HBAI, PCDAI, or GPA. Using a Spearman linear regression model, we found highly significant correlations (p < 0.0001) between FLA and several commonly used biochemical indices including ESR, hemocrit, albumin, and platelet count. ROC analysis demonstrated that FLA outperformed ESR in distinguishing active vs. inactive IBD, UC and CD, but reached statistical significance only in subjects with UC (p = 0.016). FLA levels were significantly higher (1003 ± 547) in 4 subjects that went on to experience a clinical flare in their IBD within two months of specimen collection, relative to 51 subjects that remained in clinical remission (190 ± 90, p = 0.024).

Conclusions: Our data confirm FLA as a useful screening tool for detecting IBD in pediatric patients. This non-invasive surrogate marker reflects intestinal disease activity with greater precision than ESR. Elevated levels of FLA may predict patients at greater risk for developing subsequent clinical flares.

THE UTILITY OF WIRELESS CAPSULE ENDOSCOPY IN THE EVALUATION OF SUSPECTED CROHNS DISEASE IN THE PEDIATRIC POPULATION


Purpose: Wireless Capsule Endoscopy (WCE) allows direct visualization of the entire small intestinal (SI) mucosa and detection of mucosal lesions not identified by conventional endoscopic and radiographic studies. Little information is available regarding the effectiveness of WCE in the investigation of SI disease in the pediatric population. The aim of this study is to evaluate the efficacy of WCE in the diagnosis of known or suspected SI crohns disease (CD) in children with non-confirmatory traditional diagnostic studies.

Methods: Retrospective analysis of consecutive patients undergoing WCE for suspected CD at single center during a 6 month period. Suspension of CD was based upon chronic abdominal pain with at least one of the following additional criteria: chronic diarrhea, weight loss, anemia, occult blood loss, increased ESR, or malnutrition. Conventional diagnostic testing including colonoscopy and small bowel series were non-diagnostic. The finding on WCE of multiple SI ulcers was considered diagnostic of CD, < 3 ulcers suspicious of CD and otherwise as normal. All patients received a 2 liter preparation with PEG the day prior to the procedure.

Results: 16 patients (10 male, mean age 14, range 12 to 18 yrs) were studied. Two patients had known SI CD, including 1 with prior SI resection, but neither of the 2 patients had evidence of recurrent disease. Two patients required endoscopic placement of the Capsule Endoscope (CE), 1 for refusal to swallow the CE and 1 for Autism. The CE reached the cecum in 11/16 (69%) cases. SI visualization was suboptimal in 1/16 (6%) due to luminal debris. WCE identified CD in 5/16 (31%) of the cases with subsequent change in patient management. Two additional cases had single areas of erosion in the SI (suspicious but not diagnostic of CD). Nine of sixteen (56%) had normal exams. Capsule retention occurred in 1 case despite prior normal small bowel series requiring surgical resection of the SI stricture. No adverse events occurred.

Conclusions: WCE is effective in the identification of suspected SI CD in children with undetected disease by conventional testing. Approximately half of the patients studied had normal exams excluding significant SI mucosal disease. The risk of CE retention appears to be increased in this subpopulation.

INFANTILE HEPATIC FIBROSIS: AN UNUSUAL MANIFESTATION OF DOWN SYNDROME AND ABNORMAL MEYOLOPHOESIS

Michael A. Russo, M.D., Becky J. Ennis, M.D., Carol A. Redel, M.D.*. University of Texas Southwestern Medical Center, Dallas, Texas.
Hepatic fibrosis is a rare and usually fatal manifestation of transient myelo-proliferative disorder (TMD); a disorder seen only in newborns with Down syndrome. We present a Down syndrome neonate who succumbed to this process despite attempted treatment with the chemotherapeutic agent cytosine arabinoside (ARA-C).

A 2495g female infant was born by spontaneous vaginal delivery to a healthy 18 year old gravida 1 para 0 woman at 36 weeks gestation. Apgar scores were 9 and 9 at 1 and 5 minutes. At delivery the stigmata of Down syndrome were apparent and chromosomal analysis would confirm Trisomy 21. Hepatosplenomegaly without ascites was noted at birth. Initial labs included a WBC count of $4 \times 10^9/\text{ul}$ with blasts present on the peripheral smear. The diagnosis of TMD was made on day of life 2. Over the following weeks the infant became coagulopathic and hypoalbuminemic. Her clinical condition deteriorated with the development of progressive jaundice and abdominal distention requiring assisted ventilation secondary to respiratory compromise from massive hepatosplenomegaly. An open liver biopsy was performed on day 27 revealing numerous megakaryocytes, exuberant intralobular fibrosis and portal areas expanded by fibrosis. On day 29 ARA-C therapy was initiated after a bone marrow biopsy revealed no evidence of leukemia. The infant subsequently developed sepsis with multiorgan system failure, succumbing to her illness on day 33.

This case represents an unusual but severe, life threatening complication of TMD in a newborn infant with Down syndrome. TMD occurs in approximately 10% of newborns with Down syndrome with most cases resolving spontaneously within the first 4–7 months of life. However, as this case illustrates, a small fraction of these patients will develop hepatic fibrosis with a severe and usually fatal course. Although initiation and timing of therapy are controversial, successful therapy with ARA-C has been described. Knowledge of the potential development of hepatic fibrosis within this subpopulation of Down syndrome patients is essential. Given the high likelihood of mortality, monitoring for liver disease with consideration for early liver biopsy and therapy may be imperative for survival.

**971**

**ISONIAZID INDUCED FULMINANT HEPATIC FAILURE IN A TEENAGER**


A 14-year old boy presented with 2 weeks of jaundice and right upper quadrant pain. His past medical history was significant for a positive PPD two months prior to admission. He was taking isoniazid 10 mg/kg/day over the past 2 months. There was no history of acetaminophen ingestion. Family history was unremarkable. Physical examination revealed marked scleral icterus, right upper quadrant tenderness and hepatomegaly. No Kayser-Fleischer ring was noted.

Blood analyses revealed normal albumin and total protein, ALT 2442 U/L, AST 2178 U/L, total bilirubin 24.8 mg/dL, direct bilirubin 17.4 mg/dL, gamma glutamyl-transferase 8 U/L, prothrombin time 40 seconds, partial thromboplastin time 78.8 seconds, ceruloplasmin 15 mg/dL, WBC $6.2 \times 10^9/\text{L}$, hemoglobin 13.7 gm/dL and platelet count 156 $\times 10^9/\text{L}$. Serum creatinine was normal. Serologic studies for hepatitis A, hepatitis B, hepatitis C, CMV and EBV; were negative. Abdominal ultrasound revealed heterogenous echogenicity with no focal masses, gallstones or biliary dilation. His clinical course was characterised by fulminant liver failure progressing to stage IV hepatic encephalopathy by the fifth hospital day. He was transferred to a liver transplant center and received orthotopic split liver transplant. The child had a full recovery. Histopathologic examination of the explant revealed centrilobular collapse (Figure 1) and intracanicular, cellular and ductular cholestasis (Figure 2) consistent with drug induced hepatic injury.

**972**

**THERAPEUTIC DILEMMA: A CASE OF AN ADOLESCENT WITH CROHN’S DISEASE AND FAMILIAL ADENOMATOUS POLYPOSIS**

Jeanne Tang, M.D., Rayna Grothe, M.D.*. Mayo Clinic, Rochester, Minnesota.

**Background:** Crohn’s disease is an idiopathic inflammatory bowel disease with an annual incidence of approximately 7 cases per 100,000. Familial adenomatous polyposis (FAP) is an autosomal dominant disorder characterized by a mutation in the adenomatous polyposis coli gene (APC) with a worldwide incidence of 1 in 100,000 births. We report a case of an adolescent female with Crohn’s disease and FAP.

**Case:** A 17 year-old Caucasian presented to the local emergency room with fever, vomiting, and abdominal pain. For the past month, she had intermittent vomiting and abdominal pain. A CT abdomen was consistent with ileitis. Initial colonoscopy showed mild to moderate ileitis and colitis, as well as hundreds of colonic polyps. The polyps were tubular adenomas. The APC gene mutation test showed a 3927-3931del AAAGA deletion on chromosome 5. The Crohn’s disease was treated aggressively with mesalamine (Asacol®), azathioprine, and infliximab. Repeat colonoscopy 10 months after the initial diagnosis showed a remission of her Crohn’s disease, but an increased number of polyps. She was maintained on her immunosuppressive regimen for over 6 months to ensure remission of the Crohn’s disease prior to colectomy. Celecoxib was initiated in the interim to slow the progression of polyph formation. Repeat colonoscopy prior to surgery showed...
continue remission of the Crohn’s disease. The number of polyps was decreased, particularly in the right colon, and polyp size did not progress. She will undergo total colectomy with ileorectomy.

**Discussion:** Familial adenomatous polyposis confers a 100% risk of colorectal cancer, necessitating a prophylactic colectomy with IPAA. Trials of cycloxygenase-2 inhibitors have been successful at reducing the polyt burden, but the longterm efficacy of this approach (i.e. prevention of colorectal cancer) is not proven. Colectomy in Crohn’s disease is generally reserved for severe colitis, and carries a risk of recurrence at the anastomosis site. In this patient, there were surgical concerns about pouch formation because of the risk of recurrent Crohn’s disease. There were also concerns that celecoxib would exacerbate the Crohn’s disease.

**Conclusions:** Basal cell hyperplasia is more severe in children with eosinophilic esophagitis than in reflux esophagitis. Basal cell hyperplasia is likely stimulated by cytokines present in eosinophilic esophagitis. Prolonged stimulation of basal cells by these cytokines present in eosinophilic esophagitis may be responsible for stricture formation.

**SEVERITY OF BASAL CELL HYPERPLASIA DIFFERS IN REFLUX VERSUS EOSINOPHILIC ESOPHAGITIS**

*Steven J. Steiner, M.D., Joseph F. Fitzgerald, M.D., M.A.C.G.*.  Indiana University School of Medicine, Indianapolis, Indiana.

**Purpose:** Basal cell hyperplasia of the esophageal epithelium is a frequent finding in children with endoscopic evidence of esophagitis. The aim of this study was to compare the severity of basal cell hyperplasia in reflux versus eosinophilic esophagitis.

**Methods:** A cohort of patients who underwent same day endoscopy with esophageal biopsy and 24 hour esophageal pH monitoring was divided into groups based on endoscopic and pH monitoring findings. Basal cell hyperplasia was defined as normal (< 25% of esophageal epithelial height), mild (26-50%), moderate (51-75%), or severe (> 75%). Using chi-square analysis, the severity of basal cell hyperplasia in patients with abnormal pH monitoring studies (reflux index >6%), regardless of endoscopic findings, was compared with the severity in patients with eosinophilic esophagitis (≥20 eosinophils/hpf and normal pH monitoring). The severity of basal cell hyperplasia in patients with abnormal pH monitoring and endoscopic evidence of esophagitis was compared with the severity in patients with eosinophilic esophagitis.

**Results:** Thirty-one children with abnormal pH monitoring were identified. Of these thirty-one children, fifteen had endoscopic findings consistent with reflux esophagitis. Thirty-two patients with eosinophilic esophagitis were identified. Patients with eosinophilic esophagitis had significantly more severe basal cell hyperplasia than patients with abnormal pH monitoring.

<table>
<thead>
<tr>
<th>Severity of Basal Cell Hyperplasia in Patients with Abnormal pH Monitoring versus Patients with Eosinophilic Esophagitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
</tr>
<tr>
<td>Abnormal pH Monitoring</td>
</tr>
<tr>
<td>Eosinophilic Esophagitis*</td>
</tr>
</tbody>
</table>

*p < 0.001 compared to Patients with Abnormal pH Monitoring

Patients with eosinophilic esophagitis had significantly more severe basal cell hyperplasia than patients with abnormal pH monitoring and endoscopic evidence of esophagitis.

<table>
<thead>
<tr>
<th>Severity of Basal Cell Hyperplasia in Patients with Reflux Esophagitis versus Patients with Eosinophilic Esophagitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
</tr>
<tr>
<td>Reflux Esophagitis</td>
</tr>
<tr>
<td>Eosinophilic Esophagitis*</td>
</tr>
</tbody>
</table>

*p = 0.002 compared to Patients with Reflux Esophagitis.

**PSEUDO-MALROTATION IN PEUTZ-JEGHERS SYNDROME**


A 7 year old girl was referred for evaluation of abdominal pain, melena and iron deficiency anemia. Four days prior, she presented with epigastric pain associated with three episodes of non-bloody, non-bilious vomiting, and melena. Her past medical history was significant for iron deficiency anemia and intermittent abdominal pain over two years. Family history was remarkable for a mother with mucocutaneous pigmentation involving the lips and oral mucosa.

