system uses five independent variables: the presence of mural nodules, MPD diameter > 6 mm, CA 19-9 > 37 U/ml, history of pancreatitis, and age ≥ 60 years. One point was given to each variable. Validation of the scoring system was performed using a ROC analysis.

Results: Records of 98 patients (42% malignant and 58% benign) included all five variables. Analysis showed that a cut-off of three points had the highest discriminating power. The associated risk ratio (RR) was 3.13 (95% CI 1.51-6.49) and could predict IPMN malignancy with a sensitivity of 73.2% and a specificity of 80.7% (AUC 0.81, 95% CI 0.73-0.89). Additional analysis performed on side-branch variant of IPMN and mixed type (71 cases [37% malignant and 63% benign]) for the cut-off of three points also showed the highest discrimination in predicting malignancy in IPMN. The RR was 6.49 (95% CI 2.41-17.7) with a sensitivity of 84.6% and specificity of 86.7% (AUC 0.90, 95% CI 0.82-0.96).

Conclusion: The 3-point scoring system described by Shin et al was successfully validated and can be used to reliably predict malignancy in IPMN in both main branch as well as side/mixed cases of IPMN. Use of this scoring system may assist clinicians in predicting malignancy in the preoperative patient with IPMN and is especially useful with the side branch and mixed variant.

ROC for Patients Without Main Duct Pathology

<table>
<thead>
<tr>
<th>Area under ROC curve</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8966</td>
<td>0.5</td>
<td>1.0</td>
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</table>

Tandem Endoscopic Ultrasound and Endoscopic Retrograde Cholangiopancreatography versus Different Day Procedures: Experience at a Tertiary Care Center

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Purpose: Patients with pancreatobiliary diseases undergoing EUS and ERCP procedures are increasing. Performing EUS first may guide the need for therapeutic ERCP interventions. Performing EUS and ERCP in tandem is convenient to the patient and is likely to be cost effective. Limited data exists on safety, procedure times and impact on patient outcome. We performed a retrospective review of tandem procedures performed at our institution.

Methods: A chart review of all patients who underwent tandem (t) EUS/ERCP between 2007 and 2012 was performed. Procedure duration (PD) was defined as the time between the first and last endoscopic images. Follow-up was available for all procedures. Thirty three patients with comparable indications who underwent either EUS only or ERCP only served as a control group. This number was the minimum sample size required to detect an effect. Data was collected on the following parameters: indications, procedure duration and complications.

Results: A total of 104 patients were included. Indications for the t procedures are listed in Table 1. Abnormal imaging (CT/MRI) included strictures, dilated ducts, pancreatic cysts/pseudocysts or changes of chronic pancreatitis. The t EUS/ERCP were associated with shorter PD (Table 2). The mean PD for t EUS/ERCP were 22.9 and 42.5 m and 28.7 and 57.1 s for control groups respectively. This difference was statistically significant for both procedures compared to the control group. Adverse events in the t EUS/ERCP group included hypotension and bradycardia (2.8%), pancreatitis (5.2%), non-specific abdominal pain (7.2%), hospitalization (8.6%), and gastric perforation following cystogastrostomy (0.9%). These results are comparable to our annual incidence of adverse events of hospitalization (7.4%), perforation (0.4%), and pancreatitis (3.7%) for ERCP and EUS procedures.

Conclusion: t EUS/ERCP are safe with statistically significant induced procedure time compared to separate day procedures. No increase in post procedure complication rate was observed. The reduced procedure time may be associated with low procedure cost. Larger controlled studies are needed to confirm our results.

