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Original Research Article

Eosinophilic esophagitis: clinical features, endoscopic findings and response to treatment

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ABSTRACT

Background: Eosinophilic esophagitis (EoE) considered to be an allergic inflammatory disorder of the esophagus characterised by an inherent impairment in epithelial barrier integrity, possibly worsened by reflux of gastric contents. The aim of this study was to study EoE and its clinical and endoscopic evaluation and response to treatment with relapse rates.
Methods: Fifty patients in the study were selected based on a review of biopsy results from previous endoscopies performed between August 2015 to August 2017. All patients with biopsy-proven EoE, defined as more than 20 eosinophils/HPF. Biopsy samples were taken from the mid and distal esophagus and sent for analysis. The endoscopic findings were noted grossly. Twenty five patients were started on PPI's only and the remaining 25 patients were started on fluticasone MDI 440mcg inhaled two times day and PPI. Follow up of the patients was done at 1, 3 and 6 months after treatment.
Results: The mean age in the study population was 42 years, males affected more often (64%) with rings and corrugations and linear furrows being the most commonly seen endoscopic findings (64% and 27%). Normal study was seen in 40% of the patients. Most common symptom was dysphagia 26%. Steroids are the mainstay of the treatment along with PPI. Relapse rate was 61.1% in the study.
Conclusions: EoE is an inflammatory condition of the oesophagus that occurs predominantly in young and middle-aged men, EE should be strongly considered in those who present with dysphagia and/or food impaction, particularly with a history of atopic disorders. Swallowed fluticasone is a safe and effective treatment; however, relapse rates are very high. In adults, there remains a need for a randomized controlled trial to assess the safety and efficacy of various treatment modalities.

Keywords: Allergic, Atopy, Eosinophils, Esophagitis

INTRODUCTION

Eosinophilic esophagitis (EoE) also known as allergic esophagitis, is an allergic (antigen mediated), inflammatory or a chronic condition of the esophagus that involves eosinophils, a type of white blood cell. Symptoms are swallowing difficulty, food impaction, and heartburn.[1] Eosinophilic esophagitis (EoE) was first described in children but also occurs in adults. The condition is not well understood, and several hypothesis have been proposed in its pathogenesis.[2] Eosinophilic esophagitis (EE) is an inflammatory disorder of the oesophagus characterized by eosinophilic infiltration of the oesophageal mucosa.[3]

It most commonly affects young men aged between 30 to 40 years of age.[4] The most common symptoms include solid food dysphagia and food impaction, which are seen

in almost all the patients.[5-7] Heartburn and acid regurgitation are also common complaints in approximately 20% of patients[8,9], while other symptoms like abdominal pain, chest pain and weight loss are seen in a few instances. Eosinophils are commonly found in gastrointestinal tract physiologically, but in the case of EoE, they tend to multiply and proliferate in the oesophagus releasing a protein that causes inflammation ad fibrosis in the oesophagus and thus causing symptoms like dysphagia and food impaction along with myriad of other complaints.

People with eosinophilic esophagitis may have food allergies, environmental allergies, asthma, atopic dermatitis or chronic respiratory diseases, some people are genetically more likely than others to develop eosinophilic esophagitis. There is no common consensus regarding the precise histological definition of EoE, with common recommendations by various studies mentioning a minimum of 15, 20 or 24 eosinophils/high-power field (HPF).[10] Physiologically, EoE is suspected to be an allergic response involving T-helper cell 2 mechanisms, with eosinophils degranulating and releasing various products that result in tissue damage, edema, inflammation and fibrosis.[11]

The most widely followed treatment protocol is, swallowed topical corticosteroid therapy including fluticasone propionate and beclomethasone.[12] Because relapse rates are high, esophageal dilation has also been tried; however, it is associated with the potential risk of complications such as mucosal tears and perforations.[12]

The purpose of the present study was twofold: to evaluate patient characteristics, clinical features and endoscopic findings in a cohort of patients diagnosed with EoE on endoscopy and biopsy at the Dept of Surgery, Victoria Hospital, BMCRI a tertiary care referral centre in Bengaluru, Karnataka and also to assess the response to treatment in this group of patients.

