Epidemiologic Characteristics and Clinical Pattern of Eosinophilic Esophagitis: Single Centre Experience

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ABSTRACT

Background: Eosinophilic esophagitis (EoE) is a progressively documented disorder in adults presenting with dysphagia and chest pain. EoE is featured by eosinophilic infiltration of the Esophageal mucosa; its pathogenesis is unknown. All patients with suspected EoE must undergo Esophageal mucosal biopsies to confirm the diagnose. Endoscopy had certain but variant features among EoE cases.

Objective: This study aimed to identify the epidemiologic characteristics and clinical pattern of Eosinophilic Esophagitis in a single centre, Aseer region, Saudi Arabia.
Methods: A record based retrospective study was conducted targeting all patients diagnosed with eosinophilic esophagitis in ACH during the period from 1990 to 2021. Data were extracted using pre-structured data extraction sheet to avoid data extraction error. Data extracted included patients' demographic data, past medical history, presenting clinical symptoms, laboratory findings, endoscopic findings, biopsy results, and medications prescribed. Data extracted were filtered and then fed to excel sheet for raw data presentation.

Results: A total of 91 patients fulfilling the inclusion criteria were reviewed. Patients ages ranged from 6 to 65 years with mean age of 26.6 12.5 years old. Exact of 79 (86.8%) patients were males. The most reported clinical symptom was dysphagia (67%), followed by food impaction (33%), Barret's oesophagus (14.3%), and heartburn (3.3%). The most frequent Endoscopic findings were wrings (41%), followed by Trachealization (38%), linear grove (31%), stricture (29%), white exudate (27%), esophagitis (19%), mucosal oedema (10%), and oesophageal ulcer (9%).

Conclusion: In conclusion, the study showed that, EoE was more among males in their middle age with eating disorders due to dysphagia, and food impaction. These clinical complaints were associated with oesophageal changes and functional disability due to inflammatory changes with wrings, and strictures.

Keywords: Eosinophilic esophagitis, Clinical features, Epidemiology, Diagnosis, Endoscopy

INTRODUCTION

Eosinophilic esophagitis (EoE) is a long-lasting immunological Esophageal disease[1] featured by Esophageal histopathology, with more than 15 intraepithelial eosinophils in a minimum one high-power field (HPF)[2]. Many studies have assessed a higher frequency among males of EoE, with a male-to female ratio of 3: 1 while the most frequent age of diagnose ranged from 30-50 years old which indicates that EoE is a disease of the middle-aged man[3]. It can affect patients of all race, but this disease is more common among Caucasians and it can affect both children and adults[4].

The most reported symptoms among patient with Eosinophilic esophagitis are Esophageal dysfunction such as dysphagia, food impaction which symptoms which is confused with gastroesophageal reflux disease[5]. The most frequent clinical presentation among adult is dysphagia for solids which was reported among 70–100% of patients with EoE[6].

Environmental factors and family history have a significant role in developing EoE[7]. EoE has been reported among nearly 2% of relatives with higher rate among multiple family members[7]. A recent twin study included paediatric cases with EoE assessed heritability and showed that relative risk ratios varied between 10 to 64 for in family members compared with general population. A higher risk was reported in male relatives[8].

Reference to these standards, a diagnosis of EoE should be considered among person presents with symptoms of oesophageal dysfunction where oesophageal biopsy proves 15 or more eosinophils in a high-power field (eos/hpf) in the absence of other causes such as gastro-oesophageal reflux disease (GERD)[9,10]. Although endoscopic findings are helpful in identifying patients with EoE but they are not diagnostic of the disease in the absence of pathognomonic clinical symptoms, all patients with suspected EoE must undergo Esophageal mucosal biopsies to confirm the diagnose[11]. The current study aimed to identify the magnitude of EoE in Aseer region. Also, the study results provided clinical pattern regarding EoE and to evaluate further EoE management program.

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METHODOLOGY

A record based retrospective study was conducted targeting all patients diagnosed with eosinophilic esophagitis in ACH during the period from 1990 to 2021. Data were extracted using pre-structured data extraction sheet to avoid data extraction error. Data extracted included patients' demographic data, past medical history, presenting clinical symptoms, laboratory findings, laparoscopic findings, biopsy results, and medications prescribed. Data extracted were filtered and then fed to excel sheet for raw data presentation.

