Conclusion: These statistically significant results suggest that lactulose therapy may help prevent infection with C. diff in patients on antibiotics. Further research is needed to identify additional clinical factors that may be contributing to observed differences, as well as to elucidate the appropriate dosing, route, and duration of therapy.

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Cytotoxic T-Lymphocyte-Associated Antigen 4 Antibody (Ipilimumab) Associated Enterocolitis

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Purpose: The Cytotoxic T-lymphocyte-associated antigen 4 (CTLA-4) antibody, ipilimumab, is a monoclonal antibody used for the treatment of metastatic melanoma. Several immune-mediated toxicities occur, the most common of which is enterocolitis. The objective was to establish the prevalence of this toxicity and identify demographic, disease related risk factors and biomarkers for its occurrence.

Methods: We performed a retrospective chart review on all adult (>18 yrs) melanoma patients treated with ipilimumab in a university hospital population. All patients between 2005-2012 receiving ipilimumab were assessed. Data extracted included patient demographics, cancer diagnosis and treatment, endoscopic, laboratory, histology findings and treatment for colitis. Descriptive statistics with t-test and chi-square were performed to identify risk factors for ipilimumab associated enterocolitis.

Results: Thirty patients were treated with ipilimumab. Mean age was 57 yrs. 73% of patients were male. 53% were non-smoker. Mean duration of treatment with ipilimumab was three months. Six patients (20%) developed signs and symptoms of colitis. The diagnosis was made on colonoscopy, histology and with stool markers. Mean age of diagnosis of colitis was 51 years. Table 1 describes descriptive statistics in patients developing colitis with ipilimumab therapy. Statistically significant associations were found for a shorter mean duration of treatment with ipilimumab (p=0.042) and for presence of gastrointestinal symptoms such as diarrhea or abdominal pain (p=0.001). Gender, smoking status, antecedent IL-2 therapy and laboratory parameters were not found to be associated with colitis. All patients except two treated with corticosteroids had improvement. Two steroid non-responders were treated with Infliximab with resolution of symptoms. One patient had self-limiting diarrhea requiring no intervention.

Conclusion: We describe the risk factors and characteristics of patients with ipilimumab induced colitis. We found shorter duration of ipilimumab therapy and presence of GI symptoms significantly associated with colitis. We would recommend obtaining colonoscopy and biopsy in any patients on ipilimumab therapy presenting with GI symptoms for diagnosis and treatment of colitis.

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Case Series of an Uncommon Colon Polyp - Leiomyoma

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Introduction: Most gastrointestinal (GI) polyps are epithelial in origin. Some, however, are nonepithelial and include leiomyomas which are most common in the stomach and small bowel. Only 3% of all GI leiomyomas are found in the colon and rectum and constitute 1% of all GI neoplasms. We present four such cases. The first case is of an asymptomatic 52 year old man who underwent screening colonoscopy. It revealed an 11mm polyp in the descending colon that was resected using a hot snare. The second case is of a 52 year old man who underwent colonoscopy for complaints of intermittent rectal bleeding. A 4mm polyp was found in the sigmoid colon that was removed with biopsy forceps. The third case is of a 68 year old asymptomatic woman with history of polyps who underwent surveillance colonoscopy. A 6mm sessile polyp at the hepatic flexure was seen that was resected using a cold snare. The fourth case is of a 66 year old man who underwent screening colonoscopy that revealed a 6mm polyp in the rectum that was resected using a hot snare. The pathologies of these polyps were consistent with leiomyoma and had immunostain for SMA (+), CD117 (-), CD34 (-). The first patient had surveillance colonoscopy three years later that was normal. Discussion: The most common sites of leiomyomas in the colon include descending and sigmoid colon. Peak incidence is in the third decade of life with a female predominance. They can present in asymptomatic individuals on screening or can have a wide variety of symptoms including bleeding, abdominal pain and intestinal obstruction. Endoscopically leiomyomas can appear as pedunculated or intramural. They arise from the muscularis mucosa/propia, or the vascular smooth muscle and are submucosal. Diagnosis is made on histology as endoscopically they might be indistinguishable from adenomas. Wide surgical excision of the neoplasm is recommended. Up until now, there have been single case reports of leiomyomas of the colon that were endoscopically removed. Our case series has four patients with varying presentations with the tumor occurring at different locations and removed by different modalities. The high number of cases in our review suggests that the neoplasm might be more common than originally thought. No guidelines for management and follow-up of such lesions exist. We recommend that due to the neoplastic nature of such lesions, they should be followed by surveillance endoscopy. However the time interval between procedures is a matter of debate. Furthermore, we opine that for small tumors endoscopic resection, with surveillance, is appropriate as opposed to subjecting these patients to surgery. Further studies are needed to help guide in the appropriate direction to be taken.

