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Prevalence of esophageal eosinophilia in patients referred for diagnostic upper gastrointestinal endoscopy

Azizullah
Consultant Gastroenterology, Type-D Hospital Jamrud District Khyber Pakistan

Arslan Shahzad
Associate Professor Gastroenterology, PAF Hospital, Islamabad Pakistan
Corresponding author email: drarslanshahzad@hotmail.com

Hina Shaukat
FCPS Gastroenterology, DHQ Hospital, Haripur KPK Pakistan

Rashad Mahmood
MPhil, PhD, Associate Professor Physiology, Mohtarma Benazir Bhutto Medical College, Mirpur Azad Kashmir

***Abstract*---**Background and Aim: Esophageal eosinophilia such as gastro-esophageal reflux disease (GERD) and eosinophilic esophagitis (EoE) are associated with several conditions. Esophagus eosinophilic infiltration characterized the Eosinophilic esophagitis (EoE). The purpose of the present study was to determine the esophageal eosinophilia prevalence in patients underwent diagnostic upper gastrointestinal endoscopy. Patients and Methods: This cross-sectional study was carried out on 96 male adult patients underwent upper gastrointestinal endoscopy for unexplained upper GI symptoms in the department of Hepatology & Gastroenterology and Faculty of Medicine, DHQ Hospital Haripur KPK and Type-D Hospital Jamrud District Khyber from June 2022 to November 2022. Patient age>16 years with upper GI symptoms such as nausea, upper abdominal pain, dysphagia, vomiting, and heart burn referred for upper GI endoscopy were enrolled. Individual's history, demographic details, physical examination, clinical details, laboratory tests such as serum creatinine, CBC, upper GI endoscopy, differential leucocytic count, liver biochemical tests, biopsy, and biopsy staining for histopathological examination were recorded. Data analysis was done in SPSS version 27. Results: Of the total 96 patients, incidence of Esophageal eosinophilia (EE), EoE, and low-grade esophageal eosinophilia was 33.3% (n=32), 5.2% (n=5), and 29.2% (n=28)

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respectively. The prevalence of most prevalent symptoms were gastroesophageal reflux disease (GERD) 29.2% (n=29), heart burn 27.1% (n=26), upper abdominal pain 17.7% (n=17), dysphagia 8.3% (n=8), anemia 7.3% (n=7), nausea 5.2% (n=5), and vomiting 4.2% (n=4) respectively. Based on histopathological examination, the incidence of mild reflux esophagitis and severe reflux esophagitis was 37.5% and 16.6% respectively. Dysphagia, male gender, incompetent cardia, hernia, and hypertension were significantly associated with EE. Conclusion: The present study found that the incidence of esophageal eosinophilia in patients underwent upper GI endoscopy was 33.3%. Additionally, gastroesophageal reflux disease (GERD) and heart burn were the most prevalent symptoms. The different clinical predictors and EoE characteristics were asthma history, male gender, and typical signs of EoE on endoscopy.

***Keywords*---**esophageal eosinophilia, upper gastrointestinal endoscopy, GERD.

Introduction

Eosinophilic esophagitis (EoE) is a clinicopathologic disorder defined by esophageal dysfunction symptoms with eosinophilic inflammation present on esophageal biopsy [1, 2]. This syndrome has grown in popularity over the last decade, and commonly seen in patients having upper endoscopy [3–5]. Infections, autoimmune, drug hypersensitivity, connective tissue diseases, and hypereosinophilic syndrome are among the possible diagnoses [6, 7]. In practice, however, gastroesophageal reflux disease (GERD) is the most prevalent disorders to differentiate from EoE [8, 9]. The frequency of EoE in an asymptomatic population has been estimated to be 0.4%, and it has been increasing over the previous decade [10, 11]. Adult patients primarily appear with solid food dysphagia and food impaction [12]. EoE is considered to be present in 10%-15% of dysphagia patients [13]. Additional symptoms observed in EoE patients include heartburn, chest discomfort, and vomiting [14]. There is currently no information on the incidence of EoE in patients with gastrointestinal symptoms other than dysphagia.

Numerous risk factors have been identified through which elements inherent in each individual and external environmental agents cause EoE. The diagnosis of EoE includes esophageal dysfunction symptoms, eosinophil-predominant inflammation on esophageal biopsy and exclusion of other [15]. Dysphagia is the utmost prevalent symptom of EoE among adult patients [16]. Nevertheless, about 10% to 25% patients of EoE had normal esophagus appearance on endoscopy [17]. The purpose of the present study was to determine the esophageal eosinophilia prevalence in patients underwent diagnostic upper gastrointestinal endoscopy.

