Eosinophilic Oesophagitis in Patients Presenting with Dysphagia: A Retrospective Study from A Single Tertiary Care Centre in Saudi Arabia

Abstract:

Background and Study Aims: Eosinophilic oesophagitis (EoE) is an increasingly common cause of dysphagia in many Western countries, especially in young adults; however, the prevalence of EoE in Middle Eastern countries remains unknown. We aimed to estimate the prevalence of EoE in Saudi patients presenting with dysphagia. Additionally, we aimed to assess the practice pattern of physicians with respect to evaluating these patients.

Patients and Methods: We performed aretrospective review of all adolescent and adult patients who underwent upper gastrointestinal endoscopy for the assessment of dysphagia. Demographic data and endoscopic and histologic findings were reviewed. The primary outcome was the prevalence of biopsy proven EoE, defined as 15 or more eosinophils per high power field (≥15eos/hpf) in patients presenting with dysphagia. Secondary outcomes included the frequency of endoscopic features suggestive of EoE and the physician's judgement about the need for oesophageal biopsies to diagnose EoE.

Results: A total of138 patients were identified and reviewed. The mean age was 50.7 years; 43.5% were males and 56.5% were female. Endoscopy revealed normal oesophageal mucosa in 52.9% of the patients. White plaques were reported in 4.3%, linear furrows in 2.9% and multiple rings (trachealization) in 2.2% of patients. Oesophageal biopsies were obtained from 20.3% of all patients to rule out EoE, this included 7.1% of those with normal appearance of the oesophageal mucosa. Only two patients (1.4%) with biopsy proven EoE were identified from this cohort; both were young adults.

Conclusions: Failure to perform oesophageal biopsies in patients presenting with dysphagia as per

international guidelines could explainthe low prevalence of EoE observed in this population. Alternatively, the prevalence of EoE may be lower than expected in the Middle Eastern countries. Large prospective studies are necessary to accurately assess the prevalence of EoE in Middle Eastern countries.

Keywords: Dysphagia, endoscopy, eosinophilic oesophagitis.

Introduction:

Eosinophilic oesophagitis (EoE) is a chronic, immune-mediated, or antigen-mediated oesophageal disease, characterised by symptoms related to oesophageal dysfunction and eosinophil-predominant inflammation (1) in adult patients. The most common presenting symptoms are solid food dysphagia, which is usually intermittent in nature; and food bolus impactions, which are either self-limited or require an emergency endoscopic intervention. (1, 2) Less frequently, patients may present with non-cardiac chest pain, refractory gastroesophageal reflux, or abdominal pain. Many affected patients may have concomitant allergic diseases such as asthma, rhinitis, and eczema. (1, 2) Endoscopically, the most common findings are white exudates, mucosal oedema, linear furrows, oesophageal rings, and strictures. (3, 4) Histologically, the detection of 15 or more eosinophils (eos) per high power field (hpf) (≥15 eos/hpf) is necessary for the diagnosis of EoE. (5, 6) Additional supportive but nonspecific histological features such as eosinophil microabscesses, basal zone hyperplasia, and lamina propria fibrosis may be present. (5, 6)

The incidence and prevalence of EoE have remarkably increased in western countries over the past two decades, with the current estimated incidence ranging from 5 to 10 cases per 100,000 and the estimated prevalence ranging from 0.5 to 1 case per 1000.(7) In patients undergoing upper gastrointestinal endoscopy indicated for dysphagia, the reported prevalence of EoE ranges from 12-23% (7) However, it should be noted that these rates are mainly from studies conducted in the North American and European countries. Factors leading to the increase in diagnosis of EoE in these countries are not well identified but are possibly environmental. The epidemiology of EoE in the Middle Eastern and Arab countries is not

known. Only a limited number of case reports and descriptive studies have been published from these countries. (7)

In Saudi Arabia, the few published reports on EoE were about children. A retrospective analysis of 229 children with dysphagia or gastroesophageal reflux disease who underwent upper gastrointestinal endoscopy, identified EoE in 4.8% of the patients; most of them were male with a mean age of 8.4 years. (8) Another single centre descriptive study from Saudi Arabia reported an increase in the diagnosis of EoE by reviewing 37 children and 8 adult cases, with many similarities in the clinical presentations as seen in data from western countries. In this study, we aimed to retrospectively estimate the prevalence of EoE in adult and adolescent patients presenting with dysphagia in a single tertiary centre in Saudi Arabia. Additionally, we aimed to assess the physicians' practices with respect to suspecting and diagnosing EoE, in this cohort.

Methods:

. Endoscopy procedures were performed and supervised by board-certified expert gastroenterologists and detailed procedure reports were prepared using electronic software (ProVation®).

A data collection sheet was developed to collect relevant patient information including: A) Demographic data such as age, sex, and body mass index (BMI); B) Endoscopic dataincluding reported findings suggestive of EoE (trachealization, white exudates, linear furrows, and strictures) or a normal oesophagus; and biopsies (if performed); C) Histopathology data including the number of oesophageal fragments submitted, presence of $\geq$15 eos/hpf consistent with EoE, or eosinophilia with an unspecified density count.

Definitions and Outcomes

The primary outcome was the prevalence of biopsy proven EoE (defined as more than 15 eos/hpf) in all included patients presenting with dysphagia. Secondary outcomes included the frequency of endoscopic

features suggestive of EoE, and the attending doctor's judgement about the need for oesophageal biopsies to diagnose EoE.