Table 1: Colitis in Ipilimumab treated patients by patient and treatment characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Colitis</th>
<th>No Colitis</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at diagnosis, mean (SD)</td>
<td>51 (14.8)</td>
<td>59.1 (15.8)</td>
<td>0.132</td>
</tr>
<tr>
<td>Gender, n (%) Male Female</td>
<td>4 (66.7) 2 (33.3)</td>
<td>18 (75) 6 (25)</td>
<td>0.690</td>
</tr>
<tr>
<td>Smoking status, n (%)</td>
<td>1 (16.7) 1 (16.7) 4 (66.7)</td>
<td>17 (40.4) 7 (30.4) 12 (52.2)</td>
<td>0.775</td>
</tr>
<tr>
<td>Ipilimumab Duration, months, mean (SD)</td>
<td>2.5 (0.84)</td>
<td>3.35 (1.07)</td>
<td>0.042</td>
</tr>
<tr>
<td>IL-2 Chemotherapy, n (%) Yes No</td>
<td>0 (0) 3 (100)</td>
<td>0 (0) 3 (100)</td>
<td>0.420</td>
</tr>
<tr>
<td>Gastrointestinal Symptoms, n (%) Yes No</td>
<td>6 (100) 0 (0)</td>
<td>6 (25) 18 (75)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

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Prior Appendectomy Is Not Associated with Adverse Outcomes in Clostridium difficile Infection - A Population Based Study

Presidential Poster

Sahil Khanna, MBBS, Larry Baddour, MD, Darrell Pardi, MD, MS, FACP, Division of Gastroenterology and Hepatology, Mayo Clinic, Rochester, MN.

Purpose: The vermiform appendix is a lymphoid organ that harbors commensal gut microbes and may have immune regulatory functions. Recent studies suggest that although a prior appendectomy is not linked to an increased risk of Clostridium difficile infection (CDI), it may lead to an increased risk of recurrence. We assessed CDI outcomes (severe and severe-complicated CDI, treatment failure and recurrence), in adult CDI with and without prior appendectomy from 1991 - 2005. CDI was defined as positive stool toxin in patients with diarrhea. According to current guidelines, severe CDI was defined by a peripheral leukocyte count ≥ 15,000/ul. or ≥ 50% serum creatinine rise from baseline and...
severe-complicated CDI by the presence of megacolon, sepsis or death due to CDI. CDI recurrence was defined if diagnostic criteria were met within 8 weeks of initial diagnosis after symptom resolution. Treatment failure was defined as change in treatment within 14 days due to non-response.

Results: There were 355 adult CDI cases and 46 (12.9%) had undergone appendectomy prior to CDI; they were younger (median 64 vs 71 years, p=0.08), and more likely to be female (OR 2.9, 95% CI 1.3-6.9, p<0.01), but had similar Charlson Comorbidity Index (CCI) as compared to patients without prior appendectomy. The median time from appendectomy to CDI was 22.5 years (5 days - 45 years). There were no differences in frequency of prior antibiotic exposure (OR 1.6, 95% CI 0.4-7.8, p=0.36) or gastric acid suppression (OR 1.2, 95% CI 0.6-2.2, p=0.59) in the two groups. On univariate analysis, there were no differences in initial treatment, treatment failure (OR 0.9, 95% CI 0.4-1.9, p=0.77), development of severe (OR 0.6, 95% CI 0.3-1.4, p=0.26), severe-complicated (OR 0.8, 95% CI 0.2-2.8, p=0.76), or recurrent CDI (OR 0.9, 95% CI 0.5-1.9, p=0.93) among those who had undergone appendectomy prior to CDI as compared to those without prior appendectomy. On multivariate logistic regression analysis, adjusting for age, sex and comorbidities, a higher CCI was associated with severe CDI and severe-complicated CDI, and increasing age was associated with severe-complicated CDI, but a prior appendectomy was not associated with severe outcomes or recurrent CDI.

Conclusion: In this population-based cohort, 12.9% of adult CDI cases had undergone appendectomy prior to CDI. They were younger but there were no differences in CDI risk factors, treatment, or outcomes including treatment failure, development of severe or severe-complicated CDI and recurrence rate as compared to patients without prior appendectomy.

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PEG 4L with Bisacodyl 20 mg is Superior to PEG 4L Alone for Colonoscopy Preparation
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Purpose: Combination bisacodyl plus polyethylene glycol (PEG) is being used less frequently due to available alternatives and the concern for ischemic colitis. The purpose of our study was to identify whether the addition of bisacodyl 20mg to 4L PEG results in a better preparation than 4L PEG alone as a single dose preparation for colonoscopy and to review its safety in a large group of patients.

