EOSINOPHILIC GASTROENTERITIS – A CASE REPORT OF 15 A YEAR-OLD BOY

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Abstract

Eosinophilic gastroenteritis (EGE) is a rare condition characterized by eosinophilic infiltration into the gastrointestinal tract. Symptoms are often non-specific and gastrointestinal in nature, such as nausea, vomiting, abdominal pain, diarrhea, weight loss, and malabsorption. Diagnosis is primarily based on clinical findings, laboratory tests, imaging, and histopathological examination through endoscopic biopsy. Treatment involves corticosteroids, proton pump inhibitors (PPIs), and dietary modifications. This article presents the case of a 15-year-old male diagnosed with eosinophilic gastroenteritis with a history of cow's milk allergy. The patient was treated with systematic corticosteroids (1mg/kg/24h), PPIs (esomeprazole 40mg/day) and elimination dietary therapy (peptide-based formula), resulting in positive clinical outcome. Through this case, we emphasize the importance of early diagnosis and appropriate management in handling this rare disorder.

Keywords: allergic diseases, corticosteroids, Eosinophilic gastroenteritis, gastrointestinal disorders

1. Introduction

Eosinophilic gastroenteritis is a rare gastrointestinal disorder, with an incidence of 1 to 30 cases per 100,000 individuals (Chen et al., 2003). The condition is often associated with hypersensitivity immune responses and can occur at any age but is more prominent in adults. The hallmark of the disease is eosinophilic infiltration into the gastrointestinal tract, leading to mucosal damage and impaired digestive function (Chen et al., 2021).

In children, clinical symptoms vary based on age and gastrointestinal damage. Therefore, there is yet to be a gold standard for diagnosis (Sasaki et al., 2020). Diagnosis is usually made based on gastrointestinal symptoms, presence of eosinophil in endoscopic biopsy and exclusion of other causes for eosinophilia, such as parasitic infections, autoimmune diseases, or drug reactions. Treatment typically involves corticosteroids to reduce inflammation, along with dietary modifications to eliminate allergenic triggers. Early diagnosis and appropriate treatment can significantly improve the prognosis of affected patients (Higuchi et al., 2022).

2. Case report

2.1 Patient Information

A 15-year-old male hospitalized due to abdominal pain and frequent vomiting. Other notable symptoms include nausea and diarrhea.

One week before admission, the patient developed intermittent periumbilical pain, accompanied by frequent vomiting, vomiting of greenish gastric content and watery diarrhea (2-3 times per day). The family attempted probiotic therapy at home, but symptoms persisted.

2.2 Clinical Examination

Alert, mild signs of dehydration.

Abdominal distension, tenderness in the epigastric region.

Watery, mucoid greenish stool, 2-3 times per day, without blood.

History of cow's milk allergy.

2.3 Laboratory Findings

Complete blood count: Markedly elevated eosinophils (13.12 G/L, 51.5%).

Serum IgE: 590IU/ml (elevated).

Abdominal ultrasound: 55mm of free fluid in the peritoneal cavity, thickened bowel loops.

OCB abdominal x-ray: normal.

Upper gastrointestinal endoscopy: Hemorrhagic gastritis at gastric fundus.

Colonoscopy: normal.

Histopathology: Eosinophilic infiltration, > 50 eosinophils per high-power field (HPF).

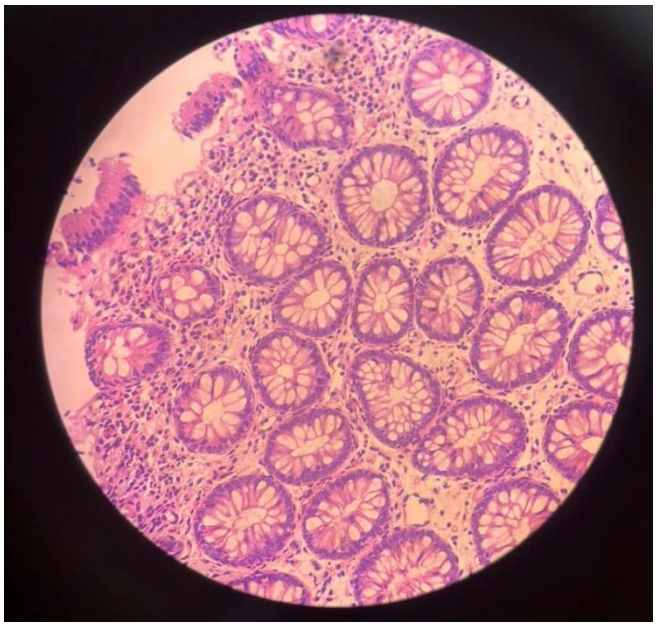

Figure 1. Patient's eosinophil infiltration at the lamina propria of the colonic mucosa (H&E stain, original magnification ×400).