METHODS

Fifty patients in the study were selected based on a review of biopsy results from previous endoscopies performed between August 2015 to August 2017. All patients with biopsy-proven EoE, defined as more than 20 eosinophils/HPF, were included in the study. Further information regarding the patients' clinical features at the time of diagnosis, response to treatment, endoscopic findings and follow-up data were obtained.

All patients had their endoscopies and biopsies performed at a single centre after taking valid informed written consent, during the endoscopy, findings were recorded. Representative biopsy samples were taken from the mid and distal esophagus and sent to the department of pathology for cytological analysis. The endoscopic findings of the current study were based on gross observations at the time of endoscopy. All biopsies were reviewed at Department of Pathology in Victoria Hospital. Histological diagnosis of EoE was defined as the presence of more than 20 eosinophils/HPF discovered on biopsies taken at the time of endoscopy.

Twenty-five patients were started on PPI's only and the remaining 25 patients were started on fluticasone MDI 440mcg inhaled two times day, patients were instructed to rinse their mouths with and expectorate water after dosing, as well as avoid eating or drinking for 30 minutes afterwards. The data was analysed statistically and compared.

RESULTS

The mean age in the study population was 42 years, with the minimum age of 18 years and maximum age of 67 years with most cases seen between 40-50 years of age.

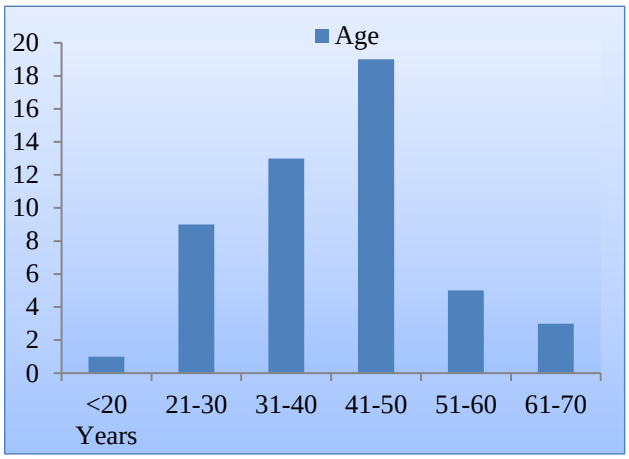

Figure 1: Age wise distribution.

Males are more commonly affected than females as shown in the table above, with 64% of the patients being males in the study.

Table 1: Sex wise distribution.

		Frequency	%	Valid %	Cumulative %
Valid	F	18	36.0	36.0	36.0
	M	32	64.0	64.0	100.0
	Total	50	100.0	100.0	

Endoscopic findings

The line graph illustrates the gross endoscopic findings in our study, rings and corrugations was the most common finding seen in 64% of the patients followed by linear furrows seen in 54% of the patients.

Other endoscopic findings seen are mucosal fragility which was seldom seen, narrow calibre of the oesophagus and exudates and plaques. Normal mucosal study was seen in 20% of the patients (Table 2).

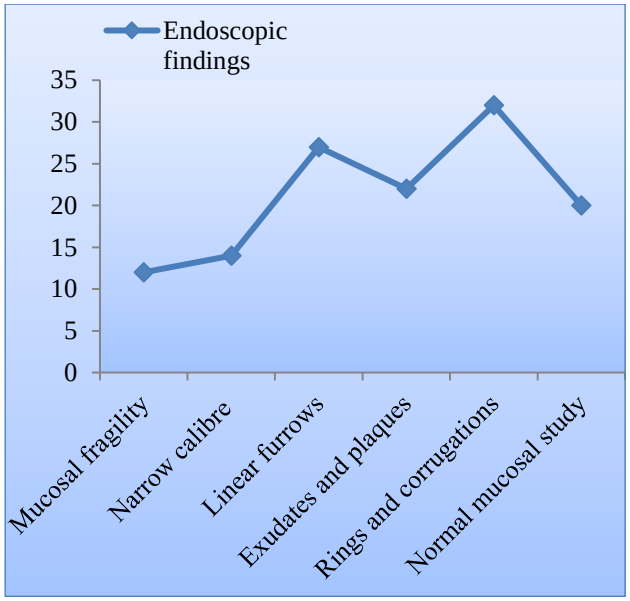

Figure 2: Endoscopic findings by line graph.