Physical examination revealed mucocutaneous hyperpigmentation. Her abdomen was soft, non-tender, with normal bowel sounds and no masses. Laboratory values included hemoglobin 4.1 gm/dL, reticulocyte percentage 2.4, prothrombin time 13.4 seconds, partial thromboplastin time 21.6 seconds, iron studies were consistent with iron deficiency anemia. The child received transfusions of PRBC’s and EGD revealed a single 0.5 cm sessile gastric polyp. A biopsy was obtained and histopathological examination was consistent with hyperplastic polyph. Colonoscopy was normal. A barium upper gastrointestinal x-ray suggested intestinal malrotation and a markedly dilated loop of proximal jejunum. Exploratory laparotomy revealed two enterointeric intussusceptions (jejunoileal and ileoileal.) (Figure 1), with no evidence of intestinal malrotation. A large 3 cm × 2.5 cm polyp was resected from the jejunum and pathological analysis revealed characteristic branching hamartomatous polyp with no dysplastic changes.

The patient recovered and has had no significant abdominal complaints. The melena and iron deficiency anemia has resolved.

**Conclusions:** This clinical vignette highlights an atypical presentation of Peutz-Jeghers syndrome with evidence of malrotation. The abnormalities on the barium UGI x-ray was in fact due to two enterointeric intussusceptions.[figure1][figure2]
Purpose: There is little data about gastric polyps in children. There are reports of pediatric patients developing gastric polyps while receiving proton pump inhibitor (PPI) therapy for prolonged gastric acid suppression. We describe our experience with 3 pediatric patients that developed gastric polyps while receiving prolonged acid suppressive treatment.

Methods: Retrospective chart review of three children diagnosed with gastric polyps during upper gastrointestinal endoscopy (UGE).

Results: Case #1: 17 year old female is being followed for the management of distal esophageal stricture. For the past 5 years, she has been prescribed a PPI (omeprazole) as adjunctive therapy. Repeated UGE were needed to dilate the stricture. 3 years ago, H. pylori negative nodular gastritis was observed and healed without change in management. Gastric nodularity recurred 2 years later, and serial UGE showed nodularity advance to a sessile polyp in the fundus. Pathology showed a hyperplastic type polyp. Serum gastrin level was 240pg/ml (normal 0-200pg/ml).

Case #2: 11 year old male with cerebral palsy is being followed for over 9 years for the management of gastroschisis. For approximately 5 years, he has been receiving an H2 blocker therapy for 8 years. The patient developed intermittent upper gastrointestinal bleeding about 4 years ago. UGE revealed H. pylori negative gastritis. Sucralfate was added to therapy. Upper gastrointestinal bleeding recurred about 1 year ago. Repeat UGE revealed a sessile polyp. On pathology, lesion was a retention type polyp.

Case #3: 5 year old male with total parental nutrition dependence (TPN) has been followed for the management of short bowel syndrome secondary to gastroschisis. For approximately five years, he has been receiving an H2 blocker in the TPN. At age 5, patient presented with upper GI bleeding, and an UGE was performed. No obvious site of bleeding was noted, however, there was a gastric polyp that was visualized and removed. On pathology, the lesion was a hyperplastic type polyp.

Conclusions: 1) Gastric Polyps are rare in pediatric population, increasing use of UGE and heightened awareness may result in increased diagnosis. 2) Prolonged acid suppressive therapy, irrespective of type (H2 blocker or PPI), or elevated serum gastrin level may increase the risk of developing gastric polyps in children. 3) Signs of nodularity on UGE may need to be followed for progression to polyps.

Purpose: Although patients with end-stage renal disease (ESRD) are at increased risk for malignancy, the incidence of colorectal cancer (CRC), associated CRC risk factors, and survival in this population are not known. We compared the incidence of CRC in dialysis patients with the general U.S. population.

Methods: Patients in the United States Renal Data System (USRDS) initiated on ESRD therapy between 1995 and 1999 with Medicare as primary payer were analyzed in a historical cohort study of CRC. The observed number of CRC cases was compared to the expected number based on data from the Surveillance, Epidemiology and End Results Program (SEER). Incidence ratios were calculated as the ratio between observed and expected cases of CRC. Cox proportional hazards regression models were used to calculate adjusted hazard ratios (AHR) for patient related factors with time to Medicare claims for CRC. Kaplan-Meier analysis was used to determine time from the first Medicare claim for CRC to death. CRC prior to dialysis was censored.

Results: Among 272,024 dialysis patients, 2,981 (1.1%) had CRC. The mean age of patients with CRC was 70.8 ± 11.0 years vs. 62.4 ± 15.9 years for USRDS patients without CRC (P < 0.001). Dialysis patients had an almost 2-fold increased risk of CRC vs. general population (SEER) (age-standardized incidence ratio, 1.82). Multivariate analysis identified advanced age (per year, AHR 1.06, 95% CI, 1.05-1.06), other malignancy (AHR 3.06, 95% CI 2.61-3.60), and hemodialysis (vs. peritoneal dialysis, AHR 1.57, 95% CI, 1.21-2.04) as factors associated with an increased risk for CRC in dialysis patients. Mortality after diagnosis of CRC was significantly worse for other dialysis patients (AHR 2.55, 95% CI, 2.33-2.80). The one-year survival after diagnosis with CRC was 32%.

Conclusions: Dialysis patients had a significantly increased risk of CRC among race, gender and all age groups. Survival from CRC is poor in these patients, perhaps due to advanced stage of disease at diagnosis or other unknown factors. Because of the increased risk and poor survival after diagnosis, more aggressive screening strategies may be indicated.

Purpose: Colorectal cancer (CRC) is one of the most common malignancies in Western societies and diet is thought to exert an influence on polyps or CRC formation. Dairy and its micronutrients has been most extensively studied. However meta analyses of case control and cohort studies have reported conflicting results. We recently proposed that in lactase nonpersistent populations (LNP) lactose ingestion may exert prebiotic properties. We examined the hypothesis that classifying existing studies by frequency of LNP status of the country(ies) of origin may better explain discrepant results.
Methods: Per capita dairy consumption (20 countries) and LNP status (28 countries) were matched with reported national colorectal cancer mortality (CRCM) rates. A personal and computerized search of the literature of studies relating CRC colorectal polyps (CRP) and dairy consumption together with allied nutrients (e.g. calcium, vitamin D) was collected. Countries were divided as high LNP, low LNP and mixed LNP populations. National dairy consumption was compared with CRCM rates using Pearson’s correlation. LNP frequency to CRCM rates was analyzed using negative binomial distribution. Odds ratios and relatives risks of individual studies were obtained and systematically reviewed. Alpha error was accepted at \( P < 0.05 \).

Results: There was a modest statistically insignificant positive correlation between dairy consumption and CRCM rates (\( R^2 = 0.1 \)), and a modest negative correlation between LNP status and CRCM rates (\( R^2 = 0.27 \)). These 2 observations suggest an ecological fallacy and a systematic review of 76 studies in both high and low LNP regions supported protection against CRCM but not in mixed populations.

Conclusions: We conclude that genetic dichotomy of intestinal lactase impacts on results of studies and in the future the frequency of LNP status in the population in a particular geographic region should be considered as a potential confounder.

978

VIRTUAL COLONOSCOPY IS NOT SAFER: PROCEDURE- AND SCREENING PROGRAM-RELATED MORTALITY OF COLONOSCOPY VERSUS CT COLONOGRAPHY

Douglas O. Faigel, M.D.∗, Amnon Sonnenberg, M.D., David A. Lieberman, M.D., Oregon Health and Science University and Portland VA Medical Center, Portland, Oregon.

Purpose: Virtual Colonoscopy (VC) is felt to be a less invasive and, therefore, safer alternative to colonoscopy (COL) for colorectal cancer (CRC) screening. However, VC carries a substantial radiation exposure, and screening programs employing VC rather than COL are likely to be less efficient in detecting malignant and pre-malignant lesions. We performed a mathematical analysis to determine the cancer- and procedure-related mortalities of VC vs. COL screening programs.

Methods: We analyzed hypothetical cohorts of 100,000 subjects undergoing a single COL or VC at age 60. Assumptions were based on published literature: perforation 3/10,000, perforation mortality 5%, post-polypectomy bleeding 2%, bleeding mortality 0.5%, sedation complication 2/1,000, sedation mortality 1/25,000, cancer mortality from a single 5mSv CT radiation exposure 1/4,000, COL sensitivity 90%, VC sensitivity 90%, cumulative CRC risk per 10 years 2.2%, CRC mortality 40%. We assumed that 1/3 exposure 1/4, COL sensitivity 90%, VC sensitivity 90%, cumulative mortality 1/25,000, cancer mortality from a single 5mSv CT radiation exposure 2%, bleeding mortality 0.5%, sedation complication 2/1,000, sedation a single COL or VC at age 60. Assumptions were based on published literature.

Conclusions: Both procedure-related and screening program-related mortality are higher for VC than COL.

979

SPORADIC OVARIAN CANCER DOES NOT INCREASE THE RISK FOR COLORECTAL NEOPLASIA

Marcia C. Mitre, M.D., Sandhya Salguti, M.D., Colleen M. Brensinger, M.S., James D. Lewis, M.D., Radhika Srinivasan, M.D., F.A.C.G.*. University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania and Abington Memorial Hospital, Abington, Pennsylvania.

Purpose: Colorectal cancer (CRC) and ovarian cancer account for the second and fifth leading causes of cancer death among women in the United States. Cancer registry data suggest an elevated risk of CRC (SIR, 1.36, 95% CI, 1.21-1.53) in women previously diagnosed with ovarian cancer and a much higher SIR 3.67, 95% CI, 2.74-4.80 in women diagnosed with ovarian cancer under age 50. To determine if patients with sporadic ovarian cancer have an increased risk of colorectal neoplasia compared to age-matched women who have not been diagnosed with ovarian cancer.

Methods: A case-control study was performed. Potential cases were women diagnosed with ovarian cancer. All cases underwent a colonoscopy within the past five years for either gastrointestinal symptoms or as part of average-risk CRC screening. Controls were women who did not have a history of ovarian cancer who underwent a colonoscopy within the past five years for gastrointestinal symptoms or average-risk CRC screening. Colorectal neoplasia, defined as adenomatous polyps and/or CRC, was confirmed in each group by endoscopic and histologic findings. Ovarian cancer metastatic to the colon was excluded.

Results: The mean age of the 88 cases was 58.7 (24-83) and of the 417 controls was 61.7 (20-97). The prevalence of colorectal neoplasia was 11/88 (12.5%) in cases and 88/417 (21.1%) in controls, (OR 0.53, 95% CI, 0.27-1.05, \( P = 0.07 \)). Logistic regression models adjusting for age revealed the odds ratio of colorectal neoplasia in cases vs. controls to be 0.60 (95% CI, 0.30-1.18, \( P = 0.14 \)). CRC was present in no cases and in four controls. Similar results were found among the women under age 50 (age adjusted OR = 0.47, 95% CI, 0.05-4.08, \( p = 0.49 \)). Comparing symptomatic cases vs. symptomatic controls, the age adjusted odds ratio was 0.92 (95% CI, 0.41-2.10, \( p = 0.85 \)).

Conclusions: Our data indicate that women with a prior history of sporadic ovarian cancer are not at increased risk for developing colorectal neoplasia. We suggest that such women should follow average risk CRC screening guidelines starting at age 50.


980

SCREENING FOR COLORECTAL CANCER IN ITALY: A FEASIBILITY STUDY

Daniele Lisi, M.D., Massimo Crespi, M.D., F.A.C.G.*, AMOD Working Group. National Cancer Institute Regina Elena, Roma, Italy.

Purpose: In Italy Colorectal Cancer (CRC) is responsible for more than 35,000 new cases and almost 17,000 deaths annually. Epidemiological data show that CRC is the second most frequent cancer in incidence and mortality for both sexes. A legislation allowing free screening colonoscopy (TC) in average risk subjects was enacted in 2001, but screening by fecal occult blood (FOBT) is also ongoing in several Regions.

Purpose: A preliminary study to assess the rate of compliance to the different screening modalities in various Regions, the yield of significant lesions and the quality parameters of FOBT and TC. A RCT based on guaiac FOBT on three consecutive samples (directly developed by GPs) or TC in asymptomatic average risk subject, age 55 - 64 years,
without familiarity, in 9 out of 20 Italian Regions, involving 14 Endoscopy Units. Eligible subjects are directly invited from their GPs and randomized to one of the two tests. The preliminary results of the first round of screening are reported, being the study still ongoing. 7,776 subjects were contacted and 1,129 (14.5%) were excluded by protocol. The remaining 6,647 were invited by letter and non-compliers reminded by subsequent phone call.

The overall compliance is, up to now, 18.9% for both tests, being 32.0% for FOBT (range 7.9 – 60%) and 7.4% for TC (range 0 – 54.9%). Overall rate of FOBT positivity is 11.1% (range 0.8 – 48%), but excluding the GP with 48% of positive tests, the rate drops to 5.6%.
The compliance to tests differs in northern, central and southern Italian areas.

