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Eosinophilic Duodenitis: A Case Report on Rare Disorder

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Abstract: ***Eosinophilic duodenitis (EoD) is a digestive disorder in adults that is characterized by eosinophilic infiltration in the stomach and intestine. The underlying molecular mechanisms predisposing to this disease are unknown, but it seems that hypersensitivity response plays a major role in its pathogenesis, as many patients have a history of seasonal allergies, food sensitivities, asthma, and eczema. Symptoms and clinical presentations vary, depending on the site and layer of the gastrointestinal wall infiltrated by eosinophils. Laboratory results and endoscopy can provide important diagnostic evidence for EoD; however, the cornerstone of the diagnosis remains the histological examination of gastric and duodenal specimens for evidence of eosinophilic infiltration (>20 eosinophils per high-power field), and finally clinicians make the diagnosis in correlation with and by exclusion of other disorders associated with eosinophilic infiltration.***

Keywords: Eosinophilic duodenitis (EoD), Eosinophilic gastroenteritis (EGE), Eosinophilic infiltration

1. Introduction

Eosinophilic gastroenteritis (EGE) is an inflammatory disorder of the gastrointestinal tract characterized by eosinophilic infiltration of the bowel wall, with the stomach and small intestine being the most commonly affected areas. Because the symptoms are very similar to other GI disorders, Eosinophilic duodenitis (EoD) has been often underdiagnosed and thus considered a rare disorder "(1)". The diagnostic criteria include demonstration of eosinophilic infiltration of bowel wall, lack of evidence of extra intestinal disease and absence of other causes of intestinal eosinophilia by history, laboratory evaluation and other testing. "(2)". Diagnosis requires a high index of suspicion and exclusion of various disorders that are associated with peripheral eosinophilia. Kajiser first described EGE in 1937 and since then about 300 cases have been reported in the literature. Its prevalence in the US is estimated to range from 8.4 to 28 cases per 100, 000 people and it can occur at any age from infancy to the seventh decade, but it typically peaks between the third and fifth decade of life.

In the disease according to the anatomical location of eosinophilic infiltration in the different layers of the intestinal wall into three subtypes: mucosal, muscular and serosal. Mucosal EoD is the most common variety, seen in about 57% to 100% of cases. The serosal type is the least common, with an estimated prevalence of 4.5%–9% in Japan and 13% in the US" (1)". An electronic survey sent to North American Allergists and Pediatric Gastroenterologists indicate prevalence for EGE of 22–28 per 100, 000 persons. Although no large longitudinal study has been performed, EGE is largely understood to be a chronic disease with few remissions after the first year" (3)"

Etiology is unclear, but an allergic component is highly suggested based on epidemiological and clinical features. Symptoms vary based on the location, extent and depth of involvement of the gastrointestinal tract. The most common symptoms of eosinophilic mucosal infiltration are abdominal pain, nausea, early satiety, vomiting, diarrhea and weight loss. Involvement of the muscular layer results in wall thickening and affects mobility, so patients may present with symptoms of intestinal obstruction. Patients with subserosal type of EoD usually present with as cites, either isolated or with symptoms of mucosal or muscular EoD" (4"). Currently, eosinophilic duodenitis (EoD) are defined pathologically, virtually, and exclusively by endoscopically obtained mucosal biopsies necessitating greater understanding of the role of eosinophils in GI mucosal health and disease However, as our understanding of the disease is evolving, its prevalence is expected to increase.

2. Case Report

A 63-year-old woman, with past medical history of diabetes mellitus type II, presented to the gastroenterology OPD with abdominal pain, nausea and diarrhea that started few weeks prior to presentation. Abdominal pain was generalized without radiation. No alleviating or aggravating factors were noted. She had frequent, watery to loose, non-bloody bowel movements. Patient had no fever, chills, skin rashes or joint pains. She denied any recent travel, sick contact or antibiotics use prior to onset of symptoms. Patient did not use tobacco, alcohol or illicit drugs. No family history of similar symptoms. Patient was admitted to the hospital for further management.