Table 2: Endoscopic findings.

		Frequency	%	Valid %	Cumulative %
Mucosal fragility					
Valid	N	38	76.0	76.0	76.0
	Y	12	24.0	24.0	100.0
	Total	50	100.0	100.0	
Narrow calibre					
Valid	N	36	72.0	72.0	72.0
	Y	14	28.0	28.0	100.0
	Total	50	100.0	100.0	
Linear furrows					
Valid	N	23	46.0	46.0	46.0
	Y	27	54.0	54.0	100.0
	Total	50	100.0	100.0	
Exudates, papules, plaques					
Valid	N	28	56	56.0	56.0
	Y	22	44	44.0	100.0
	Total	50	100	100	
Rings and corrugations					
Valid	N	18	36.0	36.0	36.0
	Y	32	64.0	64.0	100.0
	Total	50	100.0	100.0	
Normal study					
Valid	N	30	60.0	60.0	60.0
	Y	20	40.0	40.0	100.0
	Total	50	100.0	100.0	

Symptomatology

The above pie chart shows the symptomatology associated with EoE, the most common symptom complained by the patients was dysphagia to solid food seen in 26% of the patients followed by heart burn and impaction of food bolus seen in 17% of the patients. Regurgitation was seen in 14% of the patients.

Less common symptoms complained were epigastric discomfort, nausea and cough (Table 3).

Table 3: Symptomatology.

		Frequency	%	Valid %	Cumulative %
Cough, nausea					
Valid	N	36	72.0	72.0	72.0
	Y	14	28.0	28.0	100.0
	Total	50	100.0	100.0	
Epigastric discomfort					
Valid	N	32	64.0	64.0	64.0
	Y	18	36.0	36.0	100.0
	Total	50	100.0	100.0	
Regurgitation					
Valid	N	25	50.0	50.0	50.0
	Y	25	50.0	50.0	100.0
	Total	50	100.0	100.0	
Dysphagia					
Valid	N	5	10.0	10.0	10.0
	Y	45	90.0	90.0	100.0
	Total	50	100.0	100.0	
Heart burn					
Valid	N	21	42.0	42.0	42.0
	Y	29	58.0	58.0	100.0
	Total	50	100.0	100.0	
Impaction					
Valid	N	20	40.0	40.0	40.0
	Y	30	60.0	60.0	100.0
	Total	50	100.0	100.0	

Treatment response

The study patients were randomly assigned to 2 groups. Group A received Tablet Omeprazole 20mg OD only and Group B received both Tablet Omeprazole and Fluticasone MDI 440mcg BD.

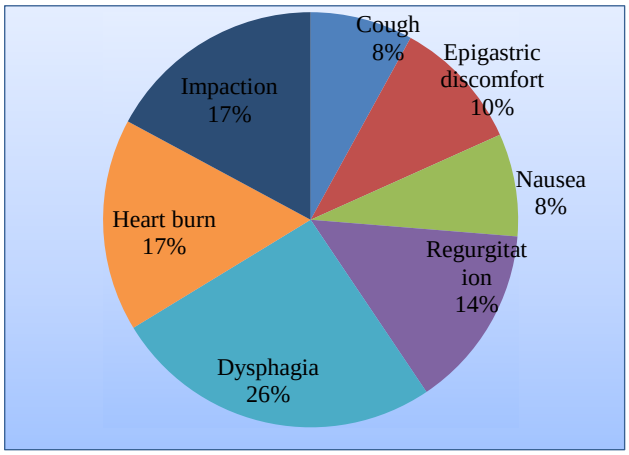

Figure 3: Symptomatology.

The combination treatment was found to be more effective in controlling the symptoms (30%) as compared to just PPI where only 9% of the patients reported

improvement. The follow up consultations were conducted at 1, 3 and 6 months of initiating treatment after diagnosis.