The interest and compliance to free screening colonoscopy is low, with wide variability between GPs, Endoscopy Units and Regions, with a well defined North-South trend. Lack of awareness on the benefits of CRC screening, embarrassment in discussing bowel matters with GPs and fear of cancer diagnosis are among the possible explanations for the low compliance, as shown by the results of an European survey made by the United European Gastroenterology Federation.

Results:

- The Chinese cohort comprised 671 subjects (100% Chinese; 62% men; mean age 50.1 yrs). Advanced colonic neoplasms were found in 26 subjects (3.9%), including 8 proximal lesions, 14 distal lesions and 4 bilateral lesions. Colonic neoplasms were found in 102 subjects (15.2%), including 34 proximal lesions, 50 distal lesions and 14 bilateral lesions.
- 4 cancers (0.6%) were detected, all in the proximal colon.

Conclusions: Screening colonoscopy in Chinese subjects is safe and demonstrates a significant prevalence of colorectal neoplasia, albeit lower than that seen in Western subjects (p < 0.001). The prevalence of cancer and the distribution of neoplasms are not statistically different between the two groups. The Chinese cohort had a lower mean age but a larger proportion of men, which may account for some of the differences seen.

### Table 1.

<table>
<thead>
<tr>
<th></th>
<th>North</th>
<th>Center</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOBT</td>
<td>36.1%</td>
<td>31.1%</td>
<td>24.8%</td>
</tr>
<tr>
<td>TC</td>
<td>11.7%</td>
<td>8.0%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

981

**COMPLIANCE WITH SCREENING COLONOSCOPY INCREASED WITH PRIOR MULTIMEDIA PRESENTATION ABOUT COLON CANCER AND SCREENING COLONOSCOPY**

Jennifer Riggs, Srinivas Naram, M.D., Scott Sanford, M.D., Suresh Prasad, M.D., Ravikumar P. Yemuru, M.D.*, Permian Gastroenterology Associates, LLP and Texas Tech University Health Sciences Center at Odessa, Odessa, Texas.

**Purpose:** Efforts to screen average risk patients with colonoscopy have been hampered by patient’s misconceptions about seriousness and natural course of colon cancer and their fears about the procedure itself. We tried to determine if improvement of knowledge about colon cancer and colonoscopy enhances patient compliance with screening colonoscopy.

**Methods:** Patients eligible for screening colonoscopy were selected from an internal medicine practice and were randomly divided into two groups. One group was exposed to a short multimedia presentation carefully prepared to present the prevalence of colon cancer, ease of identification and the effectiveness of colonoscopy in preventing the disease. Later both groups were offered screening colonoscopy by their physician. We measured the rate of acceptance and completion of the procedure in both groups.

**Results:** A total of 104 (50 M/54 F) patients participated in the study. 51 patients were exposed to the multimedia presentation. 47% (24/51) of the exposed group consented for colonoscopy and 92% (22/24) of these completed their colonoscopy. Among patients who were not exposed to the presentation the rates were 23% (12/53) and 75% (9/12) respectively.

**Conclusions:** Exposing patients to a short multimedia presentation regarding colon cancer and colonoscopy resulted in significant increase in compliance with screening colonoscopy.

982

**SCREENING COLONOSCOPY IN CHINESE AND WESTERN SUBJECTS: A COMPARATIVE STUDY**

Otto S. Lin, M.D., Maw-Soan Soon, M.D.*, Virginia Mason Medical Center, Seattle, Washington and ChangHua Christian Medical Center, ChangHua, Taiwan.

**Purpose:** Colonoscopy is an increasingly popular screening test for colorectal cancer in Asian countries. The aim of this study was to compare the findings of large-scale screening colonoscopy in a Chinese cohort versus a concurrent Western cohort.

**Methods:** Asymptomatic adults aged >50 years underwent screening colonoscopy in two hospitals, one in Taiwan and the other in Seattle, during the same time period (July 2001 to March 2004). All procedures were done under sedation by highly experienced colonoscopists. The prevalence and distribution of colonic neoplasia, advanced neoplasia (defined as an adenoma >9 mm or with villous or high-grade dysplastic features) and cancer were compared between the two cohorts. Complications were also recorded.

**Results:** The Taiwanese cohort comprised 671 subjects (100% Chinese; 62% men; mean age 50.1 yrs). Advanced colonic neoplasms were found in 26 subjects (3.9%), including 8 proximal lesions, 14 distal lesions and 4 bilateral lesions. Colonic neoplasms were found in 102 subjects (15.2%), including 34 proximal lesions, 50 distal lesions and 14 bilateral lesions.

4 cancers (0.6%) were detected, all in the proximal colon. There were 2 complications (0.07%), a post-polypectomy perforation and a post-polypectomy bleed. Age and male gender were independent predictors of colon neoplasia by multivariate logistic regression in both cohorts.

**Conclusions:** Screening colonoscopy in Chinese subjects is safe and demonstrates a significant prevalence of colorectal neoplasia, albeit lower than that seen in Western subjects (p < 0.001). The prevalence of cancer and the distribution of neoplasms are not statistically different between the two groups. The Chinese cohort had a lower mean age but a larger proportion of men, which may account for some of the differences seen.

983

**RISK STRATIFICATION FOR PROXIMAL COLON NEOPLASIA USING AGE, GENDER, FAMILY HISTORY AND DISTAL COLON FINDINGS**


**Purpose:** Currently, implementation of universal colonoscopic screening is limited by issues of patient acceptance, cost-effectiveness, insurance coverage and availability. A simple risk scoring system (based on age, gender and distal colon findings on sigmoidoscopy) has been proposed and internally validated for identifying patients most likely to benefit from colonoscopy because of high risk of proximal advanced neoplasia (Imperiale Ann Int Med 2003). Our aim is to determine if this risk index can be improved by modifying it to include colorectal neoplasia family history information.

**Methods:** Based on Imperiale’s risk index (range 0-7), we developed a modified index that included colorectal neoplasia family history (0-10). Both indices were applied to a cohort of asymptomatic persons aged >50 who underwent screening colonoscopy. Subjects with a score of >1, based only on age, gender and/or family history, were considered to be at intermediate or high-risk, and assumed to be eligible for primary screening colonoscopy. The remaining low-risk patients were assumed to undergo screening sigmoidoscopy, but would proceed to follow-up colonoscopy if risk scores became >1 due to additional points from distal colon findings. Various outcomes were compared using the modified index versus Imperiale’s original index.

**Results:** The risk of proximal neoplasia increased with increasing risk scores for both indices. Outcomes in 3011 subjects were as follows:

**Conclusions:** Our screening strategy based on the modified risk index would detect the vast majority of proximal advanced neoplasia, requiring colonoscopy in two-thirds of patients and sigmoidoscopy in < 40%. It is superior to Imperiale’s original index in terms of sensitivity for proximal advanced neoplasia, but required colonoscopy in more patients. Until universal screening colonoscopy can be implemented, screening algorithms based on this risk index may be useful for optimizing the return on colonoscopy.
S324 Abstracts

984

COLONOSCOPY IN THE COMMUNITY: FINDINGS OF A 1 YEAR REVIEW

Purpose: Colonoscopy for colon polyp (CP) and colon cancer (CC) identification has become routine. The findings and reason for colonoscopy in a community practice are examined in this study.

Methods: We retrospectively examined charts of all patients (pts) who underwent colonoscopy between 1/1/03-12/31/03, in our private GI practice. Patient characteristics, family history (FH), reasons for testing, findings and characteristics of polyps were studied.

Results: 2167 pts underwent colonoscopy in the year 2003. 47% male (M), 53% female (F). 753 pts had polyps (35%), 57% M, 43% F. 344 (16%) had tubular adenomas (TA), 372 (17%) had hyperplastic polyps (HP) and 37 (1.7%) had both TA+HP. 425 pts (20%) had a FHHC, and 30% of them had TA. 259 pts (12%) had a FHCP, and 16% had TA. 16% of pts screened (88556) had TA. 19% of hemoccult positive pts (13/68) had TA. 82% of polyps were diminutive (<1cm), 16% were 1-2cm and 2% were >2cm size. The 6 most common reasons for colonoscopy were: FHHC or CP-26%, screening-21%, rectal bleeding-15%, h/o polyps-13%, constipation-6%, abdominal pain-6%. 98% of colonoscopies were completed to the cecum. 1 case of post-polypectomy seorsitis occurred. 13 new cases of CC were diagnosed (13/2167 = 0.6%).

Conclusions: 1. Slightly more females had colonoscopy (53 vs 47%), but more males had polyps (57 vs 43%). 2. 18% of polyps were ≥1 cm size. 3. 50% of polyps removed were TA. 50% were HP. 69% of all polyps were in pts between 50-70 years. 5. The majority of polyps (72%) were distal to the splenic flexure. 6. Screening colonoscopy appears worthwhile, with 16% of pts having TA. 7. Of 13 new colon cancers, only one was asymptomatic and diagnosed at screening.

985

THE FREQUENCY AND OUTCOMES OF FECAL OCCULT BLOOD TESTING AFTER COLONOSCOPY IN PATIENTS WITH ADENOMATOUS POLYPS

Purpose: Coloscopy is the primary modality used for colorectal cancer (CRC) screening in patients with prior adenomas. Though the use of annual fecal occult blood tests in concert with a screening sigmoidoscopy has been recommended for primary CRC screening, the utility of FOBTs after colonoscopy in a “high-risk” population has not been proven. Nonetheless, some providers are using FOBTs after colonoscopy. If FOBTs can improve diagnostic yield of colonoscopy, current guidelines might incorporate this strategy. If not, they increase costs without improving early detection of synchronous or metachronous lesions. This study examines the frequency and outcomes of FOBTs after colonoscopy in patients with prior adenomatous polyps.

Methods: We retrospectively identified patients with adenomas found on colonoscopy between 1996 and 1999 from two large medical centers. Laboratory and endoscopy databases were then searched to identify significant endoscopic and pathologic findings, as well as FOBTs performed prior to subsequent colonoscopies. Significant findings were described as tubulovillous/villous/high-grade histology/cancer, more than 2 adenomas or any greater than 1 cm. The analysis is descriptive with findings compared using Fisher’s Exact Test and logistic regression.

Results: 1,956 patients (68% male; mean age 67) with colonic adenomas were identified; 39% had FOBTs performed subsequently (49.4% single, 50.6% multiple—half sporadic, half annual). The mean number of FOBTs was 1.93 and 17.5% had at least one positive FOBT. Of these, over 80% had no significant pathology on any subsequent endoscopy. At the first subsequent endoscopy, individuals with positive FOBTs were 3-fold more likely to have a significant pathologic finding (P < 0.001), but a minority of these FOBTs were performed within 6 months of the colonoscopy (and fewer than 2% had colonoscopies for ‘FOBT positivity’). The sensitivity of FOBT prior to a colonoscopy in these high-risk patients ranged from 25-35% with a PPV of 10-25% (NPV consistently over 90%).

Conclusions: The use of FOBTs after colonoscopy in patients with adenomas was higher than expected. One fifth of these patients had positive FOBTs, but these did not trigger endoscopy and had a poor sensitivity and PPV for significant pathology. Overall, FOBTs after colonoscopy, even in this high-risk population, do not improve diagnostic yield.

986

THE USAGE AND SIGNIFICANCE OF FECAL OCCULT BLOOD TESTING AFTER NORMAL COLONOSCOPY
Craig M. Womeldorph, D.O., Brian P Mulhall, M.D., M.P.H.*. National Naval Medical Center, Bethesda, Maryland and Walter Reed Army Medical Center, Washington, District of Columbia.

Purpose: Increasingly, colonoscopy has become the preferred modality for colon cancer screening. Other accepted methods include flexible sigmoidoscopy (FlexSig) every 5 years with annual fecal occult blood testing (FOBT), barium enema every 5 years, and annual FOBT. Currently, FOBT and FlexSig have been the only screening tests shown to reduce colon cancer mortality in randomized controlled trials. Overall, colonoscopy has a miss rate of about 6-11%. The reason for this miss rate is debated, but the use of FOBT after colonoscopy to further reduce mortality in a low risk population has not adequately studied.

Methods: We conducted a database search for the period of Jan 1999 - March 2000 for normal colonoscopies performed at two tertiary care medical centers. We then searched the clinical and endoscopy databases at each institution from April 2000 - April 2004 for all subsequent FOBTs, endoscopic findings, and significant pathology for these patients. The data was entered into SPSS. Findings were analysed by chi-square statistic and logistic regression.