Data Analysis: After data were extracted, it was revised, coded, and fed to statistical software IBM SPSS version 22(SPSS, Inc. Chicago, IL). All statistical analysis was done using two tailed tests. P value less than 0.05 was statistically significant. Descriptive analysis based on frequency and percent distribution was done for all variables including patients' personal data, medical history, eosinophilic and oesophagitis presenting symptoms with laboratory investigations. Laparoscopic findings and biopsy besides intake of PPIs were also assessed in frequency tables and graphs. Crosstabulation was used to assess distribution of patients' laparoscopic findings by their age. Relations were tested using Pearson chi-square test and exact probability test for small frequency distributions.

RESULTS

A total of 91 patients fulfilling the inclusion criteria were reviewed. Patients ages ranged from 6 to 65 years with mean age of 26.6 12.5 years old. Exact of 79 (86.8%) patients were males and 89 (97.8%) were Saudi. As for past medical history, 17 (18.7%) had GERD, 16 (17.6%) had atomy, 11 (12.1%) had bronchial asthma, and 9 (9.95) had SLE. Other diseases were reported such as IBD (4.4%), HTN (2.2%), and DM (1 case) (table 1).

Table 1: Bio-demographic data of study patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia

Bio-demographic data	No	%
Age in years		
< 18	27	29.7%
18-29	27	29.7%
30+	37	40.7%
Sex		
Male	79	86.8%
Female	12	13.2%
Nationality		
Saudi	89	97.8%
Non-Saudi	2	2.2%
Past Medical History		
Negative	45	49.5%
GERD	17	18.7%
Atomy	16	17.6%
Brachial asthma	11	12.1%
SLE	9	9.9%
IBD	4	4.4%
HTN	2	2.2%
DM	1	1.1%
Eczema	1	1.1%
Smoking	1	1.1%
Celiac Disease	1	1.1%
Hype eosinophilic syndrome	1	1.1%

(Figure 1) Presenting symptoms among patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia. The most reported clinical symptom was dysphagia (67%), followed by food impaction (33%), Barret's oesophagus (14.3%), and heartburn (3.3%).

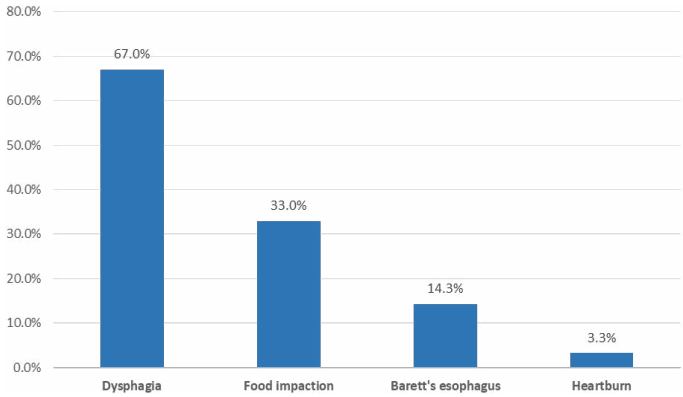

Figure 1: Presenting symptoms among patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia

(Table 2) Laboratory findings among patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia. Exact of 10 (11%) patients had anemia with mean Hb level of 14.6 ± 2.4. Low level of Haematocrit was detected among 15 (16.5%) patients. As for WBCs, 7 (7.7%) patients had Leucopenia, while 12 (13.2%) had leucocytosis. Eosinophilic count was high among 46 (50.5%) patients and only 9 (9.9%) patients had elevated platelet count.

Table 2: Laboratory findings among patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia

Laboratory findings	No	%	Mean ± SD
Hb level			
Anemia	10	11.0%	14.6 ± 2.4
Normal	81	89.0%	
Hct level			
Low	15	16.5%	42.9 ± 10.5
High	76	83.5%	
WBCs level			
Leucopenia	7	7.7%	6.8 ± 2.6
Normal	72	79.1%	
Leucocytosis	12	13.2%	
Eosinophil count			
Normal	45	49.5%	5.6 ± 4.0
High	46	50.5%	
Platelet count			
Normal	82	90.1%	307.8 ± 112.5
High	9	9.9%	

(Figure 2) Endoscopic findings among patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia. The most reported findings were wrings (41%), followed by Trachealization (38%), linear grove (31%), stricture (29%), white exudate (27%), esophagitis (19%), oedema (10%), and oesophageal ulcer (9%).