On physical examination, pallor present. There was no palpable organomegaly. Physical examination of heart, chest and extremities were normal. Lab workup revealed peripheral eosinophilia; total white blood cells were 7800 cells/μL with 28% eosinophils. Hemoglobin level was low (9.7 g/dL). Kidney function, electrolytes and liver function tests were within normal limits. Evaluation for eosinophilia included a peripheral blood smear that showed an increased

number of mature eosinophils and no evidence of atypical cells or blasts. Microscopic testing for stool ova and parasites was negative. All patient's medications were reviewed, and the possibility of drug-induced eosinophilia was excluded. Patient underwent duodenoscopy, mucosal biopsies were obtained from the duodenum showed erythema of the duodenal mucosa.

Histological exam revealed eosinophilic-predominant mucosal inflammatory infiltrates in a biopsied specimens as shown in Figure 1 and 2. Helicobacter Pylori was negative. No villous abnormality, cryptitis, increase in intraepithelial lymphocytes and parasites were identified. Diagnosis of eosinophilic duodenitis was made.

3. Discussion

This is a case of a 63-year-old woman who suffered from multiple gastrointestinal symptoms including nausea, abdominal pain and diarrhea, which are commonly encountered in the healthcare setting. She presented to the hospital few times and was hospitalized without identifying the underlying diagnosis, and had no relief of her symptoms. Upper endoscopy with biopsies confirmed the diagnosis of Eosinophilic duodenitis (mucosal type), based on histopathologic findings of abundant eosinophils in the duodenal mucosa. Laboratory results, and endoscopy can provide important diagnostic evidence for Eosinophilic duodenitis; however, the cornerstone of the diagnosis remains the histological examination of duodenal specimens for evidence of eosinophilic infiltration (>20 eosinophils per high-power field), and finally clinicians make the diagnosis in correlation with and by exclusion of other disorders associated with eosinophilic infiltration" (1)". There are many underlying diseases associated with gastrointestinal (GI) mucosal eosinophilia such as Food allergy, Inflammatory bowel disease, parasitic infections, drug reactions, systemic mastocytosis, vasculitis e. g., eosinophilic granulomatosis with vasculitis (Churg-Strauss syndrome), granulomatosis with polyangiitis, microscopic polyangiitis, connective tissue disease (e. g., systemic sclerosis), hypereosinophilic syndrome, celiac disease and organ transplant" (5) ".

Currently, the only etiology that can be identified histologically is parasitic infestation, if a portion of an invasive parasite is found in mucosal biopsies. Defining risk factors for the development of EoD is key to understanding the epidemiology of eosinophilic disorders of the gastrointestinal tract and ultimately prevent the manifestation of these conditions. Data for EoD is very limited, but risk factors have been studied for eosinophilic duodenitis that can overlap with more distal gut eosinophilia. A negative correlation has been shown between population density and risk of EoD when rural and urban areas were compared to metropolitan areas. In addition, cold climate zones are associated with increasing odds of EoD compared with tropical and arid zones " (6) ". In conclusion the pathogenesis of EGE is complex, as many factors can trigger eosinophil load in the GI tract, consequently leading to a difficult diagnosis and to an empirical and unsystematic therapeutic approach to treat it.

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Figures:

