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Case Report

A case report of eosinophilic jejunal enteritis with spared stomach presenting as abdominal pain ☆

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ABSTRACT

Eosinophilic gastroenteritis (EoGE) is a group of infrequent conditions that arise from the accumulation of eosinophils in the gastrointestinal (GI) tract without any secondary causes of eosinophilia. Most cases of EoGE cases show involvement of different parts of the GI tract. Herein, we report a case of EoGE with the sole involvement of Jejunum. A 57-year-old male patient presented to our center with a chief complaint of acute abdominal pain. The patient had experienced chronic abdominal pain and intermittent diarrhea for several years, but he presented to the emergency department with severe acute flank pain. The patient was first diagnosed with renal stone and treated accordingly. However, the computed tomography (CT) scan also showed other incidental findings related to his chronic abdominal pain from several years ago, including mesenteric infiltration which shows fluid appearance in some areas, mild wall thickening, and mucosal edema of the duodenum and jejunal loops with normal appearance of the ileum. Complete blood count (CBC) showed increased eosinophil (15.5%) and decreased lymphocytes (13.1%) percent. Pathological examination of enteroscopy samples of jejunum showed a mild increase in the number of eosinophils in lamina propria. Neither parasites nor granuloma was detected. However, no such changes were found in other parts of the GI tracts. Based on pathological examination, the patient was diagnosed with eosinophilic enteritis of the jejunum. EoGE does not typically involve a specific part of the GI and generally affects both the stomach and intestine. This study reported the first case of EoGE where only the jejunal part of the intestine was involved and other parts of the GI tract were spared.

☆ Competing Interest: The authors declare that they have no financial or nonfinancial interests that are directly or indirectly related to the work submitted for publication.

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Introduction

Eosinophilic gastrointestinal diseases (EGIDs) are infrequent conditions that arise from the buildup of eosinophils in the gastrointestinal tract (GI), causing eosinophilic inflammation, gastrointestinal injury, and dysfunction, without any secondary causes of eosinophilia [1]. Based on the degree of eosinophilic infiltration, EGIDs are categorized as eosinophilic esophagitis (EoE), eosinophilic gastritis (EoG), eosinophilic gastroenteritis (EoGE), eosinophilic enteritis (EE), and eosinophilic colitis (EoC) [2,3]. EoGE, EoG, EE, and EoC are often included in the EoGE category because they are not distinctly differentiated in practice.

EoGE is considered to be a much less common disease than EoE, although it is more frequently reported in East Asia with a 5.5-fold higher incidence rate [4]. Recent studies in the US between 2012 and 2017 indicated a lower prevalence rate of EoGE (5.1/100,000) and EoC (2.1/100,000) [5].

EGIDs have gained recognition recently, but the true number of cases is hard to determine because it's often underdiagnosed. The stomach and small intestine are typically affected, but colonic involvement is less common. Symptoms are not specific, which can cause a delay in diagnosis [3]. In 1 study, 5.74% of patients with upper gastrointestinal symptoms had a missed diagnosis of EoGE [6]. Many patients are misdiagnosed with other conditions such as functional dyspepsia, irritable bowel syndrome, gastroesophageal reflux disease, or chronic gastritis [7]. Limited biopsy collections and failure to request tissue eosinophil counts contribute to the underdiagnosis of EoGE [8]. However, the endoscopic findings of EoGE, particularly small intestinal lesions, are mostly unknown, unlike EoE where specific endoscopic findings are well-known [9]. More importantly, in most EoGE cases stomach is affected and there are few cases where the stomach is spared. In this study, we report a case of EoGE with only eosinophilic jejunal enteritis and no involvement of other GI tract components.

Case presentation

A 57-year-old male patient presented to our center with a chief complaint of acute right flank pain. The patient had experienced chronic abdominal pain and intermittent diarrhea for several years, but he presented to the emergency department with severe acute abdominal pain. His past medical history was unremarkable except for the fact that his brother had lymphoma. Physical examination and vital signs were in the normal range. With susception of a ureteral stone, he was assessed with an abdominopelvic computed tomography (CT) scan without contrast, which showed left mild hydronephrosis due to a 5 mm proximal ureteral stone also soft tissue infiltration in para-aortic and mesentric suspected of lymphadenopathia is seen. The renal colic was symptomatically treated accordingly, and the pain was relieved. After that, the patient was assessed with a spiral abdominopelvic CT scan with and without intravenous (IV) and oral contrast, which showed other incidental findings related to his chronic abdominal pain from several years ago. Multiple mesenteric and

