Tu1599

AQUAPORIN-5 EXPRESSION IS REDUCED IN LYMPHOCYTIC COLITIS

Yi T. Tong, Andrew Dupont, Brooks D. Cash, Atilla Ertan, Mamoun Younes

Introduction: AQP3 and AQP5 are members of a family of water channel proteins widely expressed in the biliary and gastrointestinal tract. They are expressed in epithelial cells of different types of normal tissue. Lymphocytic colitis (LC) and collagenous colitis (CC) are clinically similar diseases characterized by chronic watery diarrhea in patients with usually unremarkable colonic mucosa on colonoscopy. The aim of this study was to determine whether AQP3 and AQP5 expression in the colonic epithelium is altered in LC and CC. Methods: Sections of formalin fixed and paraffin embedded colorectal biopsies from three control patients (CTL), 8 patients with chronic non-bloody diarrhea with biopsies negative for active inflammatory or significant distortion (CTL-D), 8 patients with LC and 5 with CC were stained for AQP3 and AQP5 by immunohistochemistry. The staining intensity was scored as 3 (strong), 2 (intermediate), 1 (weak) or 0 (no staining). Statistical analysis was performed using Prism 7 Statistical Software. Results: AQP3 was not expressed in the colorectal epithelium, but on mononuclear cells in the lamina propria. By contrast, AQP5 was strongly (score 3) expressed in the epithelial cells in all three CTL cases. All 8 CTL-D cases also showed strong (score 3) AQP5 expression. In the 5 cases of CC, 3 (80%) had score 3 and 2 (40%) had score 2 but none had a score of 1 or 0. Of the 8 LC cases, 2 (25%) had score 3, 3 had a score 2 (37.5%), and 3 has score 1 (37.5%). In the three cases of LC with markedly reduced AQP5 (score ≥ 3), enteric steroid treatment did not lead to significant improvement in diarrhea. Conclusions: Colorectal AQP5 expression is reduced in most cases of LC. It is also reduced in some cases of CC, but not in biopsies from control subjects with diarrhea. Markedly reduced (score ≤ 3) AQP3 expression in LC may identify a subset of patients with suboptimal response to enteric steroid treatment. Additional larger studies are needed to confirm these findings.

Tu1600

AIR OR CARBON DIOXIDE INSUFFLATION IN UPPER ENDOSCOPYS AND THE FIELD OF QUANTITATIVE SMALL BOWEL ASPIRATE CULTURES

Michele Carone, Amanda R. Carone, John League, Joseph Murphy

Introduction: Culture of anaerobic and aerobic bacteria in aspirates obtained during esophagogastroduodenoscopy (EGD) procedures is considered the gold standard for diagnosing small intestinal bacterial overgrowth (SIBO). Oxygen sensitivity of luminal anaerobic species mandates prompt and careful specimen handling during endoscopies for accurate colony growth. Increasingly more procedures are performed with carbon dioxide (CO2) insufflation as it has been shown to be associated with increased patient comfort, particularly in colonoscopy. At our institution, some endoscopy rooms use exclusively air or CO2. We aim to determine if air insufflation decreases the quantitative anaerobic culture yield. Methods: We performed a retrospective review of all patients who underwent EGDS with small bowel aspirates at our institution from January 1, 2017 through December 31, 2017. Since bowel preparation could induce transient changes in bowel microbiota, patients who exclusively underwent EGDS were included. Small bowel aspirates for bacteriologic culture were collected and cultured according to our laboratory protocol. We reviewed demographic data, comorbidities and indications for aspirate culture. Positive anaerobic culture was defined as bacterial growth of more than 10^5 CFU/mL (air n=11, 6.4% vs. CO2 n=5, 3.3%; p=0.714) and yeast growth more than 10^6 CFU/mL (air n=1, 3.9% vs. CO2 n=3, 2.8%; p=0.930) in air and 33.7% (173/514) in CO2 groups (adjusted OR=1.37 CI: 0.89-2.11 p=0.146). Rates of aerobic growth more than 10^5 CFU/mL (air n=11, 6.4% vs. CO2 n=12, 5.6%; p=0.743) and yeast growth more than 10^6 CFU/mL (air n=2, 2.9% vs. CO2 n=4, 2.8%; p=0.930) did not differ significantly between air and CO2 groups. Logistic regression during EGD does not decrease the yield of quantitative anaerobic cultures of luminal bacteria.