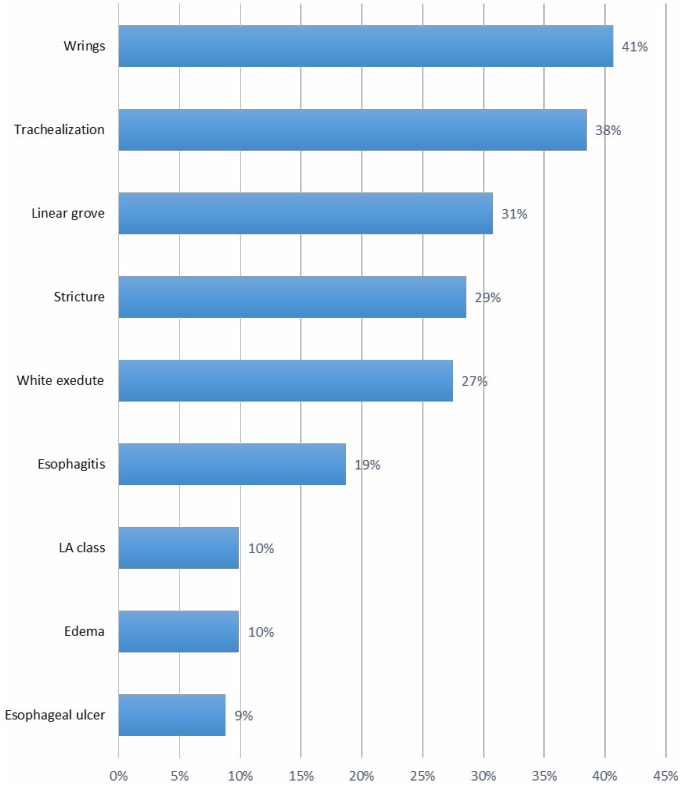

Figure 2: laparoscopic findings among patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia

(Figure 3) Biopsy results among patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia. Biopsy was positive for eosinophilic oesophagitis among 71 (78%) patients while it was not done for 20 (22%) cases.

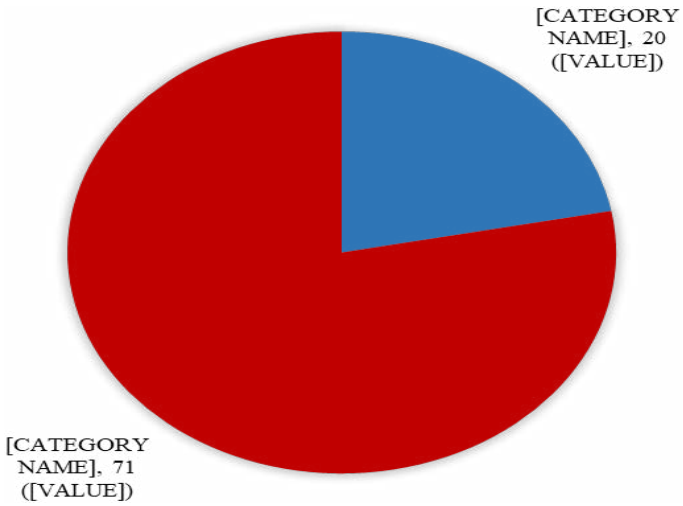

Figure 3: Biopsy results among patients with eosinophilic oesophagitis, Aseer Central Hospital, Saudi Arabia

(Table 3) The use of proton pump inhibitors among study patients. Exact of 51 (56%) patients used PPIs. The most used steroid were Budesonide (33%), oral steroids (14.3%), and Fluticasone (16.5%).

Table 3: The use of proton pump inhibitors and steroids among study patients

Proton pump inhibitors	**No**	**%**
PPIs		
No	40	44.0%
Yes	51	56.0%
Types of steroids		
Budesonide	30	33.0%
Oral steroid	13	14.3%
Fluticasone	15	16.5%

(Table 4) Distribution of Endoscopic findings among patients with eosinophilic oesophagitis by their age. Linear groove was detected among 48.1% of patients aged less than 18 years compared to 27% of others aged 30 years or above and 18.5% of middle-aged group (18-29 years) with recorded statistical significance (P=.045). Also, 16.2% of patients aged 30 years or more had esophagitis in comparison to none of those who were below the age of 18 years (P=.048).