Results: 527 patients (51.4% male; mean age 61.5) with normal colonoscopies were identified. 31.5% had FOBT done after their initial colonoscopy; 8.6% were positive. Of these, 54% had a single and 46% had multiple FOBTs. A total of 95 patients (18%) had a subsequent procedure (colonoscopy or FlexSig) with normal findings (46%), polyps (37%), or other lesions (17%; hemorrhoids, diverticuli, colitis, etc.). Of the polyps found, 46% were tubular and 3.0% were tubulovillous adenomas. 26/95 patients had a second procedure (88.5% colonoscopy vs. 11.5% FlexSig) with 42% being normal, 35% having polyps, and 23% had other findings. All biopsies were benign (no adenomas). Only 4/26 had a third procedure done (2 colonoscopies and 2 FlexSigs) with 1 normal, 2 with polyps (benign), and 1 with hemorrhoids. Overall, FOBTs were not more commonly completed prior to the 1st subsequent endoscopy in patients with worse pathology (p = 1.0). Positive FOBTs did not trigger subsequent procedures nor predict patients with worse pathology.

Conclusions: In our study, the use of FOBT after normal colonoscopies does not appear to predict the detection of advanced colonic lesions (adenomas or colon cancer). These findings suggest that the use of FOBT after a normal colonoscopy adds no benefit while unnecessarily increasing costs.
PRE COLONOSCOPY MEDICAL EVALUATION – A MODEL PROGRAM TO FACILITATE SCREENING OR SURVEILLANCE COLONOSCOPY


Purpose: Screening colonoscopy is increasingly utilized for prevention and early detection of colorectal cancer (CRC). Current practice requires a preprocedure medical evaluation because of the risks involved. The evaluation is usually done by the referring physician (MD) or the gastroenterologist who performs the procedure. This can be time consuming and may deter patients from self-referral for the procedure. As part of our Cancer Prevention and Wellness Program, we tested a model in which a nurse practitioner (NP) performs this preprocedure evaluation. Our purpose was to determine if this NP model program can safely and efficiently evaluate patients for screening colonoscopy.

Methods: Patients who presented to our program seeking screening or surveillance for CRC were evaluated by NPs to determine eligibility for screening or surveillance colonoscopy (based on institutional approved guidelines), and medical appropriateness and safety. Patients had a history and physical exam performed by the NP’s, lab tests, and were given instructions on bowel preparation for colonoscopy. Those with significant GI symptoms were referred to a gastroenterologist. Those with other active medical problems were referred to an internist. A retrospective chart review was performed.

Results: Over a one year period 215 patients presented to the program seeking screening or surveillance colonoscopy. 145 (67.5%) were cleared for colonoscopy by the NP’s and did not require evaluation by an MD prior to procedure. 70 patients required an MD evaluation prior to colonoscopy (58 patients by a gastroenterologist, 12 by an internist). 60 of these patients followed up with their referral appointments. In total, 184 (85.6%) patients were presented for the colonoscopy procedure. Colonoscopy reached the cecum in 181 (98%) patients. There were no medical complications related to the colonoscopy procedures, nor perforations or bleeding.

Conclusions: Pre colonoscopy medical evaluation can be safely and efficiently performed by NPs, eliminating the need for evaluation by the gastroenterologist or other MD. This may facilitate access, simplify the process, and increase utilization of screening colonoscopy by the general population.

COLON POLYP RETRIEVAL AFTER COLD SNARING


Purpose: Removal of small colon polyps by cold snare transection (without electrocautery) has been shown to effectively eliminate polyps, and anecdotal evidence suggests a lower risk for perforation and bleeding compared to electrocautery. The purpose of the study was to retrospectively evaluate a specific OAE (Office of AEGE) system of colon polyp retrieval after cold snaring.

Methods: A retrospective review of consecutive patients referred for an OAE examination during a 21-month period was performed. An OAE system was used consisting of a gastroscope, cold forceps, and surgical diathermy. Post polyp retrieval, the procedure was completed with cold snaring of any visible polyp. Only polyps ≥3 mm, and ≥8 mm per protocol were included for analysis. Patients were followed for at least 1 month after procedure. Chi square was used to determine statistical significance of results.

Results: Of the 266 procedures analyzed, 193 (73%) were men and 73 (27%) were women. Average age was 70 years (range 39-91). Average time to complete procedure was 20 minutes (range 10-40 minutes). Average number of polyps per procedure was 3.4 (range 1-10). After polyp retrieval, cold snared polyps ≥3 mm were found in 39 (22.6%) procedures and ≥10 mm in 4 (2.3%) patients. The overall complication rate was 0.76% (2/266). One polyp ≤10 mm in size perforated, and an additional perforation occurred in a polyp ≤3 mm in size. There were no significant differences in perforation rate and complications between polyps ≤3 mm vs ≥3 mm. There was no association between the number of polyps removed and perforation rate. There was no association between the number of polyps removed and complications. There was no association between perforation rate and complications between polyps ≤3 mm vs ≥3 mm.

Conclusions: The majority of polyps ≤3 mm in size can be effectively and safely retrieved with cold snaring. The OAE system appears to be safe and effective for removal of small colon polyps ≥3 mm.
reports indicate a low risk of bleeding and perforation. Concerns about using cold snaring have centered on the risk of immediate bleeding and difficulty in retrieving the polyp. Our aim was to determine the retrieval rates of polyps after cold snaring and to evaluate two different methods of resection and retrieval.

**Methods:** For consecutive polyps identified by a single colonoscopist, a decision was made by the endoscopist as to technique (hot snare, cold snare, or cold forceps). If cold snaring was chosen, an independent observer assigned the polyp to Method A (resect polyp cold without tenting, and then suction the transected polyp into a trap) or Method B (ensnare the polyp, pull it into the colonoscope channel, and then transect while suctioning).

**Results:** Of 519 consecutively encountered polyps, 400 were removed by cold snare. 197 were assigned to Method A and 203 to Method B. The mean size of polyps that were cold snared was 3.5 mm. The mean time to remove and retrieve polyps with Method A was 14.5 seconds (n = 58) and with Method B 18.1 seconds (n = 60) (p = 0.03). Of polyps removed by cold snare, 57% were adenomas, 32% hyperplastic, and 11% other. There were no complications from cold snaring. Of the remaining polyps, 66 were removed by cold forceps, 45 by hot snare, and 8 by hot snare plus APC. The rate of successful retrieval with Method A was 100% (197 of 197 polyps), and Method B was 98% (199 of 203 polyps) (p = 0.04).

**Conclusions:** Polyp retrieval rates after cold snaring are very high. Leaving the polyp on the site followed by suctioning after transection (Method A) resulted in higher retrieval rates and was more efficient.

---

**MICRO-ARCHITECTURAL ALTERATIONS IN ENDOSCOPICALLY-NORMAL MUCOSA PROVIDES ACCURATE RISK STRATIFICATION FOR COLORECTAL NEOPLASIA**


**Purpose:** The “field effect” is frequently exploited for colorectal cancer (CRC) screening; however, the most common markers (i.e. the distal adenoma) lacks both sensitivity and positive predictive value. Micro-alterations in the colonocytes (i.e. the “field”) may reflect the earliest events in colon carcinogenesis although, to date, practical detection of these subtle changes have not been possible. We have pioneered optics for the detection of dysplasia in general (Nature 2000) and in the colon (Nature Med 2001). We have recently developed 4D-ELF, a new generation of light-scattering technology, that allows heretofore unattainable insights into the nano-scale cellular architecture (IEEE 2003). In experimental models, 4D-ELF analysis of uninvolved mucosa had unprecedented sensitivity for CRC risk (Gastroenterology, 2004). The aim of this study was to evaluate the ability of 4D-ELF to predict neoplasia in humans.

**Methods:** Forty-five patients undergoing colonoscopy had two mid-transverse colon biopsies from endoscopically normal mucosa. 4D-ELF analysis was performed on fresh tissue using our advanced light-scattering apparatus. Parameters that were evaluated included principal component 1 (PC1) and spectral slope. Patients were divided into high and low risk based on current and past colonoscopy findings (presence of adenoma or carcinoma).

**Results:** PC1 and spectral slope were dramatically and highly statistically significantly altered in colonic neoplasia patients (high risk) when compared to those with normal colonoscopies (low risk) (see figure).

**Conclusions:** We demonstrate, for the first time, that micro-architectural changes in the endoscopically normal mucosa could predict the risk of colonic neoplasia. These parameters were markedly superior to any previously described biomarkers. This suggests that 4D-ELF analysis may have potential applicability in CRC risk-stratification.[figure1]

---

**KNOWLEDGE ABOUT AND PERCEIVED RISK OF COLORECTAL CANCER: A COMPARISON OF WOMEN AND MEN**

Sarah E. McGregor, Ph.D., Robert J. Hilsden, M.D.*, Alison Murray, M.D., Heather E. Bryant, M.D. Alberta Cancer Board and University of Calgary, Calgary, Alberta, Canada.

**Purpose:** Colorectal cancer (CRC) screening for average risk women lags behind that for breast cancer, despite education campaigns advocating screening. Women often tend to overestimate their risk of breast cancer. Our purpose was to determine women’s perceived risk of CRC and knowledge of risk factors relevant to screening in comparison with men.

**Methods:** Population-based random digit dial telephone survey of 1808 adults aged 50 to 74 years living in the province of Alberta, Canada. A knowledge score based on knowledge of risk factors (age, family history, history of bowel polyps), awareness of screening tests (fecal occult blood tests [FOBT] and colonoscopy/flexible sigmoidoscopy), recommendations for screening, and symptoms was developed.

**Results:** The lifetime risk of developing CRC was underestimated (<1/100) by 63.1%. A further 13.8% did not know the risk. Women were less likely than men to underestimate the risk (20.0% vs 29.4% indicated risk = 1/1000, P < 0.0016). Perceived risk of developing CRC compared to others the same age was similar in men and women. Among average risk subjects, 47.2% rated their risk as the same and 38.2% as lower than others their age. Self-rated health status was strongly related to perceived risk among those at average risk: 58.3% of men and 55.6% of women who rated their health as excellent perceived themselves at lower risk of developing CRC than others their age. Women had higher knowledge scores than men (p < 0.001) but substantial knowledge gaps were found for both genders with average correct scores of 65.0% and 58.0% for women and men respectively. Women were more likely than men to be aware that prior polyps and family history of CRC increased a person’s chances of developing CRC. Among men and women, knowledge
scores were higher among those who had a FOBT in the past two years and among those who had a colonoscopy/flexible sigmoidoscopy within the past five years.

Conclusions: Women and men underestimate their risk of developing CRC. Although women have somewhat more knowledge about CRC screening than men, substantial knowledge gaps were found. Low perceived risk among women may partly explain why screening rates lag behind those for breast and cervical screening. Programs designed to increase knowledge about CRC, not just awareness of screening, may lead to increased uptake.

993

IMPACT OF SHORT BENDING SECTION ON PEDIATRIC COLONOSCOPE FUNCTION

Purpose: The utility of colonoscopes with short bending sections is not clear.

Methods: We randomized 102 adult patients with intact colons to undergo colonoscopy with a standard pediatric colonoscope (PCF-160), a pediatric colonoscope with short bending in 4 directions (PCF-AYL) or a pediatric colonoscope with short bending in 2 directions and normal bending in 2 directions (PCF-AY3L).

Results: The 3 groups did not differ in age (p = 0.27), sex (p = 0.15), race (p = 0.24), or prep quality (0.78). All pts were sedated with propofol and the cecum was reached in all. Time to the cecum with AYL (4.08 min) was longer than PCF-160 (2.62 min; p = 0.0001) and AY3L (3.25 min; p = 0.018) but cecal intubation times for PCF-160 and AY3L did not differ (p = 0.43). More AYL pts required position change (16%) compared to PCF-160 (0%; p = 0.047) but there was no difference compared to AY3L (6%). AYL pts required abdominal pressure (79%) more often than PCF-160 (32%; p = 0.0001) or AY3L (34%; p = 0.0003). Variable stiffness was activated more often with AYL (70%) than with PCF-160 (41%; p = 0.02). Successful cecal retroflexion (ability to see the ileocecal valve from retroflexion) was possible in fewer PCF-160 patients (57%) than either AYL (94%; p = 0.0005) or AY3L (91%; p = 0.001). There was no difference between scopes in ability to intubate the TI (PCF-160 and AY3L 100%; AYL 94%) or time to intubate the TI (p = 0.73) but depth of TI intubation scores were deeper with PCF-160 compared to AYL (p = 0.0002) and AY3L (p = 0.017). The mean scores for depth of TI intubation AYL and AY3L were similar (p = 0.09) with numerically deeper scores for AY3L.

Conclusions: Short bending in 4 directions (AYL) is associated with more difficult and longer cecal intubation and more difficulty deeply entering the TI but with better ability to retroflex the cecum. AYL may a specialty scope for hard to access polyps. AY3L (short bending in only 2 directions) maintains most of the maneuvering ability (retroflexion) of AYL and loses less than AYL when compared to PCF-160 for cecal insertion. AY3L may have a role for routine use.

