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Eosinophilic esophagitis and intermediate esophagitis after tracheoesophageal fistula repair: a case series

Carol Oliveira[a], Mohammed Zamakhshary[a,b], Peggy Marcon[c], Peter C.W. Kim[a,*]

[a]*Division of General Surgery, The Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8*
[b]*Division of Paediatric Surgery, King Abdulaziz Medical City-Riyadh, Saudi Arabia*
[c]*Division of Gastroenterology, Hepatology and Nutrition, The Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8*

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Abstract

Background: Eosinophilic esophagitis (EE) is often missed or underdiagnosed in children, particularly in the setting of reflux disease associated with tracheoesophageal fistula (TEF). Intermediate esophagitis (IE) is a recently described condition, which includes characteristics of gastroesophageal reflux disease and EE but does not present with enough eosinophils on biopsy to diagnose EE. Here we present a case series of EE and IE associated with TEF, and their clinical manifestations.

Methods: A retrospective analysis including clinical presentation, endoscopic and pathologic findings, and treatment of 4 patients with EE and 4 patients with IE who presented between 2003 and 2007 was performed.

Results: Male dominance was found equally in both groups (75%), and most patients had a personal history of atopy (87.5%). Food allergies were seen mainly in the EE group (75%). The most frequent primary symptoms in both groups were dysphagia for solids (75%) and for liquids (25%). The median age at diagnosis was 9.8 vs 11.2 years in the EE and IE groups, respectively. On endoscopy, both groups had similar findings including furrows (EE, 75%; IE, 66.6%) and white plaques (EE, 50%; IE, 33.3%). In both groups, almost all patients had basal cell hyperplasia on biopsy (EE, 100%; IE, 75%). Degranulated surface eosinophils (50%) and eosinophilic abscess (25%) were found in the EE group only. Elongated rete papillae were more often seen in EE biopsies (50%) compared with IE biopsies (25%). Peripheral serum eosinophilia was seen in all EE patients and in 33% of the IE patients. The only effective treatment with complete resolution of the symptoms was the topical or systemic application of steroids.

Conclusions: The diagnosis of EE and IE is frequently missed or delayed. Eosinophilic esophagitis should be suspected in reflux disease refractory to conventional treatment, particularly in the setting of TEF. Intermediate esophagitis represents an entity that includes findings of gastroesophageal reflux disease and EE. Endoscopic biopsies are diagnostic for both conditions and allow institution of specific medical treatment.

With improved and expectant survival after the surgical repair of tracheoesophageal fistula (TEF), the long-term follow-up and management of morbidity are increasingly becoming clinically relevant in the post-TEF repair period

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* Corresponding author. Tel.: +1 416 813 6357; fax: +1 416 813 7477.
E-mail address: peter.kim@sickkids.ca (P.C.W. Kim).

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[1]. Presenting symptoms of some of these gastrointestinal morbidities include dysphagia (50%), respiratory tract infections (29%), and gastroesophageal reflux disease (GERD) (25%-75%) [1]. Eosinophilic esophagitis (EE) has been recently described in the literature as a separate entity from GERD and intermediate esophagitis (IE) [2,3]. Because presenting symptoms are similar to those of GERD, misdiagnosis or delayed diagnosis often occurs. Therefore, in children with persistent therapy-refractory GERD, particularly in the setting of TEF and/or atopic conditions, EE represents an important differential diagnosis from GERD requiring pathologic differentiation based on infiltrating eosinophil counts: EE (>20 eosinophils per high-power field [HPF]), IE (5-19 eosinophils per HPF) and GERD (<3 eosinophils per HPF).

The association of TEF to EE has been underreported [4]. Here we report the results of our long-term follow-up of patients with EE and IE in TEF population.

1. Methods

With a Research Ethics Board approval, a retrospective analysis of all TEF cases between May 2003 and January 2007 was performed. Eight patients were identified after upper endoscopy with biopsy. The indication for endoscopy was nonresponse to medical treatment of GERD. Patients were diagnosed and assigned to either the EE or IE group based on the pathologic findings. The clinical presentation, endoscopic and histologic findings, and treatment of the 4 patients of each group were evaluated. Primary symptoms necessitating the initial referral were recorded.

Patients with more than 20 eosinophils per HPF were diagnosed with EE. Eosinophilic count between 5 and 19 eosinophils per HPF was considered IE. Secondary histologic findings like basal cell hyperplasia or elongation of reti papillae were not crucial for diagnosis. Other diagnostic tests such as blood work and 24-hour pH probes were performed uniformly on all patients in our series.

2. Results

2.1. Demographic data

Eight patients with TEF repair as neonates were included. Four had EE and 4 had IE based on the aforementioned classification. Male dominance was seen in both groups (75%). The ethnic background was predominantly Caucasian in both groups. The median age at diagnosis was 9.7 years (range, 4-13.4 years) vs 11.3 years (range, 8.6-15.9 years) for the EE and IE groups, respectively (Table 1). Interestingly, 1 in 4 patients had pure esophageal atresia (TEF anomaly type 1) in both groups. Fifty percent of EE patients had a history of prematurity compared with only 1 patient in the IE group. Associated anomalies included the full spectrum of the VACTERL syndrome. The IE group had more associated malformations than the EE group.

Table 1 Differences between EE and IE

		EE	IE
Median age at diagnosis of EE/IE (range)		9 y 8 mo (4 y-13 y 4 mo)	11 y 2 mo (8 y 7 mo-15 y 10 mo)
History:	Environmental/ seasonal allergies	75%	25%
	Food allergies	75%	0%
Family history:	Food allergies	0%	50%
Endoscopy:	Difficulty passing endoscope	50%	0%
Blood work:	Eosinophilia	100%	33%
	Eosinophilic count 0.5-1/>1	75%/25%	0%/100%

Table represents a selection of the most significant results.

2.2. Presenting symptoms

Dysphagia was universal in both groups. Dysphagia to solids was seen in 75% of cases. Vomiting was a predominant symptom in 50% of the patients in the EE group, whereas only 1 patient in the IE group had significant vomiting. In both groups, failure to thrive was present in 25% of the patients. Chest pain was more often found in the IE group (EE, 25%; IE, 50%). Constipation and epigastric pain were only present in the IE group (50% and 25%, respectively).

Virtually all patients of either group had an atopic condition. Asthma was found in 75% of the patients of both groups, whereas environmental and seasonal allergies were predominant in the EE group (75% and 25%). One patient in the EE group had eczema. Interestingly, food allergies were exclusively seen in the EE group (75%). Furthermore, all patients had GERD as an infant or later. Strictures necessitating dilation were present in 50% of the EE patients vs 25% of the IE patients. A family history of atopy was present universally. Family history of food allergies was not demonstrated in any of the patients in the EE group, whereas such a history was present in 50% of the IE group (Table 1).

2.3. Diagnostic considerations

Anemia was observed in 50% of the EE group compared with 25% of the IE group. Interestingly, a peripheral eosinophilia was found in all patients of the EE group, with an eosinophilic count of 0.5 to 1 in 3 patients and >1 in 1 patient. One patient of the IE group had a peripheral eosinophilia with a total eosinophilic count of >1.