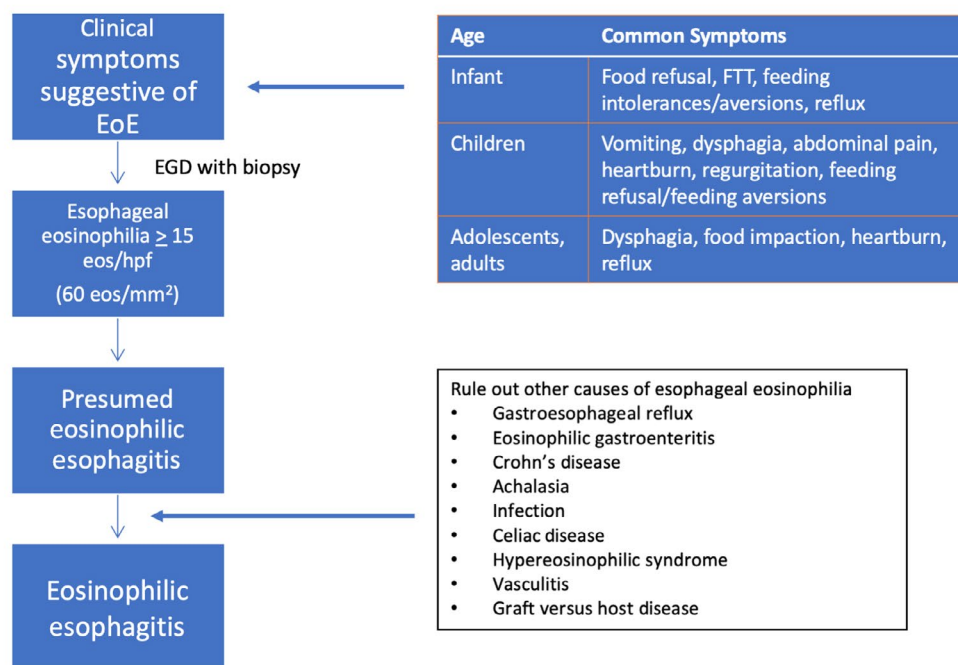


Diagnosis and treatment of eosinophilic esophagitis in children

Eosinophilic esophagitis (EoE) is a chronic allergic inflammatory disorder, almost always related to food antigens, in which isolated mucosal esophageal infiltration of eosinophils, mast cells, and basophils leads to esophageal dysfunction.^{1,2} The goal of this brief review is to discuss a potential diagnosis and treatment options in pediatrics. Multiple symptoms have been associated with EoE and often vary with age.^{3,4} Infants often present with vomiting, feeding disorders, and failure to thrive. School-aged children typically present with vomiting, epigastric abdominal pain, and other symptoms of gastroesophageal reflux. Currently, adults typically present with dysphagia, of variable severity, esophageal narrowing, and food impaction are typical symptoms. Reflux symptoms (heartburn) may

occur but are not typical. Unlike adults, dysphagia is not typically associated with esophageal narrowing in pediatrics. This broad range of symptoms means that physicians need to maintain a high index of suspicion of EoE in patients with chronic esophageal symptoms. This is especially true for patients who have underlying atopic conditions such as asthma, allergic rhinitis, IgE-mediated food allergy, and atopic dermatitis as these disorders more commonly seen in EoE than the general population. Example of chronic esophageal dysfunction includes failure to thrive associated with feeding problems, chronic reflux requiring H2 blockers or proton pump inhibitor (PPI) therapy, dysphagia leading to compensatory slow eating or drinking a lot of fluids, and food impaction necessitating removal.

Diagnostic algorithm for diagnosis of eosinophilic esophagitis*



Eos-eosinophils; hpf-high power field; EoE-Eosinophilic Esophagitis; EGD-Esophagogastroduodenoscopy; FTT-Failure to thrive

*Based on Spergel, et al. Ann Allergy Asthma Immunol 2018 Sep;121(3):281-284; Dellon et al Gastroenterology. 2018 Oct;155(4):1022-1033

