ESOPHAGUS

1

Chest Pain in an Immunocompromised Patient
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Background: Patients with immunosuppression secondary to AIDS, solid organ transplant, steroids, chemotherapy, or neutropenia are at an increased risk for opportunistic infections, including, infectious esophagitis. Early identification and treatment of infection in this population is important because of high associated mortality. Aim: With a growing number of immunocompromised patients, it is likely that we will see an increase in the incidence of Herpes simplex virus (HSV) esophagitis. Herein, we describe a case of HSV esophagitis presenting with an atypical chest pain.

Case Report: A 41-year-old-female with a history of agranulocytosis, secondary to cocaine use with an ANC count of zero, was admitted for acute abdominal pain and diarrhea. Initial infectious work-up for diarrhea was negative and symptoms resolved spontaneously. However, during hospitalization, patient developed severe, mid-seral, constant, crushing chest pain radiating to her neck. She also had associated odynophagia, dysphagia to both solids and liquids, and regurgitation symptoms with fever spikes. Electrocardiogram and cardiac enzymes ruled out cardiac origin. Chest radiograph showed no evidence of pneumothorax. Barium esophagram showed a shagged appearance of the distal esophageal mucosa suggesting esophagitis. The patient was empirically started on proton pump inhibitor (PPI) therapy for acid reflux esophagitis, and fluconazole for possible Candida esophagitis. Her symptoms did not respond to empiric therapy. Esophago-gastro-duodenoscopy (EGD) could not be performed due to severe neutropenia. She was started on granulocyte colony-stimulating factor (G-CSF), and an EGD was performed after resolution of neutropenia. EGD revealed large, deep, circumscribed clean-based ulcers throughout the esophagus. Esophageal biopsies confirmed the diagnosis of HSV esophagitis, and her serology was positive for HSV IgM antibodies. She was started on IV acyclovir, and her symptoms improved dramatically. The patient was able to tolerate oral diet well prior to discharge.

Conclusion: HSV esophagitis mainly affects immunocompromised patients, and usually presents with dysphagia, odynophagia and fevers. Atypical chest pain is a less common presentation. HSV esophagitis should be suspected in immunocompromised patients with these symptoms who do not respond to empiric PPI and anti-fungal therapies. Diagnosis is made with an EGD with esophageal ulcer biopsies. Treatment of choice is acyclovir for 14-21 days.

2

The Prevalence of Eosinophilic Esophagitis in the United States Military Healthcare Population
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Purpose: Eosinophilic esophagitis (EoE) is a chronic inflammatory disorder of the esophagus with an increase in prevalence over the last 20 years. This rise in prevalence has been attributed to a combination of increased incidence and increased awareness. Establishing a nationwide prevalence of this disease is challenging due to recent recognition of EoE as a unique diagnosis with its own ICD-9 code. The purpose of this study is to establish the prevalence of EoE in a military healthcare population using a comprehensive electronic medical record search.

Methods: Using the ICD-9 code 530.13, we described the total number of EoE patients enrolled in the military healthcare system from January 1, 2009-December 31, 2009 including active duty military, dependents of military personnel and retired military were identified. For each case of EoE identified, demographic data (age, sex, race) and geographic location was obtained. The overall prevalence of EoE was calculated as well as the prevalence within subgroups. The geographic regional locations were reported per the U.S. Census Bureau regions (Northeast, South, Midwest and West) in addition to the 37th parallel latitude.

Results: A total of 987 EoE patients were identified from 10,180,515 military healthcare beneficiaries establishing an overall prevalence of 9.7 per 100,000 [95% CI 9.1-10.3]. In the adult population, 728/8.9 million patients (>20yrs) were identified establishing a prevalence of 8.2 per 100,000 [95% CI 7.6-8.8] with a peak prevalence between 30-40yrs (17/100,000). In the pediatric population (<20yrs), 259/1.2 million were identified establishing a prevalence of 20/100,000 [95% CI 17.6-22.5]. EoE was more prevalent in males vs. females (RR 2.0 [95% CI 1.8-2.3]). Race data was available for 502 patients. EoE prevalence was higher in Caucasian vs. African Americans (18.1 vs. 5.2/100,000, RR 3.5 [95% CI 2.1-5.7]). In this study, EoE was more prevalent in the West region of the U.S. compared to the Northeast, South, and Midwest regions with a prevalence of 11.9 vs. 5.2, 9.6, 9.2 per 100,000, respectively (RR 2.3). When comparing Northern vs. Southern states, there was an increased prevalence in the North (10.9 vs. 7.2/100,000, p<0.05).