Tu1601

DIARRHEA IN TUBE- Fed HOSPITALIZED PATIENTS: FEEDING FORMULA IS NOT THE MOST COMMON CAUSE

Pimsiri Siripongmuen, Kern Lertpitiphattha, Chanon Krongkam

Background and Aim: Diarrhea in hospitalized patients is not uncommon, especially in patients receiving enteral nutrition (EN). Clostridium difficile associated diarrhea (CDAD) and EN-associated are the most recognized etiologies of nosocomial diarrhea. However, when it comes to clinical practice, the data regarding how common each etiology contributes to the diarrheal episodes are limited. This study aims to identify the causes of diarrhea in tube-fed hospitalized patients. Methods: This is an analysis of prospectively collected data of the patients enrolled in ‘Effect of Pylium Fiber Supplementation on Diarrhea Incidence in Enteral Tube-Fed Patients: A Prospective, Randomized, and Controlled Trial’ (RCT). The development of the RCT resulted in no difference in diarrheal episodes between both formulas, and the management of diarrhea if occurred was as the primary doctors’ decisions. Thus, we analyzed the data of all enrolled patients as a cohort of tube-fed hospitalized patients. The causes of diarrhea were classified as: 1) CDAD: positive Clostridium difficile toxin and/or collagenous pseudomembranous colitis; 2) medication-associated: diarrhea occurred while receiving the medications reported in literature causing diarrhea + responded to the discontinuation of the drug; 3) overflow: diarrhea with a clinical presentation of fecal impaction + response to laxatives/evacuation; 4) EN-associated: exclusion of other causes + clinical response to feeding adjustment. The causes and the characteristics of patients who developed diarrhea were analyzed. Results: In a cohort of 83 patients, 31 patients (37.3%) developed diarrhea. The most common cause of medication-associated (61.3%), followed by CDAD (9.7%). EN-associated diarrhea was found in only 2 patients (6.5%). Patients who developed diarrhea had a higher rate of days with CDAD testing (8 vs 4 days, p=0.031) and tended to have a lower baseline serum albumin (3.1 vs 3.3 g/dL, p=0.053) compared to those without diarrhea. Medications that can cause diarrhea were prescribed in a comparable proportion between patients with and without diarrhea, except for oral phosphate solution, which was prescribed more frequently in patients with diarrhea (51.6% vs 23.1%, p=0.016). Conclusions: The most common cause of diarrhea in hospitalized patients receiving EN is medication-associated, while EN-associated is uncommon. Review and cessation of possible drugs, especially oral phosphate solution, should be done before enteral formula modification. Causes of diarrhea in tube-fed hospitalized patients.

<table>
<thead>
<tr>
<th>Cause of diarrhea</th>
<th>Number of patients (%)</th>
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</thead>
<tbody>
<tr>
<td>Medication-associated diarrhea</td>
<td>19 (61.3)</td>
</tr>
<tr>
<td>CDAD</td>
<td>3 (9.7)</td>
</tr>
<tr>
<td>EN-associated diarrhea</td>
<td>2 (6.5)</td>
</tr>
<tr>
<td>Overflow diarrhea</td>
<td>1 (3.2)</td>
</tr>
<tr>
<td>Unidentified and spontaneously improved without treatment</td>
<td>6 (19.4)</td>
</tr>
</tbody>
</table>

CDAD - Clostridium difficile associated diarrhea, EN - enteral nutrition
Tu1603
GASTROINTESTINAL COMPLICATIONS IN PATIENTS WITH LOCAL EXTROPHY: A SINGLE CENTER EXPERIENCE
Gayathri K. Nararapu, Carmelo Cuiffi, Steven D. Miller, Rachel Davis, Mahir Marid, John Gezahrt