Table 4: Distribution of Endoscopic findings among patients with eosinophilic oesophagitis by their age

Endoscopic findings	**Age in years**						**p-value**
	< 18		**18-29**		**30+**		
	No	**%**	**No**	**%**	**No**	**%**	
Linear grove	13	48.1%	5	18.5%	10	27.0%	.045*
White exudate	8	29.6%	6	22.2%	11	29.7%	.767
Wrings	9	33.3%	11	40.7%	17	45.9%	.598
Oedema	3	11.1%	3	11.1%	3	8.1%	.894$
Trachealization	10	37.0%	13	48.1%	12	32.4%	.436
Esophageal ulcer	1	3.7%	5	18.5%	2	5.4%	.101$
Stricture	9	33.3%	5	18.5%	12	32.4%	.385
Esophagitis	4	14.8%	6	22.2%	7	18.9%	.783

P: Pearson X^2 test *$: Exact probability test*
** P < 0.05 (significant)*

DISCUSSION

Eosinophilic oesophagitis (EoE) is a chronic allergic oesophageal disorder featured by dysphagia and food impaction in adults[12]. Eosinophilic oesophagitis is not well understood disease with increasing trend recently. Clinicians face with a challenge of varied disease definitions, and they were extra and more detailed education is mandatory[13]. Even though standard guidelines for the diagnosis and management of EoE have been established, it is still uncertain if the diagnosis and treatment of these patients imitated to those guidelines[14].

The current study aimed to assess the epidemiologic characteristics and clinical pattern of Eosinophilic esophagitis among patients in Aseer region, Southern of Saudi Arabia. Most of the patients (40.7%) aged 30 years or more while more than three-quarters of them were males which means its adult middle-aged diseases matching with literature findings[15,16]. Regarding medical history, GERD was the most prevalent clinical condition which in most cases misdiagnosed with EoE[17-19].

Regarding the presenting symptoms, the most reported were dysphagia among two-thirds of the study cases, followed by food impaction (among one third of the cases, Barrette's oesophagus and heart burn. Literature showed that the clinical presentation of EoE based mainly

on patients' age. Young aged cases may have general nonspecific manifestations including abdominal pain, vomiting, feeding problems, gastroesophageal reflux, and failure to thrive. Older cases and teenagers complain of dysphagia, chest pain and in more severe cases, food impaction[20,21].

Considering the laboratory findings, vast majority of the study cases had normal Hb, haematocrit, WBCs, and platelet count levels. As for eosinophilic count, more than half of the cases had high level.

With regard to Endoscopic findings, the most reported were wrings, followed by Trachealization, linear grove, stricture and white exudates. Mucosal oedema and oesophageal ulcers were the least recorded findings. Similar findings were reported by Remedios M et al.[22] who assessed 25 patients. Authors found linear furrows in 20 patients, multiple mucosal rings in 16 patients, narrow bore oesophagus in 7 patients, white papules/plaques in 4 cases, and proximal strictures in 3 cases. When specifically biopsied, the plaques/ papules were found to be eosinophilic micro-abscesses. Only 3 cases showed longitudinal furrows, mainly in the proximal oesophagus. Nineteen of the 25 patients had undergone a previous gastroscopy. Hirano I et al.[23] concluded that assessment for rings, furrows and exudates among EoE cases was moderate but poor for oedema. Documentation of narrow calibre oesophagus had fair evidence while feline oesophagus had poor agreement. Peery AF et al.[24] reported a similar finding where gastroenterologists identified oesophageal rings, oesophageal strictures, narrow calibre oesophagus, linear furrows, and mucosal tears with normal appearing oesophagus as endoscopic findings which forces diagnosis towards EoE. Others identified decreased mucosal vascularity, congested oesophageal mucosa, and white plaques as possible endoscopic findings of EoE in comparison to community gastroenterologists.

Nowadays, with the higher frequency, EoE has become one of the most challenging gastrointestinal diseases that will be routinely encountered by the general medical care. Physicians should be aware of varying clinical features based on age and earlier referrals should be made to gastroenterologists to minimize consequences. Untreated patients are at risk for Esophageal strictures and food impactions secondary to Esophageal changing and fibrosis[25].

CONCLUSION AND RECOMMENDATIONS

In conclusion, the study showed that, EoE was more among males in their middle age with eating disorders due to dysphagia, and food impaction. These clinical complaints were associated with oesophageal changes and functional disability due to inflammatory changes with wrings, and strictures. Being aware of these epidemiological patterns has the benefit to identify areas in need of more investigation and education and to guide upcoming research and standards construction. EoE is a chronic condition that significantly affects patient's quality of life and most patients need long-standing dietary or pharmacologic therapy.

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Competing Interest: None.

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