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Case Report

Eosinophilic Gastrointestinal Disorders: Unravelling the Complexities of a Rare Entity

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ABSTRACT

Eosinophilic ascites is a rare manifestation of serosal eosinophilic gastrointestinal disease. We present case of a 61-year-old female k/c/o Hypothyroidism who presented with eosinophilic ascites and was managed with tapering doses of steroids. Awareness of the condition, timely diagnosis, and early treatment carries excellent responses. This case highlights the importance of considering eosinophilic ascites in the differential diagnosis of unexplained ascites and underscores the need for a comprehensive diagnostic approach to identify the underlying cause.

Keywords: Eosinophilic Esophagitis, Eosinophilic Gastrointestinal Disease, Clinical Scenario, Eosinophilic ascites.

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INTRODUCTION

Eosinophilic Gastrointestinal Diseases (EGIDs) encompass a range of increasingly recognized disorders, including Eosinophilic Esophagitis (EoE), Eosinophilic Gastroenteritis (EGE), and Eosinophilic Colitis (EC).[1] These conditions are characterized by an abnormal accumulation of eosinophils in the gastrointestinal tract. Eosinophilic ascites is a particularly noteworthy manifestation, marked by the presence of an elevated number of eosinophils in the fluid that accumulates in the abdominal cavity, known as ascites.[2] While eosinophils are typically associated with allergic reactions and parasitic infections, their appearance in ascitic fluid suggests an underlying inflammatory process.[3] Diagnosing eosinophilic ascites typically involves analyzing fluid obtained through abdominal paracentesis. A significant eosinophil count in the fluid, usually exceeding 10% of total white blood cells, raises suspicion for eosinophilic ascites.[4] However, further investigations are often required to pinpoint the underlying cause. Despite advancements in understanding EGIDs, optimal diagnostic and management approaches remain insufficiently defined. Consequently, there persists a variability in clinical practice, the full extent of which has yet to be thoroughly examined. Thus, it's imperative to highlight rare manifestations like eosinophilic ascites to facilitate better recognition and management of EGID-related complications.

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CASE PRESENTATION

A 61-year-old woman with a medical history of Hypothyroidism presented with complaints of escalating abdominal distention and discomfort over the preceding fortnight. She reported experiencing diffuse abdominal pain, describing sensations of fullness and tightness, accompanied by mild nausea. Notably, she denied experiencing any notable weight fluctuations, fevers, chills, or alterations in bowel habits. Additionally, there was no prior history of atopy or reactive airway disease. Furthermore, she reported no recent travel or exposure to individuals with illnesses.

Upon examination, the patient's abdomen displayed noticeable distension and palpable tension, with dull percussion detected throughout all quadrants and positive shifting dullness. However, there were no signs of tenderness, rebound tenderness, or guarding. Bowel sounds were present but diminished, and no palpable masses or organ enlargement were observed. Initial blood investigations revealed a slightly elevated total white blood cell count of 11,120 (Neutrophils-56%, Lymphocytes-26%, Eosinophils-15%) and an absolute eosinophil count of 1740. Liver function tests, renal function tests, and thyroid profile results were all within normal ranges.

Peripheral blood smear analysis confirmed eosinophilia. Stool Ovo parasite testing yielded negative results, and serology for hepatitis-B, hepatitis-C and HIV came back non-reactive. Contrast-Enhanced Computed Tomography (CECT) of the abdomen and pelvis was conducted to rule out intra-abdominal pathologies, revealing moderate ascites without peritoneal

enhancement or thickening, along with mild diffuse wall thickening of ileal loops. A 2D echocardiogram showed no abnormalities. The ascitic fluid analysis showed eosinophils and negative for malignant cells and was sterile. CBNAAT for Tuberculosis was also found negative.

Upper gastrointestinal endoscopy (Figure 1) and colonoscopy findings (Figure 2) were unremarkable. However, duodenal biopsy indicated mild inflammatory infiltrate in the lamina propria, with scattered eosinophils. The patient was initially treated with intravenous hydrocortisone, followed by a switch to oral prednisolone at 1mg/kg, gradually tapered and discontinued over a period of 6 months. Remarkably, the patient responded positively to steroid therapy, with eosinophil counts returning to normal within 2 weeks. Six months after steroid cessation, follow-up ultrasonography demonstrated complete resolution of ascites. Even after 2 years post-therapy completion, the patient remains asymptomatic.