994

IMPACT OF SHORT BENDING ON FUNCTION OF STANDARD COLONOSCOPES

Purpose: The utility of colonoscopes with short bending sections is not clear.

Methods: 68 adult pts with intact colons were randomized to undergo colonoscopy with a colonoscope with 170 degree angle of view standard insertion tube diameter 160 series Olympus colonoscopes that differ only in the length of the bending section (CF-160 WL with bending section of 13cm and CF-160W2L with bending section of 11.5cm).

Results: The two groups did not differ with regard to age (p = 0.18), sex (0.07), race (p = 0.84), or quality of bowel preparation (p = 0.64). Of various parameters, only the fraction in which cecal retroflexion could be achieved differed between the instruments (Table 1). Time to intubate the cecum was numerically longer with the short bending section instrument but the difference was not significant.

Conclusions: For standard diameter colonoscope insertion tubes a shorter bending section allows greater ability to retroflex in the cecum with only modest if any effects on other factors that affect speed to insert to instrument to the cecum.

<table>
<thead>
<tr>
<th></th>
<th>CF-160WL</th>
<th>CF-160W2L</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to cecum (min)</td>
<td>2.45</td>
<td>2.95</td>
<td>0.10</td>
</tr>
<tr>
<td>TI intubated (%)</td>
<td>100</td>
<td>100</td>
<td>1.00</td>
</tr>
<tr>
<td>Time to intubate TI (sec)</td>
<td>39.4</td>
<td>24.6</td>
<td>0.13</td>
</tr>
<tr>
<td>Depth of intubation (1-4 score)</td>
<td>3.8</td>
<td>3.7</td>
<td>0.67</td>
</tr>
<tr>
<td>Abdominal pressure (%)</td>
<td>24%</td>
<td>36%</td>
<td>0.28</td>
</tr>
<tr>
<td>Position change (%)</td>
<td>0%</td>
<td>6%</td>
<td>0.15</td>
</tr>
<tr>
<td>Variable stiffness activated (%)</td>
<td>39%</td>
<td>48%</td>
<td>0.46</td>
</tr>
<tr>
<td>Retroflexion achieved (%)</td>
<td>4%</td>
<td>67%</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

995

METHOD OF COLONOSCOPY IN PRIOR INCOMPLETE COLONOSCOPY

Purpose: We have previously reported the method of colonoscopy in 42 consecutive patients (95% success rate) in whom colonoscopy was attempted by an expert after a previous attempt to reach the cecum by a gastroenterologist or surgeon had failed. In this report we describe our experience in an additional 49 consecutive patients.

Methods: All patients referred for an attempt at colonoscopy after prior failure were prospectively identified in the indication section of the report and then pulled for review of the prior procedure and the nature of the difficulty encountered, other procedure indications, and methodology used in the repeat procedure. Variable stiffness colonoscopes were used whenever available.

Results: Of the 49 pts, 29 were female, mean age 61.5(12.4)y, range 31-87. The referring physician was a gastroenterologist in 30(61%), surgeon in 7(14%), internist in 6(12%), family physician in 5(10%), and OB/Gyn in 1(2%). The physician who performed the prior colonoscopy was a gastroenterologist in 46(94%) and a surgeon in 3(6%). The indications for colonoscopy were bleeding (anemia, heme + stool, hematochezia) (8), screening (11), abdominal pain (6), abnormal CT or BE (7), diarrhea or abnormal bowel habit (9), polyp therapy or follow-up (19), and biopsy right colon ulcers (1). 11 pts had multiple indications. By review of the records and/or discussion with the referring physician, the reason for prior failure was sigmoid stricture, angulation, fixation, or severe sigmoid diverticulosis in 15, looping or redundancy in 21, difficulty in sedating in 8, reason unclear in 3 and abdominal wall hernia in 2.

For the attempt at repeat colonoscopy, 44 were sedated with nurse administered propofol and 5 with fentanyl and midazolam. The cecum or an ileocolic anastamosis was reached in all 49 pts. An external colon straigntener (n = 4), pediatric colonoscope (n = 11), upper endoscope (n = 4), upper endoscope with guidewire exchange for pedis colonoscope (n = 2) and an enteroscope with enteroscope straightener (n = 4) were utilized. In the remaining cases a standard colonoscope was used. Important roles were identified for propofol sedation (n = 7), four-handed abdominal pressure (n = 4), the variable stiffness function (n = 6), right lateral decubitus position (n = 2), and manual reduction of an abdomanal wall hernia (n = 2). The mean time to complete the colonoscopy was 32min (range 12-95).

Conclusions: Complete colonoscopy is possible in a high percentage of patients with prior incomplete colonoscopy, provided that an array of tools are used and ample time is allowed.
996

COLORECTAL CANCER SCREENING AND RISK PERCEPTION IN CHINESE IMMIGRANTS IN CHICAGO

Purpose: Colorectal cancer (CRC) ranks third in cancer incidence and mortality in Asian Americans. Studies on colorectal cancer in Asian Americans suggest that screening rates are among the lowest reported, however, are limited and suffer from a paucity of data and absence of Asian subgroup analysis. Barriers to colorectal cancer screening (CRS) in immigrants include language, access and absence of routine health care. The effectiveness of ethnic and culturally specific community outreach on colorectal screening in Chinese immigrants has not been previously reported. This study addresses both perceived barriers to CRS, as well as risk for CRC in a cohort of Chinese immigrants.

Methods: Participants at community based Chinese health fairs aged 50 and above were provided language specific education on CRC. Translated surveys on CRS compliance and CRC risk perception were collected and FOBT was provided and recommended. The effectiveness of ethnic specific education on CRS behavior was assessed by compliance with fecal occult blood testing (FOBT).

Results: 60 participants attended CRC programs. The average age was 54; 55% were women, the average years in the US was 10. 79% of the Asian Americans surveyed did not have a regular source of health care. 76% of participants completed FOBT within 2 weeks of participation in the health fair, of which 30% were found positive. Among those that had a positive FOBT, 92% did not have a regular physician, 8% had been previously screened for CRC, and only 15% felt they were at risk for CRC. Among the remaining 70% with a negative FOBT, 74% did not have a regular physician, 13% had been previously screened for CRC, and 52% felt they were at risk for CRC.

Conclusions: The majority of Chinese immigrants in this study had no usual source of health care, had low perceived risk for colorectal cancer and were compliant with FOBT when provided through a language specific, accessible educational program. The high prevalence of positive FOBT further exemplifies the need for culturally specific, community based programs for CRS. Community health fairs can greatly increase access to CRS in Asian American immigrants, and decrease CRS disparities in this underserved population.

997

PATIENT PERCEPTIONS AND BARRIERS TO COLORECTAL CANCER SCREENING AND COLONOSCOPY
Radhakrishna Kakakuntla, M.D., Maria Hernandez, M.D., Malvinder Singh, M.D., Sweta Chawla, PharmD, Deepak Mahajan, M.D., Mitchell S. Cappell, M.D., Kivan K. Bhat, M.D.*. The Brooklyn Hospital Center; Long Island University, Brooklyn, New York and St. Barnabas Hospital, Bronx, New York.

Purpose: To investigate patient awareness of colorectal cancer and perceptions and barriers of colorectal cancer screening in an inner city population.

Methods: Residents of Brooklyn, New York ≥ age 50 were surveyed while attending a medical clinic at Brooklyn Hospital by a questionnaire that included patient demographics and details pertaining to colorectal cancer screening.

Results: 140 patients (mean age 62 ± 7 years) were surveyed; 75 were female, and 106 were minorities (81 blacks; 25 Hispanics). 136 patients had medical insurance (Medicare in 44, HMO in 41, Medicaid in 37, and PPO in 14). 118 patients visited physicians annually. 133 of the patients were aware of colorectal cancer. The source of this awareness was physicians in 94 (71%) of patients. 104 (74%) of the patients had a screening test for colon cancer, including colonoscopy in 77 (55%). Physician recommendation was the main reason for undergoing the colonoscopy in 53 (69%) of the 77 patients. Medicare patients tended to be more likely to have undergone screening colonoscopy than Medicaid patients (64%, vs 46%, p = 0.09, Fisher’s exact test). 62 (81%) of the 77 patients who underwent colonoscopy are willing to have repeat colonoscopy if needed. Pain and discomfort were the main reasons for not wanting repeat colonoscopy (12/15, 80%). 47 (75%) of the 63 patients who never had a colonoscopy said that viewing videotape could make them decide to have a colonoscopy.

Conclusions: Colonoscopy rates are higher than previously reported in this selected population of healthcare seekers, but still unacceptably low. Physicians are the primary educators and motivators for colorectal cancer screening and colonoscopy. Patient compliance with screening colonoscopy may be increased by physician education of patients and/or educational videotapes about colonoscopy. Increased patient comfort during colonoscopy may enhance patient compliance with repeat colonoscopy.[figure1]
CONTINUOUS QUALITY IMPROVEMENT (CQI) INITIATIVE ENHANCES COMPLIANCE WITH POST-POLYPECTOMY SURVEILLANCE GUIDELINES


Purpose: Despite having guidelines from major gastroenterological societies regarding screening and post-polypectomy surveillance colonoscopy intervals, gastroenterologists tend to perform follow-up colonoscopies earlier, especially for polyp surveillance. This results in additional costs. Our aim was to determine the effect of a CQI initiative on improving compliance with post-polypectomy surveillance guidelines.

Methods: Using a Pretest - Posttest design, medical records of all patients who underwent a colonoscopy with polypectomy during the 6 months before (Period I) and the 6 months after (Period II) the CQI initiative were reviewed for patient demographics, colonoscopy findings and follow-up recommendations. The CQI initiative consisted of distribution of a wallet-size card with summary of post-polypectomy guidelines from ACG and AGA to all endoscopists, Placement of guideline-charts near all computers used for typing reports and Reinforcement in monthly CQI meetings. The compliance rates and the additional costs incurred from non-compliance with those guidelines were compared between the two time periods. The potential increased cost for not following the guidelines was calculated as: (Cost of procedure - [Guideline interval - Actual scheduled interval] - Guide line interval) x 100%. Patients were excluded from analysis if they had an incomplete colonoscopy, poor colon preparation, or a high-risk condition requiring earlier colonoscopy than recommended polyp surveillance.

Results: There were 282 patients in Period I and 242 in Period II. Patient and Polyp characteristics were similar in both periods. The compliance rate with guidelines in Period I was 57.80% and it increased to 80.99% in Period II. Patients with diabetes type 2 alone increased in the number of colon polyps by 3.6 fold (t-test, P < 0.001) compared to age and BMI matched control. Hyperlipidemia alone increased the number of colon polyps by 2.1 fold (t-test, P < 0.001) compared to age and BMI matched control. Hyperlipidemia alone increased the number of colon polyps by 4.3 fold (t-test, P < 0.001) compared to age and BMI matched control.

Conclusions: These data suggest that diabetes type 2 and hyperlipidemia promote the growth of colon polyps/bOTH hyperplastic and adenomatous. Insulin like growth factor, insulin, leptin, and other cytokines may play a role in this process.

The growth of colon polyps in patients with DM and hyperlipidemia

<table>
<thead>
<tr>
<th>No. of polyps</th>
<th>Neither DM nor hyperlipidemia</th>
<th>DM only</th>
<th>Hyperlipidemia only</th>
<th>Both DM and hyperlipidemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>63 ± 10</td>
<td>67 ± 7.9</td>
<td>62.7 ± 8.0</td>
<td>62 ± 11</td>
</tr>
<tr>
<td>BMI</td>
<td>29.2 ± 5.8</td>
<td>31.8 ± 7.2</td>
<td>28.3 ± 5.0</td>
<td>31 ± 4.5</td>
</tr>
</tbody>
</table>

mean ± SD

1001

PREDICTIVE VALUE OF A POSITIVE FECAL OCCULT BLOOD TEST OBTAINED AT THE TIME OF DIGITAL RECTAL EXAMINATION: A PROSPECTIVE STUDY IN ASYMPTOMATIC AVERAGE-RISK PERSONS


Purpose: Clinicians often screen for colorectal cancer by testing stool for occult blood at the time of digital rectal examination (DRE). However, this screening method has been discouraged because it is thought to increase the false-positive rate of the fecal occult blood test (FOBT). The aim of this prospective study was to compare the predictive value of a positive FOBT obtained by testing a single stool sample at the time of DRE with the predictive value of a positive test obtained by the recommended method of testing 3 consecutive stool samples at home.

Methods: Asymptomatic average-risk patients 50 years of age and older who were referred for colonoscopy to evaluate a positive FOBT obtained by DRE or at-home testing from June 1997 to May 2004 were prospectively identified. FOBT was performed using Hemocult II test kits without rehydration. Colonic lesions which were considered clinically important included...
cancer, adenomatous polyps ≥ 1 cm, active colitis, colonic ulcers ≥ 1 cm, and vascular ectasias that numbered 5 or more or ≥ 8 mm in diameter.