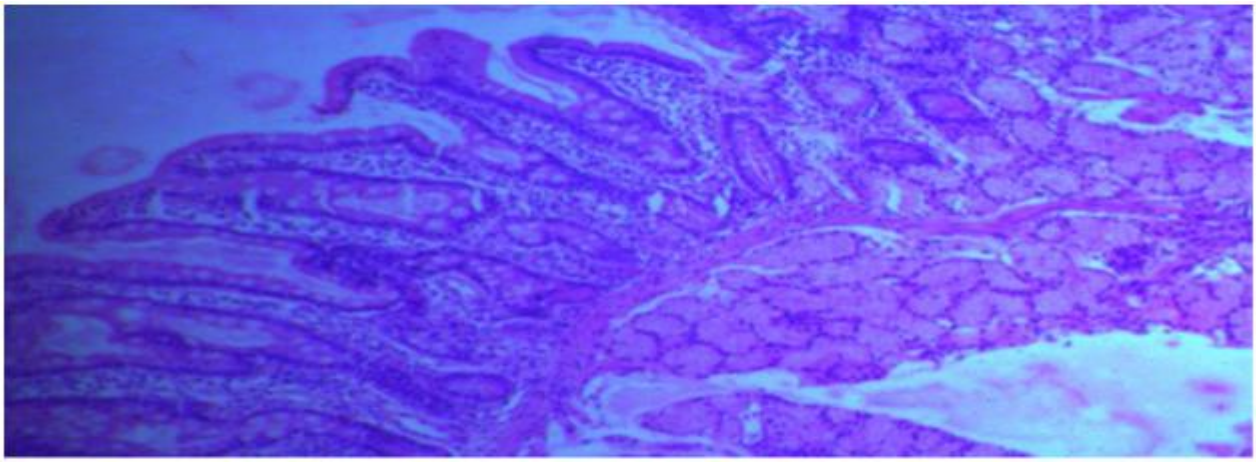

Figure 1: Photomicrograph showing normal villous to crypt ratio and lamina propria infiltrated by inflammatory cells (H&E, 200X)

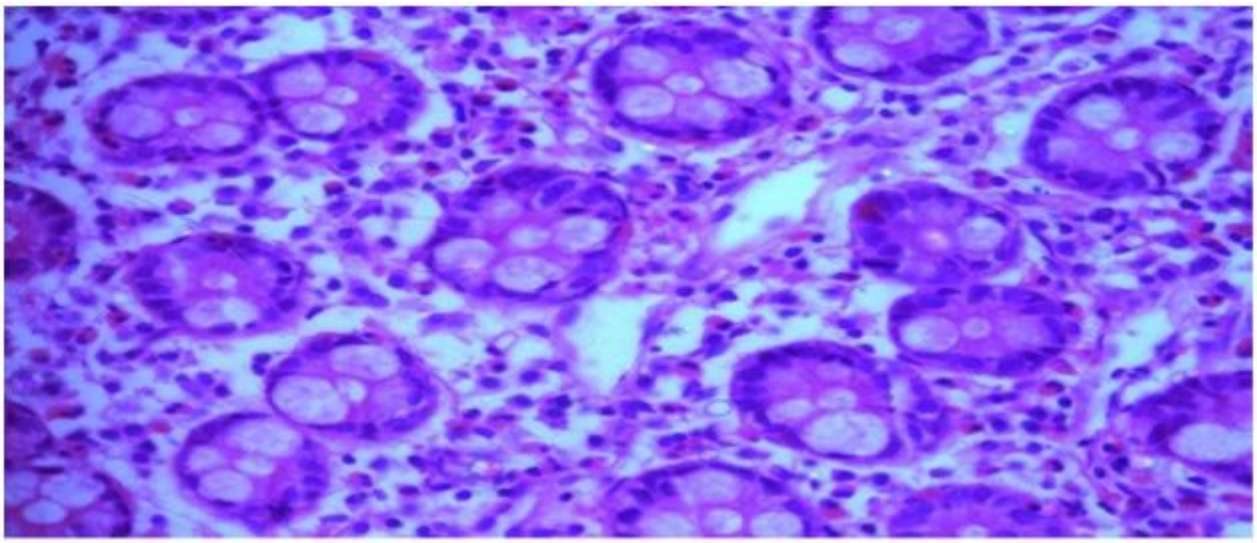

Figure 2: Photomicrograph showing Eosinophilic duodenitis revealed dense eosinophilic infiltrate in the lamina propria (H&E, 400X).