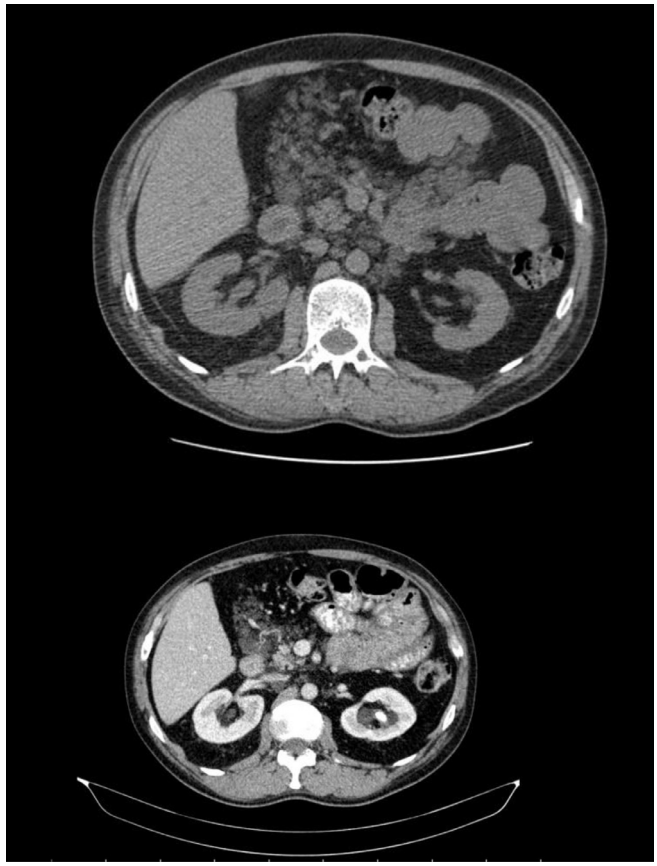

Fig. 1 – Abdominal CT scan with and without contrast shows jejunal wall thickening in left peritoneal cavity and increased wall thickness in the second part of duodenum also, infiltrative and hypodense lesions in mesentric root and para-aortic region in central retroperitoneum are seen.

para-aortic fat infiltration with ill-defined hypodense lesions which show fluid appearance in some areas were found at the central abdomen and left side. Moreover, bowel loops showed mild dilation, mild wall thickening, and mucosal edema of the duodenum and jejunal loops with normal appearance of the ileum also right para-cardiac fat infiltration with ill-defined hypodense lesions were noted (Figs. 1–3). Spiral chest CT scans with and without IV contrast also demonstrated right cardiophrenic fat infiltration (Fig. 4). Abdomen, neck, axillary, and inguinal ultrasound examination was performed and some small cystic lesions in the mesenteric fat of the left upper quadrant were depicted. No pathologic lymph nodes in the jugular, axillary, and inguinal areas were seen. Thus, the patient was referred to a gastroenterologist.

Complete blood count (CBC) showed increased eosinophil (15.5%) and decreased lymphocytes (13.1%) percent. Serum protein electrophoresis showed decreased albumin (2.2 g/dL, normal range: 3.5-4.8) and total protein (4.6 g/dL, normal range: 6-7.8). Inflammatory markers, such as ESR and CRP were in the normal range. Viral blood tests were negative for HIV, HBV, and HCV. Urine and stool exams were normal. Tumor markers including CA 15.3, CA 19.9, and CEA were negative. Stool calprotectin was 49 ng/mL (normal range < 50).