Results: A total of 611 patients (mean age 68.9 ± 9.7 years) met the entry criteria and were evaluated by colonoscopy for a positive FOBT obtained by DRE (n = 222) or at-home testing (n = 389). The baseline characteristics, including age, gender, and race, did not differ significantly between the two groups. Colonoscopy was complete to the cecum in 95.9% of the DRE group and 96.4% of those in the at-home testing group (p = 0.83). Although there was a trend towards a higher prevalence of clinically important lesions in the DRE group (32.4% vs. 25.7%, p = 0.08), there were no statistically significant differences in the proportion of patients with adenomatous polyps ≥ 1 cm (14.9% vs. 16.2%, p = 0.66) or colorectal cancer (9.5% vs. 8.0%, p = 0.53) between the DRE and at-home testing groups.

Conclusions: In asymptomatic average-risk patients, the predictive value of a positive FOBT obtained by DRE was not different from that obtained by traditional at-home testing. These findings support the practice of performing full colonoscopy for the evaluation of a positive FOBT regardless of the method of stool collection.

1002

C-TERMINAL Src KINASE (CSK): A NOVEL CHEMOPREVENTIVE TARGET FOR NON-STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS)

Purpose: Clinical enthusiasm for utilization of NSAIDS to protect against colorectal cancer (CRC) has been subdued by concerns over toxicity. Elucidating the molecular pathways involved in CRC is of paramount importance in drug design strategies to increase both efficacy and safety. The anti-proliferative effects of NSAID-chemoprevention are largely attributable to suppression of the cell cycle regulator, MAP kinase (MAPK). However, the molecular mechanisms of MAPK inhibition are unknown. C-terminal Src kinase (Csk) is a novel tumor suppressor gene in CRC. Therefore, we hypothesized that Csk induction is integral in NSAID mediated chemoprevention of CRC.

Methods: HT-29, a human CRC cell line was treated with sulindac sulphone (100μM). Cell proliferation was assessed by PCNA whereas Csk mRNA level was assessed by RT-PCR. Inhibition of Csk in HT-29 cells was performed through novel, highly specific Csk-inhibitor-ASN 2324598.

Results: Treatment of HT-29 cells with sulindac sulphone caused decrease in PCNA levels and significant increase in the Csk message followed by concomitant decrease in the Src signaling, thereby implicating Csk induction in the chemopreventive effects of NSAIDs. Inhibition of Csk by ASN 2324598 resulted in marked increase in cell proliferation markers (PCNA) and Cyclin D1. Csk-inhibition also led to activation of members of the MAP kinase pathway, viz. Raf-1, MEK and MAPK. The cell proliferative effect of the Csk-inhibitor was suppressed by the MEK inhibitor U0126. This confirmed that the tumor suppressor function of Csk in CRC is through suppression of MAP kinase pathway.

Conclusions: Transcriptional induction of Csk is important in NSAID-mediated chemoprevention of colon carcinogenesis. Further, Csk is critical in regulating MAPK and hence proliferation in CRC cell lines. Strategies that augment Csk may potentially provide a safe and effective means of CRC prevention.[figure1]

1003

EFFECTS OF CIGARETTE SMOKING AND REGULAR USE OF VITAMIN C ON OCCURRENCE OF COLON POLYPS
Hatef Massoumi, M.D., Uma Kantamneni, M.D., Alexander Pankratov, M.D., Aijit Kokkat, M.D., Mario Ricci, M.D., Edward Norkus, Ph.D., Nejat Kiyici, M.D.*, Hilary Hertan, M.D., F.A.C.G. Our Lady of Mercy Medical Center, Bronx, New York.

Purpose: Colonic polyps are known to be precursors of colon cancer. Different dietary, nutritional and pharmacologic elements have been suggested to play role in occurrence or prevention of colon polyps and cancer. In this study, we have examined any possible relation between occurrence of polyps and individuals dietary and recreational habits as well as medications in a prospective sample of patients in our GI unit.

Methods: Information in regard to their demographics, comorbid conditions, medications, smoking history, use of marijuana, consumption of coffee, tea, herbal and nutraceutical supplements including vitamins and minerals were obtained during patient interview. Colonoscopy results and pathology reports were recorded and only adenomatous polyps were included in the study.

Results: A total of 157 patients participated with mean age of 55.6 ± 14.4 (SD) years, mean BMI of 28.0 ± 5.4 (SD), range 15.1 – 45.0; 68 males and 89 females; 39% African-American, 21% Caucasian, 36% Hispanic and 4% Asian. Patients with polyps were older than control (P = 0.058), but there was no difference in BMI (P = .0242), gender (P = 597) and race (P = .409). We observed that cigarette smokers were more likely to have polyps (P = .009), to have a greater number of polyps (P = .0157), and larger polyps (P = .3937) than non-smokers. In addition, logistic regression analysis determined a 4% increased risk of polyps (P = .020) for every additional year of smoking. We have also found a significant association between vitamin C use and the absence of polyps (P = .023). In this sample, 16 patients regularly consumed vitamin C supplements at doses of equal or more than 1000 milligrams a day. None of the patients (0/16) were found to have polyps in patients who did not consume vitamin C, one-quarter (25%) of the sample had polyps identified by exam. The duration of vitamin C use in those who consumed vitamin C was 2.2 ± 5.5 (SD) years.

Conclusions: These findings suggest that cigarette smoking may be a risk factor for colon polyps and regular use of vitamin C may prevent formation of polyps.

1004

EDUCATIONAL INTERVENTION CAN IMPACT UPON COLORECTAL CANCER SCREENING BY INTERNAL MEDICINE RESIDENT PHYSICIANS

Purpose: Colorectal cancer screening causes significant morbidity and mortality in the United States. There is evidence to suggest that internal medicine physicians may inconsistently screen for this malignancy. This study evaluated internal medicine resident physicians’ colorectal cancer screening practices prior to and following an educational intervention.

Methods: A medical record review of internal medicine resident physicians’ adherence to colorectal cancer screening recommendations was conducted. Consecutive patients ≥50 years of age and of average risk for colorectal cancer who presented for a health maintenance evaluation were included. Physicians’ performance of rectal exams, fecal occult blood testing (FOBT), flexible sigmoidoscopy/colonoscopy were evaluated for 6 months prior to and 6 months following an educational intervention. The educational
intervention included didactic sessions and interactive case studies. Statistical significance was assessed using Fisher’s exact test.

**Results:** There were 177 patients included in the pre-intervention assessment. Eighty-six (48.6%) had rectal exams, 86 (48.6%) had FOBT and 92 (52%) had endoscopic exams. There were 200 patients included in the post-intervention assessment. Seventy-seven (38.5%) had rectal exams, 75 (37.5%) had FOBT and 126 (63%) had endoscopic exams. There was a statistically significant difference in the rate at which rectal exams (p = 0.0487), FOBT (p = 0.0300) and endoscopic exams (p = 0.0307) were performed.

**Conclusions:** Physicians inconsistently adhered to colorectal cancer screening guidelines. Educational intervention focused on colorectal cancer screening can impact upon resident physicians’ practice patterns. While there was a decrease in the performance of rectal exams and FOBT, there was a significant increase in endoscopic evaluations. Continued efforts to improve resident physicians’ colorectal cancer screening practices are important. Development of educational strategies is critical to enhance colorectal cancer screening.

**1005 IMPROVEMENT OF INTERNAL MEDICINE RESIDENT PHYSICIANS’ COLORECTAL CANCER SCREENING IN AFRICAN-AMERICANS CAN OCCUR WITH FOCUSED EDUCATIONAL EFFORTS**


**Purpose:** Colorectal cancer screening causes significant morbidity and mortality in the United States. African-Americans are disproportionately affected by this malignancy. There is evidence to suggest that physicians inconsistently screen for colorectal cancer in African-Americans. This study evaluated internal medicine resident physicians’ colorectal cancer screening practices in African-Americans prior to and following a focused educational intervention.

**Methods:** A medical record review of internal medicine resident physicians’ adherence to colorectal cancer screening recommendations was conducted. Consecutive African-American patients ≥50 years of age were included. Physicians’ performance of rectal exams, fecal occult blood testing (FOBT), flexible sigmoidoscopy/colonoscopy were evaluated for 6 months prior to and 6 months following an educational intervention that focused upon issues related to racial disparities in colorectal cancer. Statistical significance was assessed using Fisher’s exact test.

**Results:** There were 116 patients included in the pre-intervention assessment. Rectal exams were performed in 86 (48.6%; 48 AA, 38 W), FOBT in 86 (48.6%; 46 AA, 40 W) and endoscopic assessment in 92 (52%; 31 AA, 61 W). There was a statistically significant difference in the rate at which rectal exams (p = 0.0039), FOBT (p = 0.0006) and endoscopic assessment (p < 0.0001) were performed. Following the educational intervention, the medical records of 200 consecutive patients (132 AA, 68 W) were included in the study. Rectal exams were performed in 77 (38.5%; 51 AA, 26 whites), FOBT in 75 (37.5%; 50 AA, 25 W) and endoscopic assessment in 126 (63%; 78 AA, 48 W). There was no statistically significant difference in the rate at which rectal exams (p = 0.1217) or FOBT (p = 0.1212) were performed. There was a statistically significant difference (p = 0.0349) in the rate at which endoscopic assessment was performed in AA compared to W.

**Conclusions:** There was a racial disparity in the adherence to colorectal cancer screening recommendations by physicians when comparing AA to W patients. Educational intervention decreased the disparity in the rate of rectal exams and FOBT performed in AA and W patients. There was an improvement in the rate of endoscopic assessment in AA patients. However, there continued to be a racial disparity in the rate at which endoscopic screening was performed in AA compared to W patients despite a focused educational strategy.

**1006 RACIAL DISPARITY IN COLORECTAL CANCER SCREENING CAN PERSIST DESPITE AN EDUCATIONAL INTERVENTION**


**Purpose:** There is evidence that suggests that physicians may less often perform colorectal cancer screening in African-Americans (AA) compared to whites (W). There are no published studies that have assessed the impact of an educational intervention upon reducing racial disparities in colorectal cancer screening. This study evaluated the impact of an educational intervention upon internal medicine resident physicians’ colorectal cancer screening practices in AA and W.

**Methods:** A medical record review of physicians’ colorectal cancer screening practices in AA and W was conducted prior to and following an educational intervention. Consecutive AA and W patients ≥50 years of age and of average risk for colorectal cancer who presented for a health maintenance evaluation were included. Physicians’ performance of rectal exams, fecal occult blood testing (FOBT), and endoscopic assessment in AA and W patients was assessed 6 months prior to and following an educational intervention. Statistical significance was assessed using Fisher’s exact test.

**Results:** Medical records of 177 consecutive patients (116 AA, 61 W) were included in the pre-intervention assessment. Rectal exams were performed in 86 (48.6%; 48 AA, 38 W), FOBT in 86 (48.6%; 46 AA, 40 W) and endoscopic assessment in 92 (52%; 31 AA, 61 W). There was a statistically significant difference in the rate at which rectal exams (p = 0.0303) were performed prior to and following the educational intervention. Statistical signification was assessed using Fischer’s exact test.

**Conclusions:** Physicians inconsistently adhered to colorectal cancer screening guidelines. Educational intervention focused on colorectal cancer screening can impact upon resident physicians’ practice patterns. While there was a decrease in the performance of rectal exams and FOBT, there was a significant increase in endoscopic evaluations. Continued efforts to improve resident physicians’ colorectal cancer screening practices are important. Development of educational strategies is critical to enhance colorectal cancer screening.

**1007 THE EFFICACY OF THINNER, LONGER ENDOSCOPE FOR LOW RISK COLON CANCER SCREENING**


**Purpose:** The aim of this prospective study was to assess patient comfort during un-sedated screening sigmoidoscopy with the use of a standard 60 cm sigmoidoscope compared to thinner 100 cm endoscopes used for upper endoscopy.

**Methods:** Patients being scheduled for routine colorectal cancer screening with sigmoidoscopy at a single military medical center were randomly assigned using concealed allocation to have the procedure performed with either a standard 60 cm sigmoidoscope or standard 100 cm upper endoscope. Before the procedure, patients completed a validated anxiety questionnaire and demographic data was collected. The procedure time, depth of insertion, anatomic landmarks, and presence of polyps were documented. Another questionnaire measuring comfort and symptom scores using a Likert 7-point scale and Visual Analogue Scale (VAS) was performed immediately after the procedure and again telephonically in 1 week. The comfort scores, VAS, symptom scores, procedure time, insertion depth, %reaching transverse colon, and % with polyps were analyzed.
Results: This is an ongoing study with 43 patients completed at time of submission. The comfort scores to date are similar, 60cm group: 4.34 +/- 1.36 vs. 4.29 +/- 1.52 for the 100cm group p = 0.9. VAS scores, along with symptom scores of abdominal pain, cramping, and bloating, were also not statistically different. After 1 week however, the comfort scores using the Likert Scale showed statistically better comfort with the 100cm group, 60cm group: 3.50 +/- 1.97 vs. 100cm group: 4.81 +/- 1.6, p = 0.02. Procedure time was 312 seconds for the 60cm group vs. 472 seconds for the 100cm group, p = 0.009. Insertion depth was 57cm vs. 67cm, p = 0.01; % reaching transverse colon was 4.5% vs. 57%, p = 0.01; % with polyps was 32% vs. 62%, p = 0.09. One patient had a tubulovillous adenoma found in the transverse colon in the 100cm group.