Methodology

This cross-sectional study was carried out on 96 male adult patients underwent upper gastrointestinal endoscopy for unexplained upper GI symptoms in the Hepatology & Gastroenterology Unit, Faculty of Medicine, DHQ Hospital Haripur KPK and Type-D Hospital Jamrud District Khyber Pakistan from June 2022 to November 2022. Patient age>16 years with upper GI symptoms such as nausea, upper abdominal pain, dysphagia, vomiting, and heart burn referred for upper GI endoscopy were enrolled. Patients with heart failure, chronic kidney disease, and chronic liver disease were excluded. Individuals' history, demographic details, physical examination, clinical details, laboratory tests such as serum creatinine, CBC, upper GI endoscopy, differential leucocytic count, liver biochemical tests, biopsy, and biopsy staining for histopathological examination were recorded. High-power filed was used for eosinophils whereas eosinophils >15 was diagnostic criteria for EoE and < 15 for low-grade EE. SPSS version 27 was used for data analysis. Demographic, endoscopic, and clinical history were provided as proportions and evaluated using the Fisher exact test. Our population's EoE prevalence was represented as a percentage with a 95% confidence interval. The results are presented as odds ratios (ORs) with 95% confidence intervals (CIs). A P value of less than.05 was considered as statistically significant.

Results

Of the total 96 patients, incidence of Esophageal eosinophilia (EE), EoE, and low-grade esophageal eosinophilia was 33.3% (n=32), 5.2% (n=5), and 29.2% (n=28) respectively. The prevalence of most prevalent symptoms were gastroesophageal reflux disease (GERD) 29.2% (n=29), heart burn 27.1% (n=26), upper abdominal pain 17.7% (n=17), dysphagia 8.3% (n=8), anemia 7.3% (n=7), nausea 5.2% (n=5), and vomiting 4.2% (n=4) respectively. Based on histopathological examination, the incidence of mild reflux esophagitis and severe reflux esophagitis was 37.5% and 16.6% respectively. Dysphagia, male gender, incompetent cardia, hernia, and hypertension were significantly associated with EE. Figure-1 depicts the incidence of esophageal eosinophilia (EE), EoE, and low-grade esophageal eosinophilia. Incidence of different symptoms are shown in Figure-2. Incidence of mild and severe reflux esophagitis based on histopathological examination are illustrated in Figure-3. Descriptive statistics of the examined patients' demographic and clinical characteristics are shown in Table-I. Predictors of low-grade versus absence EE using logistic regression is shown in Table-II.

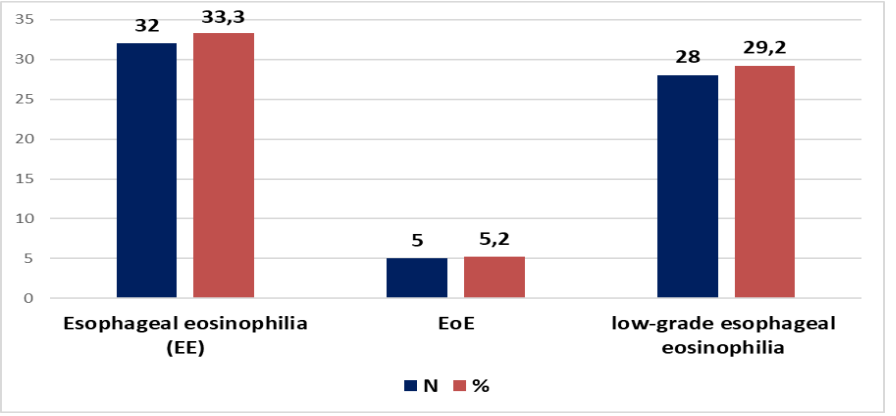

Figure-1 Esophageal eosinophilia (EE), EoE, and low-grade esophageal eosinophilia