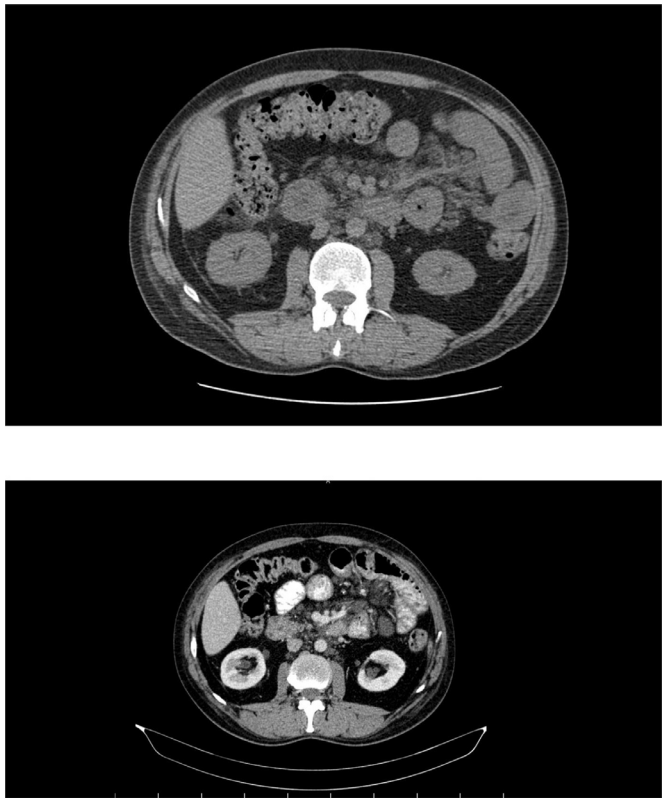

Fig. 2 – Thickened bowel wall in horizontal and ascending duodenum and jejunum in left side of peritoneal cavity with accompaniment of infiltrative and hypodens lesions in mesentric root.

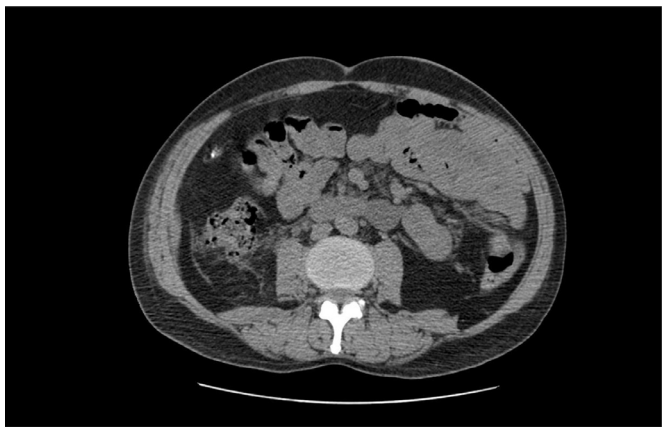

Fig. 3 – Multiple mesenteric and para-aortic fat infiltration with ill-defined hypodense lesions which show fluid appearance in some areas were found at the central abdomen and left side. Moreover, bowel loops showed mild dilation, mild wall thickening, and mucosal edema of the jejunal loops.

The patient was also investigated with endoscopy and enteroscopy under anesthesia. Endoscopy was normal. Enteroscopy showed near normal musoca with few small erosions in the jejunum. Sampling was conducted on both normal mucosa and mucosa with erosions.

Pathological examination of enteroscopy samples of jejunum showed a mild increase in the number of eosinophils in lamina propria. Neither parasites nor granuloma was detected. However, no such changes were found in other parts of the GI tract, including the stomach or duodenum. Based

