

# Frequency of Eosinophilic Esophagitis Among Patients Undergoing Upper Gastroesophagoscopy for Symptoms of Gastroesophageal Reflux Disease (GERD)

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## ABSTRACT

**Introduction:** Eosinophilic Esophagitis (EE) Is Manifested by Infiltration of The Esophageal Mucosa by Eosinophils and Culminates In Clinical Features That May Be Difficult To Distinguish From Those Of Gastroesophageal Reflux Disease (GERD).

**Objectives:** To Assess the Frequency of Eosinophilic Esophagitis Among Patients Undergoing Upper Gastroesophagoscopy for Symptoms of Gerd.

**Study Design:** Cross-Sectional Survey

**Subjects and Methods:** Duration of the study was six months (05-11-2012 to 04-05-2013) in gastroenterology department, medical unit 1, general hospital, lahore. A total of 125 cases were enrolled. All the patients who met the inclusion criteria underwent gastroesophagoscopy. And four biopsies, each from upper, middle and lower esophagus were taken. The biopsy specimen was preserved in 10% formalin and sent for histopathology by a single histopathologist to detect the presence of EE

**Results:** Mean age of the patients was  $31.02 \pm 5.16$  years. Out of 125 patients, 80 patients (64.0%) were male while 45 patients (36.0%) were female. Distribution by symptoms showed 90 patients (72.0%) of heartburn, 60 patients (48.0%) of regurgitation and 44 patients of dysphagia (35.2%). Distribution by oesophagoscopy findings were as follows: normal 78 (62.4%), mucosal furrows 3 (2.4%), exudates 18 (14.4%), lumen narrowing 25 (20.0%), and esophageal rings 5 (4.0%). Mild inflammation was present in 77 patients (61.6%), 41 patients (32.8%) were found to have moderate inflammation and 7 patients (5.6%) were having severe inflammation. Eosinophilic esophagitis was found in 10 patients (8.0%).

**Conclusion:** In The Studied Population Sample Of 125 Patients , 8% Have Been Found To Suffer From Eosinophilic Esophagitis , Hence It Is Narrated That Eosinophilic Esophagitis Should Be Considered In Differential Diagnosis Of Gerd And Mucosal Biopsies Are Warranted For Confirmation.

**Key Words:** Eosinophilic Esophagitis, Gastroesophageal Reflux Disease, Gastroesophagoscopy

## INTRODUCTION

Gastroesophageal reflux disease (GERD), a common disease (approximately 25-40% of Americans experience symptomatic GERD at some point)<sup>1</sup>. This is gaining attention of the physicians due to its wide range of symptoms including vomiting, heart burn or dyspepsia. The course of treatment is further complicated by the self medication of the patients<sup>2,3</sup>.

Eosinophilic Esophagitis (EE) is a comparatively novel entity<sup>4</sup>. Pathogenesis involves antigen antibody hypersensitivity reaction comprising of a mixed IgE-dependent/delayed-type process<sup>5</sup>. Numerous research studies have shown allergic etiologies as majority of these individuals

were also suffering from asthma, atopic dermatitis, allergic rhinitis and the evidence of allergic antigen sensitization based on skin prick testing or measurement of IgE which is specific for allergic reactions<sup>6</sup>. Clinical picture is not much different from gastro esophageal reflux disease (GERD) like difficulty swallowing, retrosternal burning and at times, esophageal strictures<sup>7,8</sup>.

In a previous study by Vaerappan et al, the frequency of eosinophilic esophagitis was 6.5 % among the patients undergoing for endoscopy<sup>9</sup>. It was even increased to 8.8% among patients with GERD<sup>10</sup>. In a study by de Sa CC, et al, esophagogastroscopy among GERD patients (n=103), the frequency of EE was 0.97%<sup>11</sup>.

The frequency of Eosinophilic Esophagitis among adults is not completely described in the literature. Since, the frequency of EE is described variably by different authors. The frequency of GERD is very high, while the symptoms of both disorders mimic with each other. Not much work has been done so far in this regard. Moreover, this disorder is still considered a rare entity and is often ignored during endoscopy and is not differentiated during endoscopy for evaluation of GERD. So, I want to conduct this study in order to determine that how frequently eosinophilic esophagitis is seen among patients with symptoms of GERD. This will help our patients by early detection and starting prompt treatment. No local study available specifically in patients with symptoms of GERD to determine frequency of Eosinophilic esophagitis.