Methods: We identified all outpatient colonoscopy exams performed between January 1, 2010 and July 1, 2011. We excluded cases in which the preparation was not 4L PEG alone or 4L PEG + 20mg bisacodyl. We recorded patient characteristics, preparation quality on a 5-point scale, procedure duration, and adenoma detection rate.

Results: After screening 1,644 exams, 938 patients were identified (4L PEG n=574, 4L PEG + 20mg bisacodyl n=364). There was a marked difference in the proportion of individuals who had a good or excellent preparation in the 4L PEG + 20 mg bisacodyl group compared to the group receiving 4L PEG alone (88.5 vs. 77.4%). In a multivariate analysis, lower BMI (≤30) and use of 4L PEG + 20mg bisacodyl (OR=2.49; 95% CI 1.64-3.79) were independently associated with a good or excellent preparation. No cases of ischemic colitis were identified due to bisacodyl. Adenoma detection rate did not differ between preps (33.7 vs. 31.4% for PEG alone; P=0.47).

Conclusion: Use of 4L PEG + 20mg bisacodyl results in a better preparation for colonoscopy than 4L PEG alone when using a day before single preparation approach. This did not affect the adenoma detection rate however. Although we saw no cases of ischemic colitis, we suggest using a 5mg dose of bisacodyl with 4L PEG which is consistent with FDA recommendations.

Microscopic Colitis: Is it an Allergic Phenomenon?
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Purpose: Microscopic colitis (MC) is a disease of unknown etiology. Current models of pathogenesis suggest an immune or inflammatory response to luminal pathogens such as bile salts, bacterial products and toxins, medications and dietary antigens or auto immune process as possible mechanisms. Animal studies show that lymphocytic colitis seen in dogs responds to treatment with a hypoallergenic diet. Another study found that 5/6 patients with microscopic colitis had a food allergy and reported resolution of symptoms after elimination of the offending allergen.

Methods: In this retrospective study, cases of microscopic colitis diagnosed between June 2005 and June 2010 at our hospital were selected as a study group. Demographic characteristics, clinical, endoscopic and histological records were reviewed. The data was collected to determine the association of MC with any allergies to drugs or food and/or both.

Results: We identified 121 cases of microscopic colitis (described as collagonous colitis-39, lymphocytic colitis -31, collagenous/lymphocytic colitis-29 and microscopic colitis-22). Mean age was 68.5 yrs; majority were females - 89 vs. males - 32. Seventy five percent of the patients presented with diarrhea as their chief complaint. Endoscopy was normal in 87% of the patients. 64/121 patients (53%) were documented to have allergies (penicillin, erythromycin, sulfa and other drugs or food allergies). Because of large prevalence of allergies in our study population, we analyzed the case records of 120 randomly selected control subjects with no previous diagnosis of microscopic colitis. We found 45/120 patients (38%), to have documented allergies. This difference between the two groups is statistically significant (P= 0.019).

Conclusion: The presence of allergic tendency towards drugs or food is statistically significant in subjects with microscopic colitis compared to random-ized controls. Since patients with microscopic colitis respond well to steroid therapy, it can be hypothesized that these patients are showing a hypersensitiv-ity response to one or some of the components present in various medications or the food they are currently exposed to. The above results emphasize the importance of a careful evaluation of medications we prescribe as there can be cross reactivity between some of the constituents of the prescribed drugs and the drugs they are allergic to. We should also, consider further work up for allergy including skin testing, as dietary or other allergen elimination can decrease or abolish the need for drug therapy.

Racial Differences in Refusal of Surgery for Colorectal Cancer in the United States
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Purpose: Colorectal Cancer (CRC) is the second leading cause of cancer death in the United States. Surgery is the most common treatment for all stages of CRC. The racial variations in surgical treatment for CRC persist even after adjustment for disease stage at presentation, lower socioeconomic status and lower educational levels. Refusal of surgery in CRC patients as a reason for disparity in survival among different races has not been studied. The primary objective of our study is to determine racial differences in refusal of recommended surgery in CRC patients; the secondary objective is to investigate other predictors of refusal.

Methods: We analyzed a retrospective cohort of CRC patients included in the National Cancer Institute’s Surveillance, Epidemiology, and End Results (SEER) database from 1988 to 2008. We included Caucasian and African-American patients with primary CRC and age greater than 65 years. We excluded patients in whom surgery was not recommended, surgical status was unknown and reason for non performing surgery was unknown.

Results: We included 160,412 patients with CRC. The majority of the study population was Caucasian (92%). African-Americans presented with advanced