Conclusion: This is the largest study evaluating the prevalence of EoE (9.7/100,000) to date. There was an increased prevalence of EoE in younger patients (<40yrs old) and in the Caucasian populations compared to other races. Geographically, the western United States had a significantly higher prevalence compared to the remainder of the country and a slightly higher incidence in the Northern latitude.

3

Cryotherapy after Radiofrequency Ablation (RFA) Failure in Patients with Barrett’s Dysplasia
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Purpose: Radiofrequency ablation (RFA) is an increasingly used form of endoscopic treatment in patients with Barrett’s esophagus (BE) with dysplasia or early adenocarcinoma (ACA). Treatment failures (patients with persistent Barrett’s disease despite RFA) are offered salvage treatment using cryotherapy. The aim of this study was to determine the treatment response of cryotherapy in patients with persistent BE dysplasia after RFA ablation.

Methods: We reviewed a large, prospectively-collected database of BE ablation procedures performed from 2000-2011. The patients treated with Cryotherapy (using liquid nitrogen or carbon dioxide) for persistent BE dysplasia RFA ablation were analyzed. Patients’ demographics, initial BE segment length, total number of RFA sessions, RFA ablation response, cryotherapy procedure details, and cryotherapy treatment response were recorded.

Results: We analyzed approximately 412 patients treated with RFA for BE dysplasia since 2003. Cryotherapy was performed in 11 patients with persistent BE dysplasia despite RFA ablation therapy were included in our study analysis. Their mean age was 72 (range 60-85) years and all were male. The mean BE segment was 4.8 (range 1-12) cm. Pre-RFA, 7 patients (63.6%) had BE-HGD (high grade dysplasia) and 4 patients (36.4%) had BELGD (low grade dysplasia) prior to receiving RFA ablation. The mean number of RFA treatments was 3.2 (range 1-9). After RFA of the 7 BE-HGD patients, the HGD was unchanged in 4 (57%), downgraded to LGD in 2 (29%) or BE No dysplasia in 1 (14%). After RFA of 4 LGD patients, 1 progressed to BE-HGD while other 3 had persistent LGD. These failed RFA patients are all undergoing cryotherapy (mean 1.8 treatments; range 1-4, thus far). Cryotherapy treatments targeted 1-3 sites (mean 2.25) using 4-10 cycles (mean 7) of 10-20 seconds freeze time (mean 15.4 seconds). Post cryotherapy, esophageal biopsies were available in 8 (72%) patients (4 BEHGD, 3 BE-LGD, 1 BE-no dysplasia). Among them,
complete dysplasia eradication was seen in 1 (25%) patient with BE-HGD and 1 (33%) patient with BE-LGD (see Table). In remaining patients, the BE dysplasia severity has remain unchanged.

**Conclusion:** The number of patients undergoing cryotherapy for persistent BE disease after RFA ablation is low. Cryotherapy has shown fair response among refractory BE with dysplasia (LGD and HGD) that failed prior RFA ablation. In the remaining patients, cryotherapy treatment will continue. Future studies are needed to better define the role of cryotherapy for the endoscopic treatment of BE with dysplasia.

**Disclosure:** Dr. Patel - None. Ms. Hemminger - None. Dr. Wolfsen - Consultant for CSA Medical, Mauna Kea Tech, BARRx.

<table>
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<tr>
<th>Patient no.</th>
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</tr>
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</tr>
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<td>5</td>
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BE - Barrett’s esophagus, LGD - Low Grade Dysplasia, HGD - High Grade Dysplasia, CO2 - Carbon Dioxide, N2 - Nitrogen.

4

**Evaluation of 24-Hour Esophageal pH and Impedance Studies in Patients with Suspected Gastroesophageal Reflux**

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**Purpose:** Patients with suspected gastroesophageal reflux disease (GERD) are often treated empirically with proton pump inhibitor (PPI) therapy based on their clinical symptoms. Patients who are unresponsive to therapy may then undergo testing with 24-hour esophageal pH testing to confirm or exclude the diagnosis of GERD. The purpose of this study is to determine whether patients referred for the evaluation of typical and atypical reflux symptoms had GERD by 24-hour esophageal pH and impedance testing performed off of acid suppressive therapy.