Clinical extrophy (CE) is a complex malformation of the distal urogenital tract, seen in 1 in 230,000 of births. The majority of patients with CE have associated gastrointestinal malformations (GM). This is an IRB approved chart review of 33 patients with CE (18 male; 15 female, based on genetics), were treated at The Johns Hopkins Children's hospital from 2008 to 2016. Mean (range) age was 6 years (birth to 10 years). Among the 33 patients, 32 (97%) had gastroesophageal reflux (GERD) manifestations, including 27 (81%) with heartburn, 30 (90%) with imperforate anus, 14 (42%) with respiratory hint gut, 3 (1%) with malrotation, 1 (3%) with bowel obstruction, 1 (3%) with rectal fistula, 1 (3%) with cloacal anus, 1 (3%) with intussusception, 6 (18%) with short gut syndrome, 4 (12%) with malabsorption, out of which one required hospital admissions for dehydration and electrolyte derangements and 10 (30%) with small intestinal bacterial overgrowth. Among the 33 patients, 28 (84%) had colostomy and 4 (12%) had ileostomy, 9 patients (27%) required feeds through a gastrostomy tube and 2 patients (6%) had gastrostomy and reflux required gastrojejunostomy (GJ) presented with failure to thrive, body mass index less than or equal to -2) by 2 years of age and among these patients, 12 of them continued to have the diagnosis of failure to thrive between 4-5 years of age. Hypoglobulinemia (<2) was seen in 8 of the patients presenting with failure to thrive at 2 years of age. Linear growth failure (Z-score for height -2) was seen in 7 (21%) additional patients by 2 years of age and 6 of them continued to have linear growth failure by 4-5 years of age. Dysmotility requiring laxatives was noted in 14 patients. Parenteral nutrition (PN) was used for a short duration (1 to 2 weeks) in 8 patients. One patient required parenteral nutrition for 5 years and developed PN cholestasis (maximum direct bilirubin level was 3.7mg/dl), which later resolved. Nutritional deficiencies including vitamin D deficiency (vitamin D level less than 20 ng/mL) in 20% patients, zinc deficiency in 4 (12%) patients, iron deficiency anemia (with hemoglobin 10g/dL), low mean corpuscular volume for age, high red cell distribution width or low iron levels) in 17 (51%) patients and vitamin B12 deficiency (vitamin B12 level<22pmol/L) in 3 (1%) patient. Gastrointestinal malformations are common in children with CE and frequently contribute to the development of growth failure, nutritional deficiencies, malabsorption and dysmotility. This study showed that the 88% weight and 86% height among were monitored by a hypertrophic gastroenterologist, especially among those children with significant growth failure and malnutrition.

Tu1604
EFFICACY AND SAFETY OF ANAL SPHINCTER BOTULINUM TOXIN (BOTOTOX) INJECTION IN CHILDREN WITH ANORECTAL AND COLONIC DISORDERS
Alexandra Hallagan, Hakey Pearlstein, Kelsey Ryan, Devin R. Halleran, Marc A. Levitt, Richard J. Wood, Neelu Bali, Karla Vaz, Desale Yacob, Carlo Di Lorenzo, Peter L. Lu

Background: Anal sphincter botulinum toxin (bototox) injection is often used to treat children with anorectal and colonic disorders refractory to conventional treatment, but our understanding of its efficacy and safety remains limited. Our objective is to review our institutional experience to better understand the outcomes of bototox injection in children with various anorectal and colorectal disorders. Methods: We performed a retrospective review of pediatric patients undergoing anal sphincter botox injections at our institution between 2009 and 2018. We recorded information on patient characteristics, injection technique, clinical response, and complications. Statistical analysis was performed to evaluate responses and associations between baseline characteristics and outcomes. Results: 456 injections were performed in 303 patients (61.6% male, median age 5.2 years, range 3-16 years). The most common diagnoses were: chronic constipation (19.3%), functional constipation (20.8%), anorectal malformation (2.1%), and anal fissure (1.7%). The majority (62.2%) had undergone anorectal manometry. Patients were treated with laxatives (65.3%), rectal enemas (24.4%), and antegrade enemas (8.6%) prior to injection. In addition to the 10.8% who had undergone appendectomy or cecostomy creation, 46.8% had undergone other operations prior to injection, primarily surgery for HD (82.7%) and colonic resection (12.8%). Patients received a median dose of 100 units (range 90-200) of bototox per injection. Of the 318 (70%) injections with response information, 73.3% of patients experienced improvement, 4% no change, and 10.7% worsening of symptoms. The percentage with satisfactory bowel movement frequency and fecal incontinence did not differ between males and females or children (<13 years) and adolescents (213 years). However, positive clinical response was more common among children with HD (78.2%) than with FC (65.4%), p=0.001. Conclusion: In this large study of outcomes of anal sphincter botox injection in children, the majority of children experienced improvement in bowel movement frequency, fecal incontinence, and associated symptoms. Clinical response is more common among children with HD compared to those with FC.