FIGURE 1 Diagnostic algorithm for diagnosis of eosinophilic esophagitis*

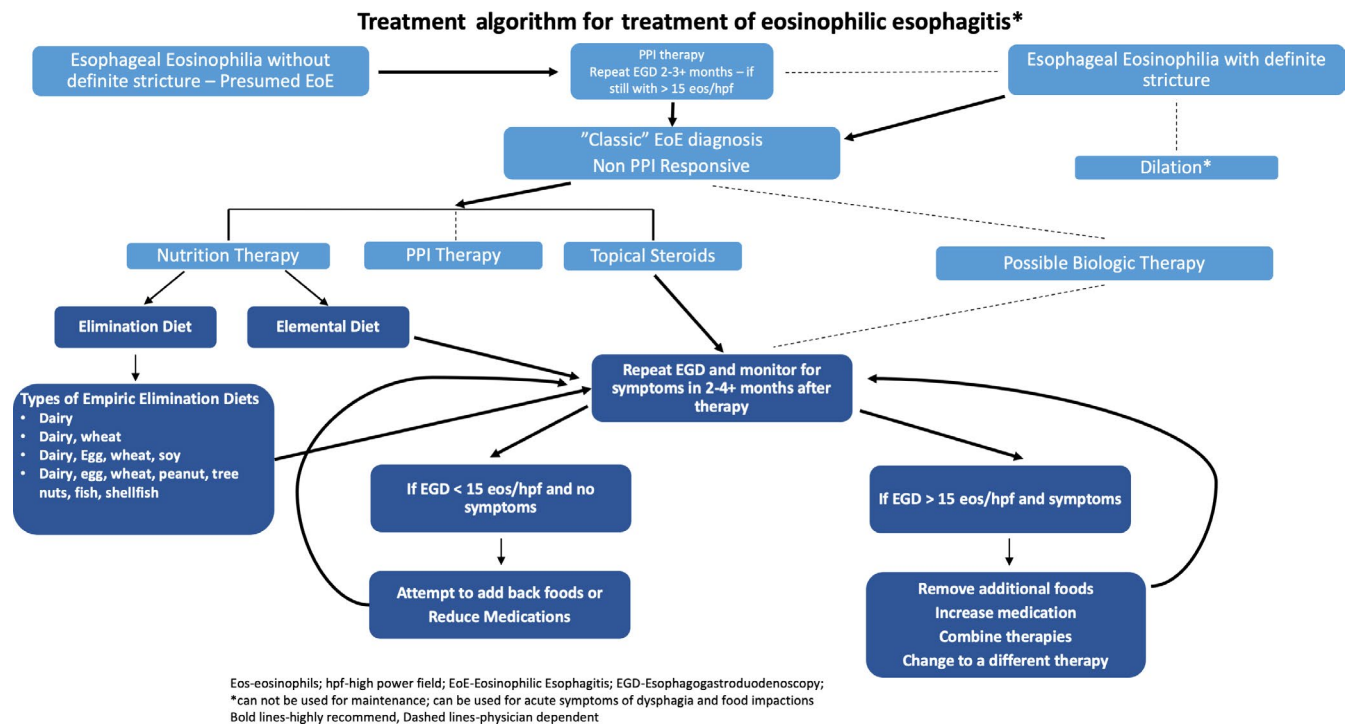


FIGURE 2 Treatment algorithm for treatment of eosinophilic esophagitis*

The diagnosis of EoE is only made via upper endoscopy with biopsy. At least 4-6 biopsies of the esophagus are required to ensure adequate sensitivity for EoE detection. Visual findings on endoscopy, that are not pathognomonic, include furrowing, narrowing, rings and white plaques. The mucosa may also appear normal. Biopsies may then demonstrate esophageal eosinophilia. If there are greater than or equal to 15 eosinophils per high powered field, EoE is a strong possibility. Other causes of esophageal eosinophilia, presented in Figure 1, must be excluded. As noted in Figure 1, initial diagnostic considerations include a decision to use PPI therapy before or after an initial endoscopy and a decision to utilize esophageal dilation (in patients with esophageal strictures). Original guidelines required initial PPI therapy for all patients.^{1,2} However, a recent article of international physicians suggested in some cases (esophageal strictures and severe mucosal disease) that the initial use of PPI therapy may not be required.⁵ In most cases, we continue to strongly suggest the initial use of PPI therapy (1-2 mg/kg; maximum 30 mg dose) whenever possible to rule out reflux (solid line represents strong suggestions; dotted lines decisions left to the treating physician). In pediatrics, reflux presents very similar fashion to EoE; therefore, we start with a PPI to rule out GERD in this population. It is also interesting to note that PPIs have some anti-inflammatory property of their own.

Once the diagnosis of EoE is established, there are two main therapeutic approaches: dietary therapy or swallowed topical steroids (biologic therapy may be available in the future; Figure 2). Choosing between these therapies is dependent on lifestyle, quality of life, and capability to comply. Dietary restriction, or complete elimination, has been shown to be effective in both children and adults,

and is often the first choice in young children.⁶ Older children, adolescents, and adults often choose swallowed topical steroids due to social consequences of restricted diet and quality of life issues.

When selecting diet therapy, there are multiple types of diets that could be utilized. The range of restricted diets include single food elimination (most often dairy or wheat); multiple food elimination; or partial or strict use of amino acid-based formulas (see Figure 2).⁷ In contrast, using a swallowed topical steroid preparation (fluticasone or budesonide) often allows patients to have a much more liberal diet. The topical steroid needs to be given without food, and after administration, nothing should be ingested or rinsed in the mouth for 30 minutes. The side effects of topical steroids include growth suppression and esophageal candida.

Because EoE is not only a chronic disease but also a disease where clinical symptoms do not always correlate with histologic findings, whenever a therapy is started or changed, an endoscopy with biopsy must be performed approximately 3-4 months later. Finally, because of co-morbid disorders and dietary changes consultations with an allergist and dietician need to be included. Finally, because of co-morbid disorders and dietary changes, patients should be co-managed with allergists, gastroenterologists, and nutritionists.

CONFLICT OF INTEREST

The authors have no conflict of interest.

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