**Methods:** A clinical database was searched for 24-hour pH/impedance studies performed off of acid suppressive therapy between 2006 and 2011. Patients referred for evaluation had typical GERD symptoms (heartburn or acid regurgitation) or atypical symptoms (chest pain, chronic cough, hoarseness, dysphagia or dyspepsia). Many patients referred for evaluation were not responding clinically to a prescribed PPI. Patients were instructed to discontinue PPI at least one week prior to testing. A Johnson-DeMeester score of ≥22 was considered diagnostic for GERD by pH testing. An abnormal impedance study was defined as > 73. Categorical data was expressed as percentages and continuous data as means and standard deviation. Fisher exact tests and Student’s t-test were used to analyze data. A p-value ≤ 0.05 was considered statistically significant.

**Results:** 348 patients were identified (mean age of 47 ± 13 years; 55% were male, and 62% were Caucasians). The majority of patients (96%) were empirically treated with PPI prior to testing, of which 68% were on daily dosage and 32% on twice daily dosage. On 24-hour esophageal pH testing, the majority (72%) had a normal Johnson-DeMeester score. Among patients who had an abnormal pH score, 58% had typical GERD symptoms and 42% had atypical symptoms (P=0.023). Significantly more males had an abnormal pH score compared to females (34% versus 20%, P=0.004). There were no significant differences in race or age of patients with normal and abnormal pH testing. On impedance testing, 21.6% patients had an abnormal test. Of patients who had a normal 24-hour pH test, 87% had a normal impedance test. Of patients who had an abnormal 24-hour pH test, 44% had an abnormal impedance test (Kappa = 0.331, P<0.001).

**Conclusion:** Most patients referred for GERD testing after failing empiric PPI therapy had a normal 24 hour pH/impedance study off of acid suppressive therapy. In these patients, an alternative diagnosis should be considered.

5

**A Case of Eosinophilic Esophagitis and Gastroesophageal Reflux Disease: A Complex Relationship**

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**Purpose:** The relationship between eosinophilic esophagitis (EE) and gastroesophageal reflux disease (GERD) is both complex and controversial. We present a case of EE and Barrett’s esophagus that were coexisting, but unrelated, entities.

**Methods:** A 51-year-old male with a past medical history of esophageal stricture due to GERD presented to an outside hospital emergency department with complaints of dysphagia, odynophagia and food impaction in his esophagus. He was evaluated with a computed tomography of the neck and chest x-ray, which were unremarkable. The patient was subsequently transferred to our hospital for higher level of care. Further history revealed the patient had undergone two previous esophageal dilations. The first occurred five years previously without complication. The second occurred two years prior to his current admission. During the second dilation, a deep esophageal tear occurred without obvious perforation and was repaired with two hemoclips. The patient stated that following the second dilation he continued to have odynophagia and dysphagia with both solids and liquids. He denied weight loss, early satiety, decreased appetite, melena, hematemesis, nausea, vomiting, or abdominal pain. Further, he denied any history of seasonal allergies, asthma, or exposure to any inhaled allergens. He stated he had consistently been taking a proton pump inhibitor. An esophagogastroduodenoscopy (EGD) was performed which revealed retained food bolus just proximal to an esophageal stricture at 35 cm that was approximately 12 mm in diameter. A retained hemoclip was noted near the stricture, which was removed with cold snare. Four weeks following hemoclip removal a repeat EGD was performed with dilation of the stricture (Savary dilators: 14 mm and 15 mm). Biopsies performed were suggestive of EE proximal to the stricture and Barrett’s esophagus distal to the stricture.

**Results:** The relationship between EE and GERD is not well defined. There are four potential associations: GERD causing EE, EE causing GERD, EE and GERD as separate and unrelated entities, and GERD causing eosinophilic infiltration. Our case presents a patient who had pre-existing GERD with a follow-up EGD showing both EE and Barrett’s esophagus. We propose that in this instance, EE and GERD were separate entities, because the biopsies proximal to the stricture were suggestive of EE, yet the biopsies distal to the stricture were suggestive of Barrett’s esophagus with no eosinophilic infiltration.

**Conclusion:** The relationship between EE and GERD continues to be complex and not fully understood. We presented a case that suggests EE and GERD can coexist and may be unrelated. Further studies need to be performed to better understand this multifaceted relationship.

6

**Empiric Esophageal Dilatation for Nonobstructive Dysphagia**

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**Purpose:** Dysphagia is one of the most common complaints encountered in gastroenterology. Endoscopy frequently does not reveal any obstruction. Empiric esophageal dilatation is performed in many of these cases for symptomatic relief. The purpose of this prospective study is to determine if