Conclusions: The use of a thinner, longer endoscope appears to be at least as comfortable, with better comfort when measured 1 week post-procedure, when compared to standard 60cm sigmoidoscopy. It may also allow better evaluation of the colon and miss less polyps. The use of thinner, longer endoscopes could improve colon cancer screening by being an alternative to sigmoidoscopy, with better efficacy than traditional sigmoidoscopy. However, a 100cm endoscope procedure takes longer to perform.

1008
EDUCATIONAL STRATEGIES FOCUSED UPON REDUCING RACIAL DISPARITIES IN COLORECTAL CANCER SCREENING MAY IMPACT UPON RESIDENTS PHYSICIANS’ OVERALL PERFORMANCE


Purpose: Efforts have been made to reduce the racial disparity in the screening, treatment, and outcome of colorectal cancer between African-Americans (AA) and whites. This study evaluated the impact of an educational intervention upon internal medicine resident physicians’ colorectal cancer screening practices in AA and white patients.

Methods: A medical record review of physicians’ adherence to colorectal cancer screening recommendations in AA and white patients was conducted 6 months prior to and following an educational intervention. Consecutive AA and W patients ≥50 years of age and of average risk for colorectal cancer who presented for a health maintenance evaluation were included. The conduction of rectal exams, fecal occult blood testing (FOBT), flexible sigmoidoscopy/colonoscopy was assessed. Statistical significance was assessed using Fischer’s exact test.

Results: Medical records of 116 AA and 61 W patients during the pre-intervention period were evaluated. Rectal exams were performed in 48 (41.4%) AA and 38 (62.3%) whites, FOBT in 46 (39.7%) AA and 40 (65.6%) whites and endoscopy in 31 (26.7%) AA and 61 (100%) whites. There was a significant difference in the rate at which rectal exams (p = 0.0039), FOBT (p = 0.0006) and endoscopy (p < 0.0001) were performed. Following the educational intervention, the medical records of 132 AA and 68 whites were evaluated. Rectal exams were performed 51 (38.6%) AA and 26 (38.2%) whites, FOBT in 50 (37.9%) AA and 25 (36.8%) whites and endoscopy in 78 (59.1%) AA and 48 (70.6%) whites. There was no significant difference in the rate at which rectal exams (p = 0.1217) and FOBT (p = 0.1212) were performed in AA and whites. There remained a significant difference (p = 0.0349) in the rate at which endoscopy was performed in AA compared to whites. However, there was a significant decrease in the rate at which rectal exams (p = 0.0065), FOBT (p = 0.0011) and endoscopy (p < 0.0001) were performed in white patients.

Conclusions: There was a racial disparity in the colorectal cancer screening of AA compared to white patients. There remained a difference in the frequency of endoscopy between AA and white patients following an educational intervention despite the significant improvement in the endoscopic assessment of AA. However, there was a significant decrease in all aspects of colorectal cancer screening in whites. Development of strategies to improve colorectal cancer screening in all patients and decreasing racial disparity is necessary.

1009
SCREENING COLONOSCOPY, CURRENT PATTERNS AND APPROPRIATENESS OF REFERRALS AT A VA MEDICAL CENTER


Purpose: Colonoscopy is being accepted as the modality of choice for screening of colorectal cancer. The volume of referrals has increased and has resulted in a burden to gastroenterology practices. AIM: To study the patterns and appropriateness of referrals of screening colonoscopy for colorectal cancer.

Methods: A sample of the screening colonoscopy consults was studied at a VAMC from 1/2/04 to 5/19/04. Every 5th consult received for screening colonoscopy for colorectal cancer screening was reviewed. Inappropriate referrals were defined as any of the following: 1) age ≥ 80 years; 2) ASA class ≥ 3; 3) colonoscopy and/or flexible sigmoidoscopy within the previous 5 years of referral; 4) if no fecal occult blood testing (FOBT) had been ordered prior to the endoscopic referral. For comparison purposes to see the change in the pattern of referrals for colorectal cancer screening we studied the same period in 1999.

Results: Of a total of 3564 consults received, 940 (26.4%) were for screening colonoscopy and we studied 180 (19.1%). In 1999, there were 1903 consults and 442 were for endoscopic screening: 368 flex sigs and 74 colonscopies (3.9%). The referral basis was the outpatient primary care setting where there were 32 MDs, 15 NPs, 3 PAs and 3 DOs. Of the 180 patients, 71% were referred by MDs and 27% by NPs. The mean age of the study group was 61 years (62.2 years in 1999) and 95% were men. The majority of patients (89%), were referred for their initial endoscopic screening. In this group, 74 (46%) were ≥ 60 years of age (62% in 1999; p = 0.01); 42 (26%) between 50 and 55 years and, 40 (25%) between 56 and 59 years. Seventy-five (41.6%) patients had inappropriate consults. The inappropriate-ness was the result of the following: age (4 patients), refusal (4 patients), prior endoscopic screening within 5 years of referral (10 patients); ASA ≥ 3 (22 patients) and FOBT never ordered (49 patients); positive FOBT (2 patients).

Conclusions: 1) The referrals for screening colonoscopy has increased 6 fold since 1999 and represents 25% of referrals to a VA GI practice. 2) Most referrals were for patients who never had screening and were 60 years or older. 3) Inappropriate referrals were found in 41% of the group. The major reason for inappropriateness was the lack of FOBT ordered prior to the consult, followed by ASA class III, and prior endoscopic exams within the previous 5 years. Educational strategies to improve referral-appropriateness should be directed to these areas of clinical practice.

1010
COLORECTAL CANCER IN AFRICAN-AMERICAN AND HISPANIC PATIENTS UNDER 50 YEARS OF AGE

Raymundo Romero, M.D., Khin Ohmmar, M.D., Manan Mehta, M.D., Ioannis Giannikopoulos, M.D., F.A.C.G., Jaydutt Vadhama, Ph.D.*. Charles R. Drew University of Medicine and Science and Martin Luther King-Drew Medical Center, Los Angeles, California.

Purpose: From 1993 to 1997 in the state of California there were 11,615 colorectal cancer cases reported in African-American and Hispanic patients. Of these, 5,367 (46%) cases were patients younger than 50 years. Currently, guidelines for screening young individuals in these two ethnic groups are lacking. Our aim was to investigate the ethnic differences in occurrence and clinical presentation, as well as evaluate a possible choice of screening in this specific age group.

Methods: A retrospective analysis was conducted for patients younger than 50, diagnosed with colorectal cancer at Martin Luther King-Drew Medical Center from January 1996 to May 2004. We recorded age at diagnosis,
gender, ethnicity, family history, tumor location, tumor histology and TNM stage.

Results: There were a total of 148 colorectal cancers diagnosed in African-American and Hispanic patients of which 38 (26%) were in patients under the age of 50. 28 (74%) of the patients were male and 10 (26%) females. 25 (66%) patients were African-American and 13 (34%) were Hispanics. In the overall group, the median age at diagnosis was 42 (Range 25 to 49). The mean age at diagnosis was 44 for African-Americans and 39 for Hispanics. A positive family history was reported by 19 (50%) of the patients. Distal location accounted for 25 (66%) of the tumors as compared to 13 (34%) proximally located tumors. 29 (76%) of the tumors were adenocarcinomas and 6 (16%) were mucinous adenocarcinomas. There were 4 (11%) cases with stage I tumors, 9 (24%) with stage II, 12 (32%) with stage III and 13 (34%) with stage IV.

Conclusions: Our findings suggest that colorectal cancer screening should be considered in African-American and Hispanic patients starting at age 40 regardless of family history. With the majority of tumors located distally, flexible sigmoidoscopy may be the appropriate screening tool in this specific age group.

1011
IN A SCREENING COLONOSCOPY POPULATION HIGH BODY MASS INDEX INCREASES RISK FOR COLORECTAL NEOPLASIA IN FEMALES MORE THAN MALES
Joseph C. Anderson, M.D.*, Zvi A. Alpern, M.D., Fouad Dakhallah, M.D., Carole Martin, ANP, Patricia M. Hubbard-Ells, ANP, John W. Birk, M.D. Stony Brook University, Stony Brook, New York.

Purpose: Body mass index (BMI) has been positively correlated with colorectal cancer but its impact on screening has not been fully examined. A recent VA study of mostly men showed no association. Our goal was to examine the impact of BMI in a screening population with equal numbers of men and women.

Methods: 2300 consecutive colonoscopies were performed on asymptomatic patients. Data collected included height, weight, age, ethnicity, education, smoking history, alcohol history, exercise/activity, fruit/vegetable intake, family history, and endoscopic findings. Patients were divided into 4 BMI groups: 1 < 25, 2 ≥25 < 30, 3 ≥30 < 40, 4 ≥ 40. Significant colorectal neoplasia was defined as large polyps (>1cm), villous tissue, high grade dysplasia, multiple polyps (>2) and adenocarcinoma. Chi-square, and multivariate logistic analyses were performed.

Results: Overall, the average age of our patients was 57 and 15% had a family history of CRC. Table 1 demonstrates the prevalence of significant neoplasia in men and women. The p values for the prevalence is for trend. The Odds Ratios shown are derived from multivariate analyses which controlled for smoking, age, alcohol and family history. The p value for the OR’s represent the overall effect of increasing BMI.

Conclusions: Overall, increasing BMI correlated positively for risk of significant colorectal neoplasia in our population. This effect was shown to be statistically significant in women but not men. Our results may have implications for CRC screening in female patients. In view of these findings, gastroenterologists should play a role in counseling patients about their weight. Our findings have greater importance in light of the increasing rate of obesity in the US.

Prevalence and Odds Ratio of Significant Neoplasia vs. BMI

<table>
<thead>
<tr>
<th>BMI</th>
<th>Men</th>
<th>Women</th>
<th>n</th>
<th>OR</th>
<th>95% CI</th>
<th>p value</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI 1</td>
<td>10.8%</td>
<td>6.3%</td>
<td>1250</td>
<td>1.0</td>
<td></td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI 2</td>
<td>11.5%</td>
<td>7.1%</td>
<td>1,050</td>
<td>1.6</td>
<td>(1.2-2.0)</td>
<td>&lt;.0001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI 3</td>
<td>13.6%</td>
<td>8.6%</td>
<td>10.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI 4</td>
<td>12.0%</td>
<td>23.6%</td>
<td>2.44</td>
<td>(1.3-4.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1012
THE USE OF CAPSULE ENDOSCOPY SURVEILLANCE IN INDIVIDUALS WITH THE HEREDITARY COLORECTAL CANCER SYNDROMES
Carol A. Burke, M.D., F.A.C.G.*, Janice Santisi, R.N., James Church, M.D., F.A.C.G., Gavin Levinthal, M.D. The Cleveland Clinic Foundation, Cleveland, Ohio and Scottsdale, Arizona.

Purpose: The hereditary colorectal cancer syndromes, familial adenomatous polyposis (FAP) and Peutz-Jeghers syndrome (PJS), are associated with an increased prevalence of SB (stomach and colon) and ileal recurrent neoplasms in FAP although the risk of duodenal cancer is well established. Jejunal and ileal polyps are prevalent in PJS and are one of the most challenging aspects of managing PJS patients. The accuracy of current techniques for SB evaluation are limited when compared to capsule endoscopy (CE). We assessed the safety and utility of CE to detect the prevalence, location and morphology of polyps using the duodenal polyps in patients with FAP and PJS.

Methods: CE was offered to consecutive, asymptomatic polyposis subjects due for surveillance upper endoscopy. The location of SB polyps (jejum, ileum), polyp size (1-5 mm, 6-10 mm, > 10 mm) and number of polyps (1-5, 6-20, >20) of polyps detected by CE was assessed.

Results: 20 patients, 15 FAP/5 PJS, with mean age of 43, were included. 19/20 subjects had prior intestinal surgery. No complications occurred. CE in FAP: 9/15 (60%) FAP patients had SB polyps. The prevalence of SB polyps was related to the duodenal polyp stage and patient age. The most distal location, size and number of polyps progressed as duodenal polyposis stage advanced. CE in PJS: 4/5 (80%) PJS subjects had SB polyps. In 3/5, the polyposis was diffuse and in one, the only polyps were in the ileum. CE findings, including large and ulcerated polyps, led to intra-operative endoscopy in two PJS patients (40%).