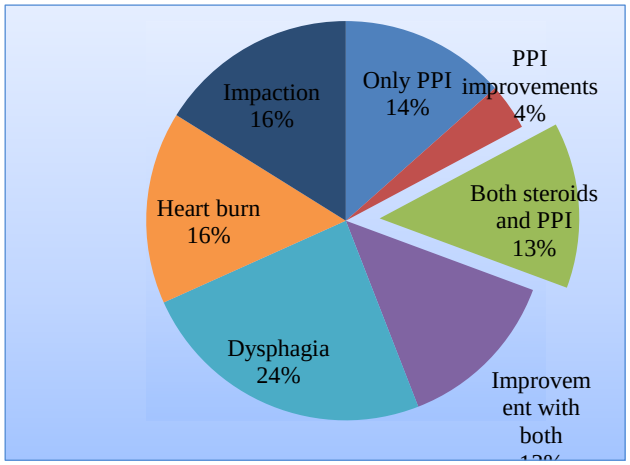

Figure 4: Treatment response.

Relapses

Only 18 of the 50 patients included in the study were available for regular long term follow up (end of 6 months), of which 11 of them developed recurrences in the symptoms within 1 month of stopping treatment. Relapse rate in the current study is 61.11%.

DISCUSSION

EE is an inflammatory disorder of the oesophagus that is being increasingly diagnosed in the adult population in the past two decades. In the present study, we assessed the patient characteristics, clinical features, endoscopic findings and the response to treatment. The mean age at which our patients had developed their first symptoms was around 30 years, while the mean age at diagnosis was around 40 years. The reasons for the delayed diagnosis are unclear but may be due to the mild nature of EoE initially.

Several risk factors for predisposed individuals are mentioned in the literature like seasonal and climatic variations, it being more common in people living in a dry or cold climatic condition and also during the spring season. It is also seen predominantly in men, and in people suffering allergic and atopic conditions. EoE due to chronic inflammation, causes furrows and scarring of the oesophagus making it difficult to swallow food leading to food impaction in majority of the cases, and for the same reason the mucosal lining is fragile because of which, endoscopic intervention carrying the risk of mucosal tears and oesophageal perforations, however no instance of oesophageal perforations was encountered in the study.

Similar to the symptoms reported in the literature, the predominant symptoms in the study group were dysphagia and bolus food impaction. A previous prospective study demonstrated that more than 50% of patients presented to us for food impaction had histological evidence of EoE on subsequent biopsy.[13] EoE should be considered in all patients presenting with bolus food impaction. Heartburn was the distant third most common symptom in our patients at 26%. This finding is similar to other studies, in which 23% of the pooled subjects reported gastroesophageal reflux disease symptom.[8.14] Many studies have demonstrated a strong clinical association of EoE with asthma and other allergic conditions. One meta-analysis reported the presence of allergic and/or atopic conditions in 55% of patients with EE.[8] Although various recommendations have been made regarding the histological definition of EoE, the diagnostic criterion for EoE according to the current North American consensus statement is a peak count of 15-20 eosinophil/HPF or more, in the proper clinical context.[14]

As with many allergies, the mainstay of treatment for EoE is the use of steroids, steroids are probably by far the only pharmacologic treatment that has shown clear benefit in EoE across various studies. They have demonstrated the efficacy of either systemic or topical steroids in treating EoE.[15.16] The use of steroids in the treatment of EoE, is not merely similar to other allergic disorders encountered. Numerous data have quite clearly demonstrated that steroids target the underlying pathophysiology of EoE and even reduce the ongoing fibrosis in the oesophagus.[17]

Studies have shown that topical steroids have been reported to reverse fibrosis (as evidenced by biopsy staining for TGF-B1) and to decrease oesophageal wall thickness (as measured by endoscopic ultrasound), however longer-term studies are needed to determine the potential of these therapies for reversing clinically significant oesophageal narrowing.[18-20] There is a risk (at most, 15%) of developing oropharyngeal or oesophageal *Candida* infection, but none such adverse effects were noted during the course of the study amongst patients. There remains a need for a randomized controlled trial to assess the efficacy of topical steroid therapy in adults with EE.

CONCLUSION

EoE is an inflammatory condition of the oesophagus that occurs predominantly in young and middle-aged men. The most common symptoms are solid food dysphagia and food impaction. EoE should be strongly considered in those who present with dysphagia and/or food impaction, particularly with a history of atopic disorders. The most common endoscopic finding in patients with EoE is a ringed oesophagus. Swallowed fluticasone is a safe and effective treatment; however, relapse rates are very high. In adults, there remains a need for a randomized controlled trial to assess the safety and efficacy of various treatment modalities.

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