DISCUSSION

Eosinophilic gastrointestinal disorder represents a rare and diverse spectrum of conditions, comprising eosinophilic esophagitis, eosinophilic gastroenteritis, and eosinophilic colitis. These disorders are characterized by the infiltration of eosinophils into the mucosa of the gastrointestinal tract, leading to inflammation, despite the absence of clear causes of eosinophilia such as drug reactions, parasitic infections, or malignancy. This disorder can manifest in three primary subtypes: the mucosal variety, which accounts for approximately 70% of cases, typically presents with symptoms like diarrhea, melena, iron deficiency anemia, and protein-losing enteropathy. The muscularis variety, making up about 20% of cases, is characterized by symptoms of intestinal obstruction. The serosal variety, the least common at approximately 10%, is distinguished by peripheral eosinophilia and the presence of exudative ascites.[5] Given the rarity and heterogeneity of eosinophilic gastrointestinal disorders, diagnosing and managing these conditions pose significant challenges. Despite advancements, understanding of the underlying mechanisms and optimal treatment strategies remains limited. Top of Form

Uncommon clinical presentations of eosinophilic gastrointestinal disorders may include obstructive jaundice resulting from biliary tract involvement and extraintestinal manifestations such as hepatitis and splenitis. Recognizing these atypical presentations is vital for timely diagnosis and management. Eosinophilic ascites, while rare, necessitates consideration of various differential diagnoses, including parasitic infections like strongyloidiasis and Toxocara, abdominal tuberculosis, Churg-Strauss vasculitis, malignancies such as lymphoma and peritoneal metastasis, hyper eosinophilic syndrome, and chronic pancreatitis.[6] Maintaining a high index of suspicion is essential to guide appropriate diagnostic assessments. Diagnostic criteria for eosinophilic ascites encompass the presence of gastrointestinal symptoms, the absence of evidence of parasitic or extraintestinal manifestations, and findings from gastrointestinal tract biopsy revealing eosinophilic infiltration or characteristic radiological features, coupled with peripheral eosinophilia or the presence of eosinophilic ascites.[7] In cases where eosinophilic ascites is secondary to eosinophilic gastroenteritis, corticosteroids constitute the cornerstone of treatment. Administration of corticosteroids typically results in symptom resolution and normalization of eosinophilic ascites, emphasizing the efficacy of this therapeutic approach.[8]

In the presented case, the patient presented with distressing symptoms of abdominal fullness and tightness, indicative of a common clinical manifestation-ascites. However, upon examination, the abdomen was found to be distended and dull on percussion, a classic sign of ascites. Remarkably, further evaluation of the ascitic fluid revealed a notable elevation in eosinophils, signaling a distinctive serosal subtype within the spectrum of Eosinophilic Gastrointestinal Disorders (EGIDs). The infiltration of eosinophils into the Gastrointestinal (GI) tract is a hallmark histopathological feature observed in conditions like Eosinophilic Gastroenteritis (EGE). This infiltration is orchestrated by a cascade of TH2-dependent cytokines, contributing to the pathogenesis of the disorder. Despite advancements in our understanding, EGE remains an enigmatic GI disorder with an uncertain etiology. Compounded by the absence of a definitive diagnostic gold standard, EGE often faces delays in diagnosis or misdiagnosis.[9] Given the diagnostic challenges associated with EGE and other EGIDs, early recognition by physicians becomes

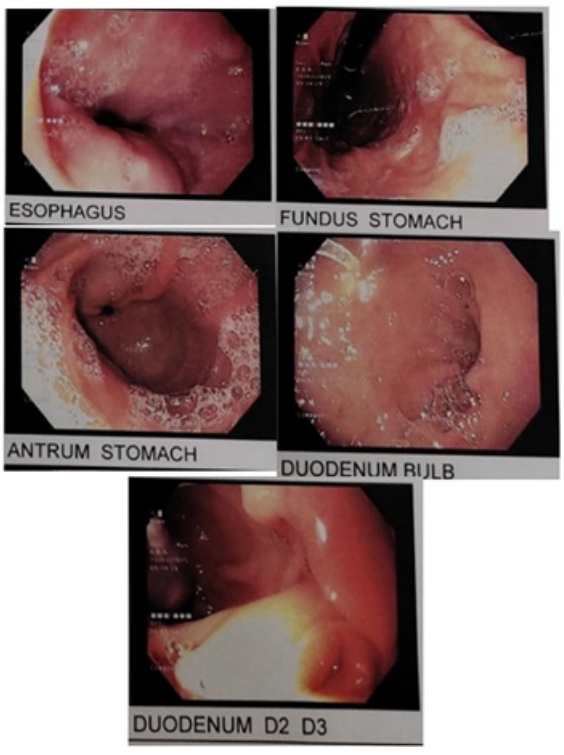

Figure 1: Upper GI endoscopy of the presented case.