Conclusions: SB polyps are surprisingly common in FAP but their importance is currently unknown. CE should be performed in FAP patients with stage III and IV duodenal polyposis. Clinically significant polyps are detected on CE in asymptomatic PJS patients and led to an operation in 40% of PJS subjects. CE surveillance should be the method of biennial SB surveillance for PJS patients. CE is safe in polyposis patients.

Table 1. CE in FAP

<table>
<thead>
<tr>
<th>Duodenal Polyposis Stage</th>
<th>No. Subjects</th>
<th>Mean age (range)</th>
<th>% with SB polyps</th>
<th>% subjects with jejunal polyps</th>
<th>% subjects with ileal polyps</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>3</td>
<td>37 (22-45)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>4</td>
<td>41 (26-52)</td>
<td>75</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>III</td>
<td>5</td>
<td>51 (46-66)</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>IV</td>
<td>2</td>
<td>67 (58-72)</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

1013
THE DETECTION OF AERODIGESTIVE TUMORS BY A STOOL-BASED DNA INTEGRITY ASSAY

Purpose: A multi-targeted DNA-based mutation assay panel for stool has been developed for colorectal cancer screening. This panel combines two different methods for detecting colonic neoplasia. One approach uses our knowledge of specific genetic mutations associated with colorectal carcinogenesis. The other method, called the DNA Integrity Assay (DIA), detects higher molecular weight fragments of DNA. This is based upon the premise that apoptosis precedes epithelial shedding from normal mucosa while cells exfoliated from cancers are generally intact and nonapoptotic. A previous study of stools collected and stored at their institution determined
that DIA can be detected in other types of aerodigestive tumors including lung, biliary tract, gastroesophageal and pancreas with a positive result in 5/8 (63%) of stage I and II cancers and 12/15 (80%) of stage III and IV cancers. (Gastroenterology 2000; 118: A855) Since DIA is now available commercially as part of a colon cancer screening assay, physicians will be caring for patients with a negative colonoscopy who had a positive DIA. Thus, we studied patients with aerodigestive tumors who collected their stool specimens at home and forwarded them to the processing lab. Our aim was to determine if a method of collection analogous to clinical practice impacted on the DIA positivity of aerodigestive tumors.

**Methods:** Nineteen untreated patients with newly diagnosed non-colonic aerodigestive tumor (2 ampullary, 5 pancreatic, 3 gastroesophageal, 5 lung, 2 pharyngeal) and 10 control tumors (7 breast and 3 prostate) underwent home stool collection under the same conditions of colon cancer patients. Human DNA was purified from the stool by oligonucleotide-based hybrid capture, amplified by PCR and analyzed for the presence of high molecular weight DNA by DIA.

**Results:** Four of the 19 (21%) aerodigestive tumors had a positive DIA while none of the controls were positive. These four included a stage IV pancreas cancer, stage IIIA gastric cancer, stage IV non-small cell lung cancer and stage IV small cell lung cancer.

**Conclusions:** DIA on stool collected at home by a patient can detect aerodigestive tumors, albeit, at lower rates than previously reported. This finding suggests that one should consider additional evaluation of those patients with a positive DIA and negative colon evaluation based on their risk factors and clinical history. The effect of shipping conditions on DIA results should also be investigated.

**1014 PERCEIVED RISK OF DYING FROM COLORECTAL CANCER – DOES IT INFLUENCE SCREENING BEHAVIOR?**

*Heiko Pohl, M.D., Justin B. Dimick, M.D., Kirsten T. Weiser, M.D., Douglas J. Robertison, M.D.*. VA Medical Center, White River Junction, Vermont.

**Purpose:** Despite compelling evidence supporting screening for colorectal cancer, less than one-half of patients in the eligible population have been screened as recommended. Little is known about the relationship between perceived risk and screening behavior. We tested a newly developed questionnaire and collected preliminary information whether the perceived risk of dying from colon cancer affects patients’ willingness to undergo screening.

**Methods:** The questionnaire included the following domains: 1) views on the effectiveness of screening; 2) perceived risk of dying from colorectal cancer; 3) factors that influence screening behavior; 4) demographics; and 5) general health characteristics. Questions about perceived risk utilized a previously validated “Magnifier Scale.” The survey was tested in a convenience sample of 21 subjects who were eligible for screening or who had a screening test in the past. Appropriate statistical analysis was used to assess reliability and validity of the questionnaire.

**Results:** The response rate was 100%, with the majority being white, healthy, with a high level of education and income. The mean age was 53. The questionnaire demonstrated construct validity in our main variable of interest – risk perception (p < 0.001); and reflected alternate form reliability. Respondents who had previously undergone screening felt they were at higher risk of dying from colon cancer than those without previous screening (median risk 5% vs. 0.1%, p = 0.3). When asked to consider the risk of an “average 60 year old” individual, respondents who had been screened before had higher estimates compared to those who had not been screened (median risks 4% vs. 1.2%, p = 0.02). Finally, when considering all subjects, only 46% would recommend screening if the risk of dying from colon cancer was 1 in 10,000, but all would recommend screening if the risk was 1 in 100.

**Conclusions:** The developed survey is reliable and valid. Preliminary results support the hypothesis that unscreened individuals underestimate their risk of dying from colorectal cancer relative to those who have been screened. Further study in a population based cohort is warranted.

**1015 SERUM FERRITIN ACCURATELY PREDICTS NEED FOR COLONOSCOPY IN PATIENTS WITH ANEMIA**

*Thokozeni Lipato, M.D., Douglas Nelson, M.D., Maureen Murdoch, M.D. Ph.d., John Bond, M.D., Stephen Ewing, M.D., Mandep Sawhney, M.D.*. Minneapolis VA Medical Center, Minneapolis, Minnesota.

**Purpose:** Evaluate the prevalence of colorectal cancer (CRC) in patients with anemia and ferritin of < 50 ng/ml (low), 50 to 100 ng/ml (low normal), > 100 ng/ml (normal) and compare that to a control group of non-anemic persons undergoing screening colonoscopy.

**Methods:** The computerized endoscopy database at a VA medical center was searched from 1997 to 2003. All patients undergoing colonoscopy for evaluation of anemia were identified. Patients with overt or occult GI bleeding, h/o GI pathology (including polypos) or family h/o colon cancer were excluded. Medical charts were reviewed and data collected. A priori, subjects were stratified by serum ferritin: < 50 ng/ml, 50 – 100 ng/ml and > 100 ng/ml. Controls were defined as a-symptomatic, non-anemic patients undergoing screening colonoscopy. The prevalence of CRC was determined in each group. Results were compared using t tests and contingency table analysis with Fischer’s exact test.

**Results:** 414 case subjects and 323 controls met inclusion criteria. 97% of subjects were male, 96% were white with average age of 70 years. 94% of controls were male, 99% were white with average age of 66 years. The prevalence of CRC in patients with ferritin < 50 ng/ml, 50-100 ng/ml, > 100 ng/ml and controls was 5.9% (15/254), 2.2% (1/45), 0.86% (1/115) and 0.6% (2/323) respectively. The ODDS RATIO for CRC in the above groups was 9.8, 7.6, 1.4 and 1.0 respectively. There was a statistically significant difference between prevalence of CRC in patients with ferritin < 50 ng/ml and ferritin > 100 ng/ml (p = 0.02) or controls (p = 0.005). There was no significant difference between patients with ferritin < 50 ng/ml and ferritin 50 – 100 ng/ml (p = 0.48) or between ferritin > 100 ng/ml and controls (p = 0.55).

**Conclusions:** Borderline IDA (ferritin 51-100 ng/ml) should be treated with the same degree of concern as IDA. Patients with anemia and serum ferritin > 100 ng/ml do not have increased prevalence of CRC. Age appropriate CRC screening is adequate evaluation for this group.

**1016 CLOSING THE OPEN-ACCESS TO ENDOSCOPY: A SAFE AND DRAMATIC POLICY SHIFT TO IMPROVE DELIVERY OF GI SERVICES**


**Purpose:** Outpatient GI (non-procedure) clinics in academic centers are often burdened by long waits for an appointment, large numbers of patients (pts), and many hours of waiting to be seen. To determine whether such inefficiency and waste of human resources could be safely reduced or eliminated with closer scrutiny of endoscopic procedures, we began a policy
of “Rigid Consult Review” and “Closed-Access Endoscopy” and prospectively studied its effects on (a) the outpatient (non-procedure) GI clinic, (b) the outpatient (procedure) endoscopy lab, (c) the overall GI section, and (d) the ability to organize and maintain a colorectal cancer screening program using colonoscopy (C-scope) as the primary investigative screening tool. We now report the outcomes after 3 years of strict adherence to the new policies.

**Methods:** In July 2001, the siege began: (1) “open access” was sacked; (2) mandatory question templates for the primary care provider were added to the electronic consult requests; (3) each request was reviewed on a daily basis both by a GI fellow and by the GI attending; (4) a pre-procedure nurse prep (NP) clinic was established for all Pts approved for an endoscopic procedure; (5) consults were assigned to 1 of 3 categories: (i) approved for NP clinic and procedure, (ii) needs to be seen in opt (non-procedure) GI clinic, (iii) returned to sender (RTS).

**Results:** During the first 35 months of “closed access” and “rigid consult reviews,” 10,991 consults from 7,235 pts were reviewed. 62% of pts were approved for endoscopy on the first round, 8% were retuned for more information, and 30% failed to qualify (co-morbidities, >80y/o, outside procedures, etc). (1) GI (non-procedure) clinic “mean wait for appointment time” was reduced in 6 months from 157 days to < 1 week, where it currently remains; (2) GI (non-procedure) clinic congestion decreased by 2/3 (from 30 to 10 consults per clinic); (3) by 12 months, the “mandatory wait time” for routine screening C-scope was only 5 days, where it remains today; (4) a pre-procedure nurse prep clinic was established for all Pts approved for an endoscopic procedure; (5) consults were assigned to 1 of 3 categories: (i) approved for NP clinic and procedure, (ii) needs to be seen in opt (non-procedure) GI clinic, (iii) returned to sender (RTS).

**Conclusions:** The policy of “Rigid Consult Review” and “Closed-Access Endoscopy” dramatically and safely improved the overall delivery of GI health care and allowed for the implementation of an efficient cancer screening program using C-scope – the procedure most likely to detect the largest number of curable cancers.

**1017**

**SCREENING FOR COLORECTAL CANCER IN THE VA: “CLOSED ACCESS” COLONOSCOPY IS THE WAY TO GO**


**Purpose:** The VA has mandated screening for colorectal cancer (CRC) in all eligible patients (Pts). The definition of eligible, however, and the exact method of screening is left to each VA hospital, with most choosing to screen with fecal occult blood testing (FOBT) alone. Considering the use of time and resources when a C-scope is required after a screening flexible sigmoidoscopy (1) because a polyp was seen or (2) because signs or symptoms eventually developed, and considering the high CRC miss rate of FOBT, The Hines GI Section chose C-scope as the sole method in our VA to accomplish the only objective of importance, the prevention of death from CRC.

**Methods:** In July 2001, as a part of our newly developed policy of “Rigid Consult Review” and “Closed-Access Endoscopy,” we laid siege to the widely held belief that the yearly C-scope “until death do us part” is a God-given right in all creatures with a colon. “Open access” was sacked and rigid procedure criteria for (a) screening, (b) surveillance, and (c) diagnostic procedures were begun. A pre-procedure nurse prep clinic was established for all approved endoscopies. Inappropriate, unnecessary, or unlikely-to-benefit procedures were denied, and endoscopies were not repeated if done at outside hospitals. Hate mail, telephone threats and intimidating Emails were forwarded to a neutral party.

**Results:** During the first 35 months, 10,991 consults from 7,235 pts were received and reviewed. In the true screening group, “first-time C-scope” detected 50 totally asymptomatic cancers; in the non-asymptomatic control group (anemia, GI signs or symptoms, etc.), “first-time C-scope” detected 154 symptomatic cancers (mean ages: 64.9 versus 64.7). Potentially curable cancers (Stages 0, 1, 2) were found in 88.0% of the asymptomatic group compared with only 60.4% of the symptomatic group (Diff: 27.6%; CI: 15.7%-39.5%; P = 0.0006). Metastatic cancers (Stage 4) were found in 0% of the asymptomatic group versus 19% of the control group. The fact that the mean ages of both groups were almost identical suggests that the C-scope screening program is detecting asymptomatic cancers at an early and curable stage.

**Conclusions:** By drastically limiting unnecessary procedures, the Closed-Access Program allowed for the shifting of resources to those pts who were likely to benefit from early cancer detection. C-scope screening in the VA is feasible, and in veterans is likely to decrease the death rate from colorectal cancer.