**MATERIAL AND METHODS**

**Study Design:** Cross-Sectional Survey  
**Setting:** Department of Gastroenterology, Medical Unit 1, General Hospital, Lahore.

**Study Duration:** Six months ( 05-11-2012 to 04-05-2013).

**Sample Size:** Sample size was 125 cases with 5% margin of error, 95% confidence level taking expected percentage of eosinophilic esophagitis among patients with GERD ie. 8.8%.

**Sampling Technique:** Sampling was by Non-probability purposive technique.

**Sample Selection**

**Inclusion Criteria**

- Gender: both male and female
- Age 20-45 years
- Patients with symptoms of GERD (as per operational definition).

**Exclusion Criteria**

- Patients unfit for gastroesophagoscopy.
- Patients with hypereosinophilia (raised eosinophil count on CBC).
- Patients previously diagnosed as eosinophilic esophagitis, eosinophilic gastroenteritis, GI malignant conditions, inflammatory bowel disease and pregnancy, coagulation disorders or low platelets and esophageal varices.

**Data Collection Procedure**

One hundred and twenty five cases meeting the set criteria were enrolled through Gastroenterology/ Hepatology OPD, Lahore General Hospital, Lahore. Patient particulars (including age) and sex was taken. Informed consent was taken from patients. Blood samples were withdrawn for peripheral eosinophil count. All

the patients who fulfilled the inclusion criteria were underwent through gastroesophagoscopy. And four biopsies, each from upper, middle and lower esophagus were taken. The biopsy specimen were preserved in 10% formalin and sent for histopathology to detect the presence of EE . The information was entered on the designed Performa.

**Data Analysis Procedure**

Version 10 of SPSS was used for data entry and analysis. The qualitative data like demographics (sex, male or female), presence or absence of eosinophilic esophagitis was presented as frequency distribution.

Qualitative data like age (in years) was presented as mean and standard deviations.

**RESULTS**

A total of 125 patients were included in this study.

Regarding age distribution, 77 patients (61.6%) were between 20-30 years old, 46 patients (36.8%) were between 31-40 years of age and 2 patients (1.6%) were 41-45 years old. Mean age of the patients were 31.02±5.16 years (Table-1).

Out of 125 patients, 80 patients (64.0%) were male while 45 patients (36.0%) were female (Table-2).

Distribution of cases by symptoms shows 90 patients (72.0%) of heartburn, 60 patients (48.0%) of regurgitation and 44 patients of dysphagia (35.2%) (Table-3).

Distribution of cases by oesophagoscopy findings was as follows: normal 78 (62.4%), mucosal furrows 3 (2.4%), exudates 18 (14.4%), lumen narrowing 25 (20.0%), and esophageal rings 5 (4.0%) (Table-4).

Mild inflammation was present in 77 patients (61.6%), moderate inflammation was found in 41 patients (32.8%) and severe inflammation in 7 patients (5.6%) (Table-5).

Eosinophilic esophagitis was found in 10 patients (8.0%). (Table-6). Mean values of cells/HPF and eosinophils in given cells presented in Table-7.

**Table-1:** Distribution of cases by age

Age (Year)	Number	Percentage
20-30	77	61.6
31-40	46	36.8
41-45	02	01.6
Total	125	100.0
Mean±SD	31.02±5.16	

**Table-2:** Distribution of cases by gender

Gender	Number	Percentage
Male	80	64.0
Female	45	36.0
Total	125	100.0

**Table-3:** Distribution of cases by symptoms n=125

Symptoms	Number	Percentage
Heartburn	90	72.0
Regurgitation	60	48.0
Dysphagia	44	35.2

**Table-4:** Distribution of cases by oesophagoscopy findings n=125

Findings	Number	Percentage
Normal	78	62.4
Mucosal furrows	03	02.4
Exudates	18	14.4
Lumen Narrowing	25	20.0
Osophageal rings	05	04.0

**Table-5:** Distribution of cases by inflammation n=125

Inflammation	Number	Percentage
Mild	77	61.6
Moderate	41	32.8
Severe	07	05.6
Total	125	100.0

**Table-6:** Distribution of cases by eosinophilic esophagitis n=125

Eosinophilic Esophagitis	Number	Percentage
Yes	10	08.0
No	112	92.0
Total	125	100.0

**Table-7:** Mean values of cells/HPF and eosinophils in given cells n=125

Variables	Mean	Standard deviation
No. of cells/HPF	13.92	8.09
No. of eosinophils in given cells	5.39	5.31

## DISCUSSION

Gastroesophageal reflux (GERD) is a disease whose causation is multifactorial. Hyperacidity, lax lower esophageal sphincter and hiatal hernia contribute to its development. Approximately 30-90

40% of the individuals are affected by this disorder<sup>12,13</sup>.