Abstracts

(203) Table 2. t-test

<table>
<thead>
<tr>
<th>Procedure</th>
<th>t-stat</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUS vs. control</td>
<td>22.9 ± 10.8</td>
<td>t = 2.02, P = 0.049</td>
</tr>
<tr>
<td>ERCP vs. control</td>
<td>42.5 ± 17.3</td>
<td>t = 3.84, P = 0.0001</td>
</tr>
</tbody>
</table>

204 Lessons on Aggressive Intravenous Hydration in Acute Pancreatitis: A Meta-Analysis of Clinical Trials

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Purpose: Largely based on animal studies and indirect evidence in humans, experts have put forth the notion that aggressive intravenous hydration (AH) in early disease, would attenuate the severity of the disease in patients with acute pancreatitis (AP). Recent clinical studies in human subjects evaluating the efficacy of AH have demonstrated conflicting results. The purpose of our study was to systematically review, analyze and combine the different studies in a meta-analysis to determine patterns of efficacy that may exist in order to promote appropriate fluid management in patients with AP.

Methods: In order to be included in the analysis, the published study needed to include patients with AP who were enrolled in a consecutive, prospective or retrospective fashion. The study needed to provide information regarding the amount of fluid for each group, and outcome, such as organ failure, necrosis and mortality. The amount of fluid over the first 24-48 hours needed to be provided. When combining the various studies, the weighted mean of power (sample size) was used to determine the relative value of significance. Sensitivity analysis evaluated sample sizes, timing, type of fluids and severity of patients included.

Results: Ten published studies fulfilled the criteria to be included in the analysis, which included 1,495 patients. There were six retrospective, four prospective studies. While three studies concluded that AH was beneficial, seven studies showed no benefit and/or harm. Using a weighted mean analysis, when evaluating the effectiveness of AH beyond 24 hours, there was no significant difference in the development of organ failure, pancreatic necrosis or mortality (OR 1.2, CI 0.4 -1.9). However, in a subgroup analysis excluding patients presenting with severe disease, there was a significant benefit to AH in preventing organ failure and/or pancreatic necrosis (OR 1.8, CI 1.5 -2.8, p = 0.02). Additionally, there was a significant decrease in organ failure and/or pancreatic necrosis if the AH was given early, within the first 24 hours (OR 2.1, CI 1.6 - 2.9, p= 0.03) and 6-12 hours (p = 0.02).

Conclusion: Based on this meta-analysis, AH appears to be most beneficial when applied to patients with AP early in the course of the disease, within the first 6-24 hours, before severe disease develops. In general, there does not appear to be a benefit to AH in patients with AP beyond the first 24 hours. Clinicians should recognize the importance of applying the principles of AH as early as possible, especially to patients who have mild disease. The benefit of early aggressive hydration appears to be preventing severe disease, organ failure and/or pancreatic necrosis.

205 Friend or Foe, Pain from My Pain Pill? A Rare Case of Drug-Induced Acute Pancreatitis

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Introduction: Acute pancreatitis is a commonly seen and potentially lethal disease that is mostly due to alcohol and gall stones. Rarely acute pancreatitis may be caused by certain medications. To our knowledge, there have been no case reports in English literature of acute pancreatitis secondary to morphine. We herein report such a case.

Case Report: A 56-year-old male with long-standing osteoarthropathy and fibromyalgia was admitted after experiencing intermittent abdominal discomfort progressing to severe sharp abdominal pain and nausea for 3 days since starting heavy-dose morphine. The patient had no history of alcohol abuse, gallstones, abdominal surgery, hypertriglyceridemia, recent antibiotics/diuretics, viral pancreatitis, or family history of pancreatitis. Physical exam revealed epigastric tenderness. Laboratory evaluation was notable for elevated WBCs with neutrophil predominance, elevated amylase, elevated lipase, and normal liver function tests and alcohol levels. Work-up also included X-ray, ultrasound, and CT of the abdomen revealing significant inflammation of the head and body of pancreas, but no pancreatic divisum, normal liver, no cholecystitis, no bile sludge/ microcalculi, no cholecystitis, and a patent non-dilated common bile duct. An initial diagnosis of acute pancreatitis was made. During hospitalization, the patient was treated with supportive therapy with fluids, antiemetics, and kept nothing by mouth. After an initial trial of morphine the patient reported his symptoms with elevation of pancreatic enzymes, the patient’s home morphine was not continued during hospitalization, and the patient tolerated supportive therapy with