Statistical Analysis

Descriptive statistical analysis was performed using the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA). Categorical data were presented as counts and frequencies, while continuous data were presented as means and standard deviations.

Results:

Demographic findings

A total of 138 patients with dysphagia were included in this study. There were 60 (43.5%) males and 78 (56.5%) females. The mean age was 50.7 ± 15.06 years. Of these, 60.9% were Saudi nationals and 39.1% non-Saudi nationals. Mean BMI was 27.1kg/m2.

Endoscopic findings

Endoscopic findings revealed normal oesophagus (52.9%); esophagitis (18.1%); oesophageal ulcers (4.3%), oesophageal stricture (10.9%), oesophageal mass (5.8%), oesophageal ring (2.2%), Barrett's oesophagus (0.7%), and hiatus hernia (15.2%). Endoscopic features suggestive of EoE included white exudates, (n=6, 4.3%), linear furrows, (n=4, 2.9%), and multiple rings or trachealization (n=3, 2.2%). Oesophageal biopsies were performed for 28 (20.3%) patients. Endoscopic findings of oesophageal mass, linear furrows, multiple rings, and Barret's oesophagus were strong indicators for performing an oesophageal biopsy with a statistically significant p value of 0.000, 0.0001, 0.001, and 0.047, respectively. Among the 73 (52.9%) patients with normal oesophagus, 2 (7.1%) underwent oesophageal biopsies. The mean number of fragments submitted in the oesophageal biopsies was 2.9.

Histopathologic findings

Only 2 patients (1.4% of all patients and 7.1% of those with oesophageal biopsies) had confirmed EoE. The first case was a 23-year-old male with oesophageal narrowing on endoscopy, and the second case was a 26-year-old female with a ringed oesophagus, white exudate, and linear furrows on endoscopy. In both cases, multiple biopsies from the distal and proximal oesophagus were performed and met the criteria of EoE after being reviewed by an expert gastrointestinal pathologist. Nine patients (6.5%) had unspecified eosinophilia not diagnostic of EoE.

Discussion:

The aim of this study was to estimate the prevalence of endoscopic and histologic findings suggestive of EoE in a single centre in the western region of Saudi Arabia, bearing in mind that ethnicity, race, climate, and other environmental factors could influence the risk of developing EoE. (9-11). In this retrospective study, we included patients who underwent upper gastrointestinal endoscopy for dysphagia. Endoscopic features suggestive of EoE were reported only in 4.3% of the patients, which seemed low compared to the western prospective studies where EoE was reported in 25-38% of patients with dysphagia. (12, 13)

In western countries, EoE has become a commonly encountered cause of dysphagia and food bolus impaction in adults. This seems to be due to the increased recognition, incidence and prevalence of the disease. (7)

The presence of endoscopic features suggestive of EoE, while not diagnostic, can be predictive for EoE indicating the need for confirmatory biopsies. (12) In our study population, only 20.3% of all patients underwent oesophageal biopsies. This can be explained by the low frequency of classic features and biopsies performed in only 7.1% patients who had a normal oesophageal appearance. Among those who underwent biopsies, the mean number of fragments submitted for histopathology was only 2.9, which could lead to a lower diagnostic yield.

In a prospective study of patients with dysphagia by Mackenzie et al, 42% of those with EoE did not have the classic endoscopic features of EoE and the diagnosis could have been missed without oesophageal

biopsies. (14) . Whether conducting biopsies in dysphagia patients with a normal oesophageal appearance on endoscopy is cost effective, depends on the disease prevalence in the population. Routine screening for EoE through oesophagealbiopsies in patients with non-obstructive dysphagia, can be supported in populations with a high prevalence of EoE, as reported by Ricker etal. (15)

Current clinical practice guidelines, based mainly on western studies and expert consensus, recommend a biopsy protocol wherein at least six biopsies are obtained from the distal and proximal oesophagus, targeting areas of endoscopic abnormality such as white exudates and linear furrows when present, to achieve a higher diagnostic yield, but also recommend biopsies in case of normal appearance of the oesophagus when EoE is clinically suspected.(5, 6) It is important that pathologists be aware of the EoE diagnosis being sought, in order to report peak eos/hpf and look for other supportive features to distinguish it from gastroesophageal reflux disease.(16)

Our study had clear limitations due to its retrospective nature. However, it highlights the infrequent finding of classic endoscopic EoE features in the studied population of dysphagic patients and low biopsy rates in the setting of a normal appearance of the oesophagus, probably due to low clinical suspicion. Additionally, 6.5% of patients had eosinophilia not meeting the diagnostic criteria and the diagnosis of proton-pump inhibitor responsive eosinophilia cannot be ruled out.

Conclusion:

Underdiagnosis of EoE in adult dysphagic patients could be due to decreased recognition or low prevalence. Future prospective studies are necessary to assess the prevalence of EoE in Arabian and Middle Eastern patients especially in those with symptoms of oesophageal dysfunction.

Ethical Approval

Ethical approval was obtained from the institute’s ethics committee. All adult and adolescent patients who presented with dysphagia and underwent upper gastrointestinal endoscopy at a

university hospital between January 2015 and July 2019 were identified through the hospital's electronic medical records.

Consent

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

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