Cardiac enzymes-Coagulation: normal.

Toxocara canis-Stool culture: negative.

2.4 Diagnosis

Eosinophilic gastroenteritis.

Food allergy (cow's milk).

2.5 Treatment

Corticosteroids: Solu-Medrol 1mg/kg/day for 5 days, followed by a tapering course over 6 weeks.

Proton pump inhibitor: Nexium 40mg/day for 4 weeks.

Dietary management: Complete elimination of cow's milk and dairy products.

2.6 Progression

After 5 days of corticosteroid therapy and dietary modifications, the patient showed significant improvement: cessation of vomiting, reduced abdominal pain, and gradual resolution of peritoneal fluid. The patient was discharged after two weeks in stable condition and scheduled for outpatient follow-up.

3. Discussion

Eosinophilic gastroenteritis (EGE) is a rare chronic inflammatory disorder affecting various segments of the gastrointestinal tract. It is characterized by the infiltration of a minimum of 30 eosinophils per high-power field (HPF) in at least five HPFs, often extending into the muscularis mucosa or submucosa, and exhibiting signs of eosinophilic degranulation (Angel et al., 2012). The exact pathogenesis remains unclear, though Th2-mediated immune responses and elevated cytokines such as IL-3, IL-5, and GM-CSF are implicated (Pineton de Chambrun et al., 2018).

Eosinophilic gastrointestinal disorders (EGIDs), including EGE, are increasingly recognized worldwide, though epidemiological data varies across regions. Incidence in the United States is estimated at 6-8 per 100,000 with a male predominance (3:2) (Jensen et al., 2016). In contrast, Asian data remain limited but suggest a rising trend (Kinoshita et al., 2015). This case, in the Vietnamese pediatric population, contributes to the literature from underrepresented regions.

Clinical presentation depends on the affected GI segment. Gastric or colonic involvement commonly causes abdominal pain, nausea, vomiting, dyspepsia, and diarrhea. Duodenal involvement may result in malabsorption and protein-losing enteropathy. When infiltration extends to the muscularis layer, complications such as strictures, obstruction, or even perforation can occur (Koutri et al., 2018). Our patient presented with abdominal pain, greenish vomiting, and diarrhea, accompanied by ultrasound findings of bowel wall thickening and peritoneal fluid—signs consistent with gastric obstruction.

The role of hypersensitivity, particularly food allergy, is significant in EGE. Both IgE- and non-IgE-mediated mechanisms are involved. The current patient's elevated eosinophil count and high serum IgE (>560 IU/ml), coupled with a clear clinical history of cow's milk allergy and past drug allergies, suggest an allergic etiology. Importantly,

clinical improvement following dietary elimination and corticosteroid therapy reinforces this hypothesis.

The patient fulfilled the three widely accepted diagnostic criteria proposed by Licari et al. (2020): gastrointestinal symptoms, histopathologic eosinophilic infiltration, and exclusion of secondary causes (e.g., parasitic infections, IBD, malignancy, HES).

In terms of treatment, corticosteroids remain first-line and are effective in most cases, typically at 0.5-1mg/kg/day. They act by suppressing Th2 cytokines and eosinophil growth factors such as IL-5 and GM-CSF (D'Auria et al., 2018). In this case, symptoms improved significantly within 5 days of steroid therapy. PPI use may also help reduce inflammation. Though the role of elimination diets remains debated, they may serve as adjuvant therapy in food allergy–associated cases or refractory disease.

In comparison, a pediatric case series from Children's Hospital No. 2 (Vo, 2024) reported 25 cases of EGE from 2018 to 2024. Sixty-eight percent were male, most over 6 years old. Abdominal pain (84%), vomiting (72%), and diarrhea (52%) were common, and 80% had peripheral eosinophilia. Histological analysis revealed mucosal involvement in 72% of cases, and the most affected areas were the ileum (72%) and colon (56%), with average eosinophil counts of 257/HPF in the ileum and 92/HPF in the colon. These findings mirror our case, particularly with colonic involvement and eosinophilic infiltration.

4. Conclusion

This case of a 15-year-old patient illustrates a typical presentation of EGE associated with food allergies. Diagnosis was confirmed through clinical assessment, laboratory findings, and histopathology. Treatment with corticosteroids and dietary modifications led to significant symptom resolution. Long-term follow-up is necessary to prevent recurrence and assess treatment response.

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