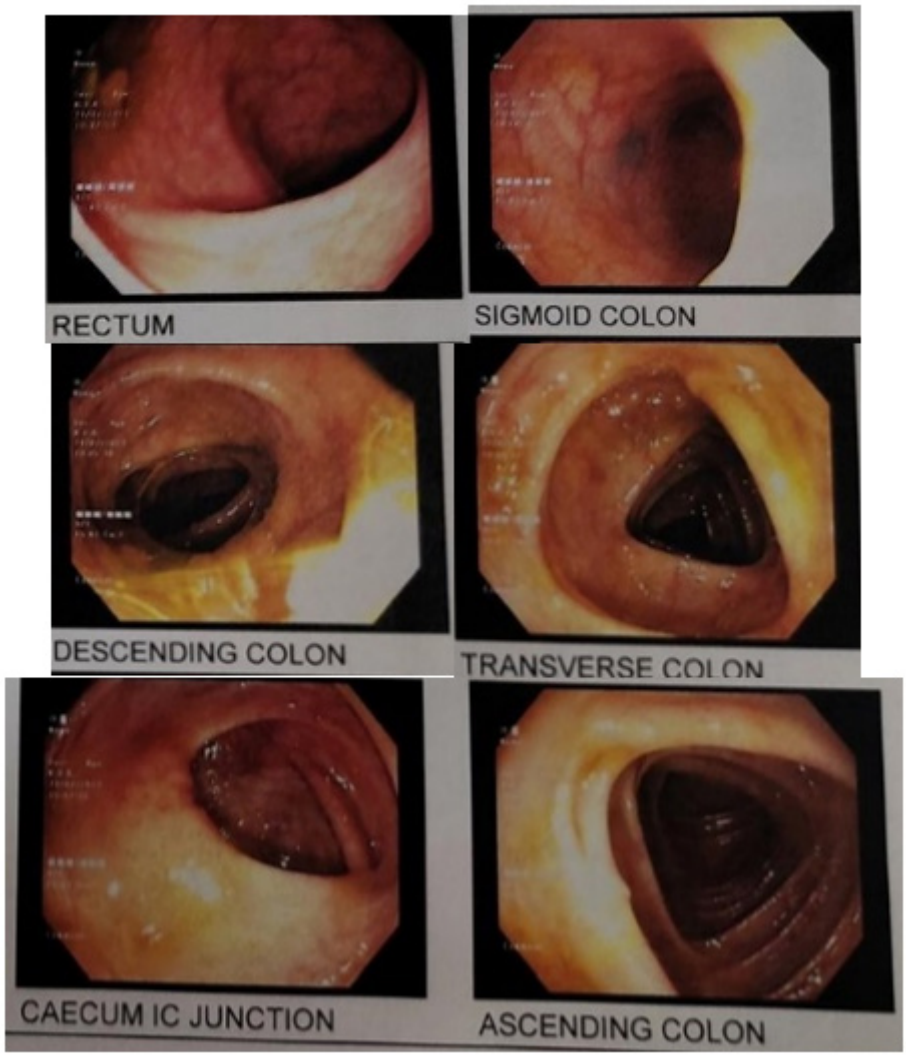

Figure 2: Colonoscopy of the patient.

paramount. Timely identification not only mitigates the potential for prolonged suffering but also paves the way for the development of tailored therapeutic interventions. Consequently, there's an urgent need for the establishment of effective therapeutic strategies tailored specifically for EGE and EGIDs to alleviate patient burden and enhance clinical outcomes.

CONCLUSION

Eosinophilic ascites, although infrequent in the context of eosinophilic gastroenteritis, demands careful diagnostic evaluation due to its potential for serious consequences if left untreated. The diagnostic process hinges on pathological analysis and the thorough exclusion of other causes of eosinophilia. This meticulous approach is imperative as steroids, the mainstay of treatment, have demonstrated high efficacy in resolving the condition. Failure to promptly diagnose and manage eosinophilic ascites can lead to the development of life-threatening complications. Therefore, it is crucial to allocate proper attention to identifying and addressing these rare presentations of eosinophilic gastroenteritis. Timely intervention not only ensures effective treatment but also mitigates the risk of severe outcomes, underscoring the importance of vigilant clinical assessment in such cases.

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ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The patient has been informed before publishing this work and written informed consent has been obtained prior to the publication.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

EGID: Eosinophilic Gastrointestinal Diseases; **EoE:** Eosinophilic Esophagitis; **EG:** Eosinophilic Gastroenteritis; **EC:** Eosinophilic Colitis; **CECT:** Contrast-Enhanced Computed Tomography; **CBNAAT:** Cartridge-Based Nucleic Acid Amplification Test.

SUMMARY

Eosinophilic Gastrointestinal Diseases (EGIDs), including Eosinophilic Esophagitis (EoE), gastroenteritis (EGE), and colitis (EC), are marked by abnormal eosinophil accumulation in the gastrointestinal tract. A rare manifestation is eosinophilic ascites, where elevated eosinophils are present in the abdominal fluid. Diagnosing eosinophilic ascites typically involves fluid analysis from abdominal paracentesis, where a significant eosinophil count suggests the condition. The case of a 61-year-old woman with hypothyroidism, presenting with abdominal distention and discomfort, highlights this condition. She exhibited notable abdominal distension, eosinophilia in blood tests, and moderate ascites on imaging. Fluid analysis revealed eosinophils without malignant cells or infection. Treatment with corticosteroids led to a resolution of symptoms and normalization of eosinophil counts, sustained for two years post-therapy. EGIDs, including EGE, involve eosinophilic infiltration in the GI tract, driven by TH2-dependent cytokines, leading to inflammation. Despite advancements, EGIDs' understanding and optimal management remain limited, requiring early recognition and tailored therapeutic interventions. Corticosteroids remain effective in resolving eosinophilic ascites, emphasizing the need for accurate diagnosis and timely treatment to prevent severe complications.

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