Eosinophilic esophagitis (EE) has been recognized as a distinct entity over the last few years. It has a prevalence of 4.3 per 10,000 children and an incidence of 1 in 10,000 as determined by a recent study done in Ohio. In another study done in Australia the prevalence in children was found to be 0.9 per 10,000. Both of the studies found a predominance of males in the affected patients and familial clustering. Affected children commonly have nausea, vomiting, dysphagia, abdominal pain and fail to thrive. Occasional children may complain of food impaction or sticking of food after swallowing. A significant number of patients have a family history of atopy, allergic rhinitis, asthma, and food allergies.

Endoscopic findings of the esophagus in patients who are diagnosed with EE have shown several patterns which include mucosal rings, linear furrows, strictures, exudates, edema and a narrowed lumen. These appearances have been variably described as “feline esophagus”, crepe paper mucosa, and a small caliber esophagus. Thus, at endoscopy, the esophageal appearance may be suggestive of EE. However, a few of the patients may present with a normal endoscopic appearance. Therefore, biopsy and histopathological confirmation is essential in making the diagnosis.

Pathological examination for confirmation of the clinical suspicion is best done by obtaining mucosal biopsies of the esophagus from the upper or mid-esophagus. Normal esophageal mucosa lacks any eosinophilic infiltrates. In reflux disease, there is an infiltration of the squamous mucosa by a few eosinophils that is most pronounced in distal esophagus. In many instances such eosinophilic infiltration is less than 10 eosinophils per high power field (hpf). In EE on the other hand, the squamous mucosa shows abundant eosinophils that frequently shows more than 30-40 eosinophils/hpf. This distribution of eosinophils is not uniform and occurs as patchy infiltrates. Therefore, obtaining a single fragment of tissue may potentially miss the lesion. Four or more mucosal fragments may be ideal for satisfactory assessment of the histology. Many investigators believe that an eosinophilic infiltration of greater than 20/hpf is diagnostic of EE. Not uncommonly there is clustering of eosinophils in the superficial layers of the mucosa that appears as microabscesses. Other histological features that may be seen in EE include intercellular edema of the squamous epithelium, epithelial hyperplasia and degranulation of eosinophils.

Skin prick testing for food allergens is frequently positive in children who have EE. In an often cited study, 73% of the tested patients had a positive skin prick test and 81% of the tested patients had a positive patch test. Dietary allergens are one of the most commonly found triggers in the pathogenesis of EE. Thus, food allergen testing can provide a basis for diet modification by avoiding intake of offending foods. The peripheral blood only infrequently shows eosinophilia and elevation of serum IgE levels. Currently, there are no laboratory tests other than the histological examination that can identify patients with EE.

Recently investigators found that the gene EOTAXIN-3 which encodes for a chemoattractant of eosinophils, was highly conserved and induced in the EE patients. Mice deficient in the eotaxin receptor protein were protected from experimental EE.
Thus, a genetic predisposition probably exists for the development of EE in certain individuals who have certain abnormalities in the EOTAXIN gene signal transduction pathway. Other mediators of inflammation such as interleukin 3, 13 and 14 have also been implicated in the pathogenesis of EE.

The main differential diagnostic consideration for EE is gastroesophageal reflux disease (GERD). The histological changes of EE and GERD show some overlap such as epithelial hyperplasia, intercellular edema and eosinophil infiltration. The eosinophils are usually lesser in number in GERD but occasional cases may have higher numbers as well. Therefore, the final diagnosis should take into account the history, endoscopic appearance, esophageal pH recording result, allergen skin test result and histological appearance of the esophageal mucosa. The treatment of GERD is different from that of EE. Other differential diagnostic considerations of the EE are Hypereosinophilic syndrome and eosinophilic gastroenteritis. Idiopathic hypereosinophilic syndrome is a disorder of eosinophils where the blood eosinophil counts are persistently elevated (>1500 cell/microliter) with no demonstrable etiology and evidence of organ involvement. The features of EE and eosinophilic gastroenteritis (EGE) overlap so much that several investigators regard EE to be a subtype of EGE. Patients with EGE have similar gastrointestinal symptoms as EE patients, show eosinophilia and positive skin tests to food allergens. While EGE may show involvement of stomach, intestines and esophagus, EE is limited to esophagus.

The treatment options of EE include diet modification by avoiding offending foods, corticosteroids, inhibitors of leukotriene receptors such as Montelukast. Although there are no prospective control studies showing the natural course of the disease in children, several retrospective studies did not show any life-threatening complications from EE. Many children show good response to appropriate treatment; but, few cases may have relapse of symptoms.

In summary, EE is an inflammatory disease that is being increasingly diagnosed in children and that is distinct from GERD. Although endoscopic studies can suggest its diagnosis, histological examination of the esophageal mucosa, ideally away from lower esophagus, is essential to confirm the diagnosis of EE. The absence of any distinctive symptoms or signs calls for active consideration of this diagnosis in patients who are not responding to the usual treatment for GERD, have a history of allergies or have a positive family history. The histological appearance of the esophageal mucosa in the classic cases may be distinctive in that there are numerous intraepithelial eosinophils (>40 eosinophils/hpf) with superficial clustering.