Symptoms of GERD are quite disturbing and affect the quality of life and even with treatment, at times cannot be cured completely. According to the American Gastroenterology Association, USA suffers a loss of approximately 24 billion dollars annually just because people suffering from GERD cannot complete their job hours due to the symptoms<sup>13</sup>. There is a wide range of symptoms and patients can have simple heartburn on one end to complete dysphagia and asthma on the other end<sup>12</sup>. At times symptoms can be alleviated just by taking simple antacids. Chronic symptoms require long standing treatment regimens. Long term complications like reflux esophagitis, strictures, Barrett esophagus, and esophageal adenocarcinoma of the esophagus are not uncommon<sup>12</sup>.

Patients who do not respond to GERD therapy should be screened for Eosinophilic esophagitis and the literature worldwide is in its favour<sup>10</sup>.

The gold standard for diagnosing EE is esophageal mucosal histopathology displaying 15 or more eosinophils per high power field (eo/HPF).

Eosinophilic esophagitis (EE) has not been thought of as a possible cause in the past as it should have been. Clues include history of atopy and asthma and the common age for disease presentation is between 20-40 years of age, majority in males. Cardinal features of presentation are dysphagia, retrosternal burning and atypical chest pain. 50% of patients with impacted bolus in esophagus may well have this disorder<sup>14</sup>.

Cases are diagnosed by endoscopy and biopsy. Endoscopic picture of the esophageal mucosa is quite varied. Mucosal elevation in papular fashion, mucosal exudates, corrugation, mucosal furrows in longitudinal fashion, mucosal hyperemia, contraction rings and sometimes esophageal strictures. It may well be entirely normal looking mucosa in 25% of patients<sup>15</sup>.

So it can be said that both the entities ( EE and gastroesophageal reflux disease) are indistinguishable on clinical and endoscopic parameters. GERD patients normally have infiltration of their lower esophageal mucosa by upto 10 eosinophils per high power field. It is the presence of more than 15 eosinophils per high power field which confirms the diagnosis of EE. Medical disorders causing eosinophilia, like parasitic and fungal infestation and eosinophilic gastroenteritis should be excluded. The interplay

between EE and GERD is quite complex, and sometimes patients present with reflux symptoms and actually having EE and responding to therapy with proton pump inhibitor (PPI)<sup>16,17</sup>.

The actual interaction between these two entities is yet to be discovered. That's why, the overlap of EE and GERD results in nonspecific findings on endoscopy and histopathology. The approximate prevalence of EE is 1%<sup>18</sup> and GERD has a prevalence of 10%-20% of adult population in Western world<sup>19</sup>. Based on this, the possibility of finding unrelated GERD in patients with EE is high.

In our study prevalence of eosinophilic esophagitis was 8.0%. Our results are consistent with the study of Foroutan et al<sup>10</sup>.

The study carried out by Saeed et al<sup>4</sup> demonstrated the prevalence of Eosinophilic esophagitis to be 7.4%. These figures are also close to our findings.

This figure could be higher if EE is actively thought of in patients presenting with typical symptoms especially in patients having dysphagia<sup>20,21</sup>.

Males were most common affected as compared to females and in current study this was also the same case (64.0%), a systemic review has claimed that 74% of the patients were male<sup>22</sup>.

As majority of the patients have allergic conditions like asthma, atopic dermatitis, allergic rhinitis, the presence of allergic antigen sensitization and measurement of plasma antigen-specific IgE, the literature worldwide also favours the allergic etiology for EE<sup>22</sup>. Allergy to specific foods can be IgE mediated, non-IgE-mediated or both types. Exposure of a genetically susceptible person to an appropriate food results in allergic sensitization and can lead to EE<sup>23</sup>.

## CONCLUSION

Eosinophilic esophagitis should be considered in the differential of any patient presenting with symptoms of GERD, as both entities, though mimic each other in their symptoms but vary in their treatment options.

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