Tu1605
CHRONIC INTESTINAL PSEUDO-OBSTRACTION IN CHILDREN: EPIDEMIOLOGY AND HEALTH CARE UTILIZATION OF INPATIENT ADMISSIONS
Sürücü Bayra, Sheikh Rahman, Md Sohel Rana, Svanan Marva, Anil Darbari

Chronic intestinal pseudo-obstruction (CIPo) is a rare but disabling gastrointestinal motility disorder. There is limited understanding of the epidemiologic and healthcare burden of this disease due to several factors, including low incidence of the disease and complexity of diagnosis. Aim: To characterize the epidemiology and factors affecting healthcare burden in children and adolescents with CIPo, who require inpatient admission in the United States by using a nationwide sample. Methods: We inquired the Kids’ Inpatient Database (KID’s 2016) developed by the Healthcare Cost and Utilization Project, which includes a random sample of inpatient discharge records from US hospitals, utilizing Sta 15.1 program to analyze data for ICD-10 diagnosis code (K9P) for CIPo either as a primary or secondary diagnosis among patients 0-18 years, during the year 2016, the last year for which this data is available. Multivariable logistic regression and Wilcoxon rank-sum test were used and P<0.05 considered statistically significant. Results: In the year 2016, there were 1671 inpatient discharges from US hospitals for patients coded with a primary or secondary diagnostic code for CIPo; of these, 350 admissions (21%) listed CIPo as the primary diagnosis. The incidence of CIPo-related inpatient admission was 29 per 100,000 patients (Table 1). Common secondary diagnoses included gastrostomy status (32%), gastroentero- reflex (21.2%), feeding difficulties (20.3%), constipation (16.8%), dehydration (15.4%) and ileostomy status (12.6%). After controlling for age group, race, income status, and insurance it was found that males vs. females (aOR: 1.10; 95% CI: 0.94 - 1.28; P = 0.241) and Whites as opposed to other races (aOR: 1.55; 95% CI: 1.27 - 1.88; P <0.001) were more likely to be admitted. In addition, patients with Medicaid were more likely to be admitted as compared to private insurance (aOR: 0.81; 95% CI: 0.64 - 1.02; P = 0.072). Chronic intestinal pseudo-obstruction related admissions results in significant healthcare burden, with a median (Interquartile Range) cost of hospitalization of US$ 52,079 (US$ 23,530 - 120,961) and a median (IQR) length of stay of 6 days (3-14 days). The presence of gastrostomy and ileostomy status appeared to incur lower median cost of hospital admission and length of stay (Table 2). Conclusions: Among children requiring inpatient admission in US hospitals, chronic intestinal pseudo-obstruction is a rare diagnosis, however, it results in a high incidence of inpatient admissions and creates a significant healthcare burden. The cost of hospitalization was higher in patients without gastrointestinal and ileostomy status. An extensive multi-dimension assessment of various comorbidities is crucial in reducing inpatient admissions in this cohort.

Tu1606
PREVALENCE OF CHILD ABUSE IN CHILDREN WITH FUNCTIONAL CONSTIPATION
Mana H. Vriesman, Thekla Vrolijk-Bosschaart, Sonja N. Brilleslijper-Kater, Arianne H. Teeuw, Ramon J.L. Lindauer, Marc A. Benninga

Aim: An association between functional constipation (FC) and child abuse has been questioned about their child's history of CAN and asked to fill out the Child Sexual Behavior Inventory (CSI). Children were interviewed using the Sexual Knowledge Picture Instrument (CSBI). Children were interviewed using the Sexual Knowledge Picture Instrument. Children were interviewed using the Sexual Knowledge Picture Instrument. Children were interviewed using the Sexual Knowledge Picture Instrument. Children were interviewed using the Sexual Knowledge Picture Instrument. Children were interviewed using the Sexual Knowledge Picture Instrument. Children were interviewed using the Sexual Knowledge Picture Instrument. Children were interviewed using the Sexual Knowledge Picture Instrument.