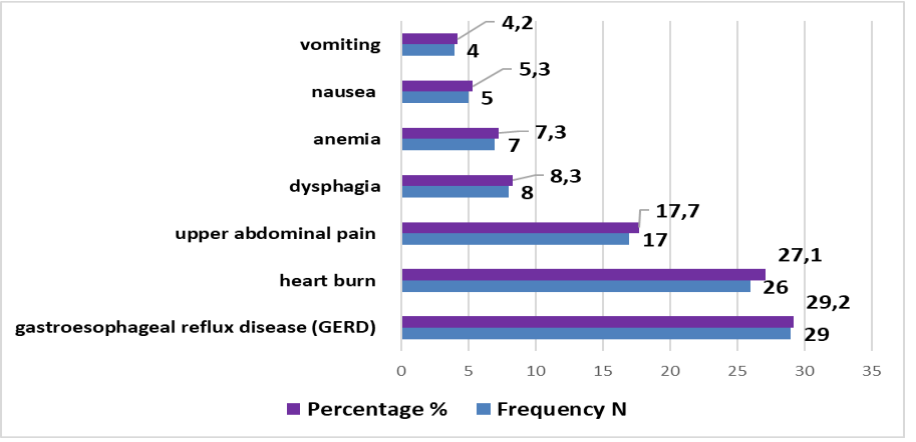

Figure-2 Incidence of different symptoms

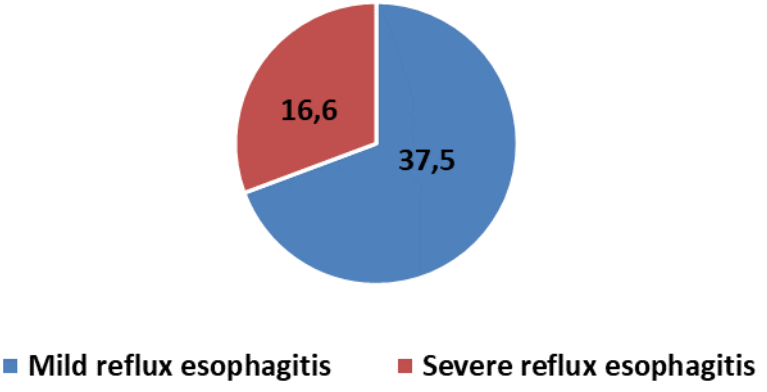

Figure 3 Incidence of mild and severe reflux esophagitis based on histopathological examination

Table-I Descriptive statistics of the examined patients' demographic and clinical characteristics

Parameters	N (%)
Age range (years)	17-70
Smoking status (current smokers)	16 (16.7)
Atopy	9 (9.4)
Hypertension	12 (12.5)
Diabetes Mellitus	6 (6.3)
NSAID use	10 (10.4)
PPI use	84 (87.5)
Reflux esophagitis grades (severe) A B C	16 (16.6) 9 (9.4) 4 (4.2) 3 (3.1)
Incompetent cardia	44 (45.8)
Hernia	8 (8.3)
Basal cell Hyperplasia <15 >15	 52 (54.2) 44 (45.8)

Table-II Predictors of low-grade versus absence EE using logistic regression

Predictor	Multivariate analysis OR 95% CI
Age (years)	4.2 (1.2–13)
Incompetent Cardia	5.2 (1.5–18.8)
Dysphagia	4.1 (1.2–15.3)
Hypertension	2.6 (0.63–11.5)

Discussion

The present study mainly focused on the esophageal eosinophilia incidence among patients underwent upper gastrointestinal endoscopy and found that upper endoscopy showed higher incidence of esophageal eosinophilia, accounting for over a quarter of those with dysphagia. Among individuals who underwent upper gastrointestinal endoscopy, the prevalence of esophageal eosinophilia was 33.3%. Also, the most common symptoms were gastroesophageal reflux disease (GERD) and heartburn. Asthma history, male gender, and typical indications of EoE on endoscopy were the various clinical predictors and EoE features. With the increased detection and EoE diagnosis, esophageal eosinophilia is becoming increasingly common [18]. While GERD and EoE were thought to be the esophageal eosinophilia major causes [19, 20].

Numerous previous research examined the incidence of EoE in endoscopy patients. The prevalence varied from 6.5% in endoscopy receiving patients to 15% in patients undergoing endoscopy for dysphagia, to more than 50% in patients undergoing endoscopy for an active food impaction [21, 22]. The incidence in dysphagia patients was comparable to the prevalence in other dysphagia populations (10%-15%) [23]. The importance of the study population cannot be

emphasized because these are the patients who gastroenterologists see on a daily basis. It is critical to examine this disease in all patients having endoscopy, particularly in our dysphagia population, 10% of whom will have EoE. The current study comprised 96 individuals who were referred for upper GI endoscopy due to upper GI symptoms. In normal circumstances, eosinophils do not exist in the esophagus [24]. The eosinophils per high-power field >15 presence and the eosinophilia alternative sources exclusion should be used to confirm the diagnosis of eosinophilic esophagitis [25].

Lenti et al. [26] discovered that 61.5% of adult patients with varied upper gastrointestinal symptoms were men and 38.4% were females in a comparable research on 91 adult patients. The incidence of smoking and taking PPIs history was one-third and 71% respectively. Heart burn 27.1% was the most prevalent presenting symptom in our research followed by GERD 29.2%, and upper abdomen discomfort affecting 17.7% patients. on the other hand, another study reported that upper stomach discomfort was the most prevalent symptoms found in 63.3% and heartburn 50% [27].

Sawada et al. [28] studied 106 EoE individuals, with a mean age of 46 years. Likewise, mostly patients (65%) were male, and the incidence of dysphagia, chest discomfort, and heartburn was 69%, 15%, and 25% respectively. According to Fouad et al., men are more susceptible to EoE than females. Nevertheless, none of the patients smoked and all had normal duodenal and stomach on endoscopy [29]. Lee et. al., [30] discovered that elderly male patients were more prone to low-grade esophageal eosinophilia. Dysphagia was the most prevalent symptom, which was observed in 83% of patients, and the most common endoscopic finding was fixed esophageal rings, which was detected in 37% of patients.

Conclusion

The incidence of esophageal eosinophilia was 33.3% among patients underwent upper gastrointestinal endoscopy. Additionally, gastroesophageal reflux disease (GERD) and heart burn were the most prevalent symptoms. The different clinical predictors and EoE characteristics were asthma history, male gender, and typical signs of EoE on endoscopy.

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