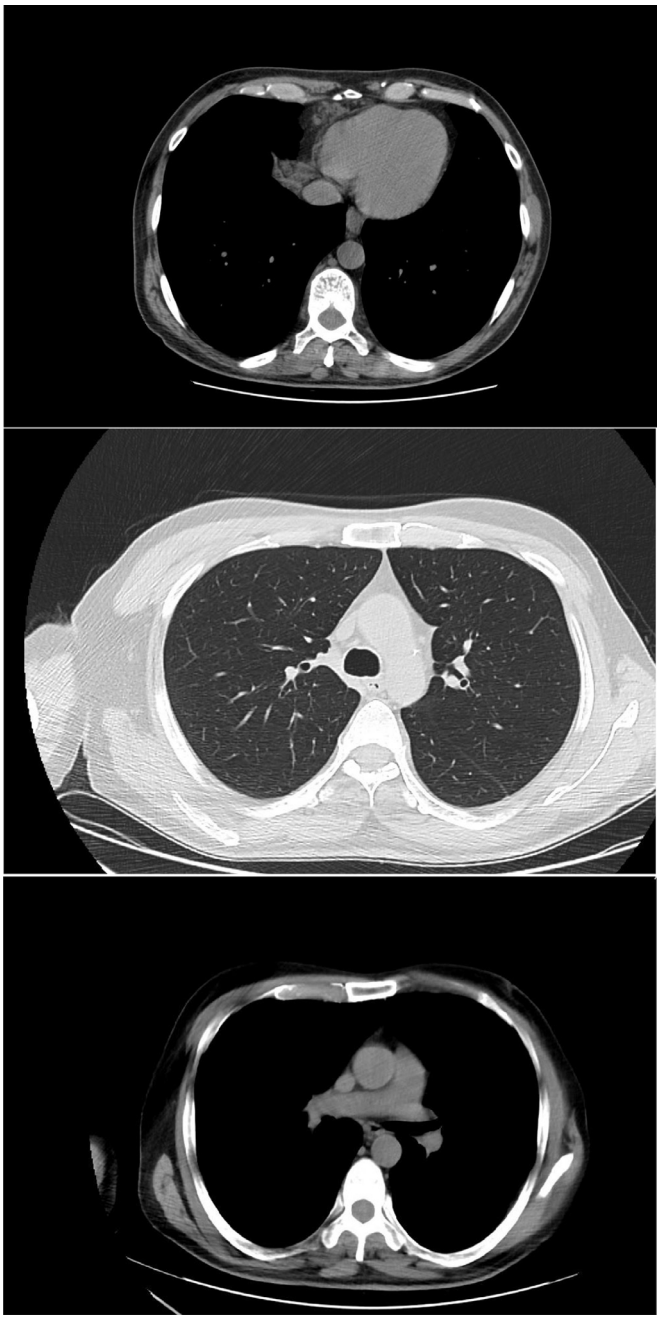

Fig. 4 – Chest CT scan demonstrates no abnormal findings except infiltrative and hypodense lesions in the right cardiophrenic angle.

on pathological examination, the patient was diagnosed with eosinophilic enteritis of the jejunum.

Discussion

EoGE is an uncommon disorder defined by eosinophilic infiltration of the GI tract. Its clinical manifestations are heterogeneous depending on the site and depth of the affected GI tract [10,11]. History of atopic conditions like asthma, allergic rhinitis, or atopic dermatitis is common in patients with EoGE [12,13]. However, our patient had no past medical or allergic history. As proposed by Klein et al. [11], EoGE is classified into 3 patterns, including mucosal pattern, muscular pattern, and serosal pattern. Although EoGE is classified into 3 patterns, in clinical practice it is not simple to find the exact layers involved since only mucosal and submucosal biopsies are taken in almost all cases and pathologic features often overlap. Similarly, in our patient, only mucosa was involved in pathology, but imaging showed findings indicative of simultaneous involvement of serosal areas.

Approximately two-thirds of patients with EoGE exhibit radiological findings that are varied and unspecific. Radiological findings in most EoGE patients are normal, and in cases where there is a predominantly mucosal pattern, nonspecific diffuse or local mucosal fold thickening is often observed [2]. Other manifestations in such cases may include polyps, ulcerations, and luminal narrowing, while patients with a predominantly muscular pattern may exhibit stenosis, obstruction, rigidity, and dysmotility. In predominantly serosal pattern cases, the presence of ascites is considered a characteristic feature. Radiological findings typically involve multiple layers of the GI wall and often coexist. In our case, a CT scan showed multiple mesenteric and para-aortic fat infiltration with ill-defined hypodense lesions which show fluid appearance in some areas found at the central abdomen and left side. Moreover, bowel loops showed mild dilation, mild wall thickening and mucosal edema of the duodenum and jejunal loops with normal appearance of ileum.

Regarding endoscopic features, several reports indicate that roughly half of the patients who underwent endoscopic exams had normal results [13,14]. The most common findings were in the stomach and duodenum and included mucosal erythema, although other signs such as mucosal hyperemia, thickening of folds, friability, areas of roughening, whitish specks, erosions, superficial ulcers, or nodularity may also be present. Some studies showed that eosinophilic infiltration could be found in biopsies taken from areas that looked normal on endoscopic exams or radiological findings but were absent in areas with the above-mentioned abnormalities [10,14]. This apparent discrepancy may be due to the fact that eosinophilic infiltration is patchy in nature, as previous studies have noted. Therefore, it is strongly recommended that multiple biopsies be taken from both abnormal and relatively normal-appearing mucosa, especially in the second part of the duodenum [2,12,15]. In our case, enteroscopy showed near normal musoca with few small erosions in the jejunum. Sampling was conducted on both normal mucosa and mucosa with erosions throughout the GI tract, but only the jejunal part of the GI tract was involved sparing other components, such as the stomach, duodenum, and ileum. This is a rare pattern for EoGE since in most cases both stomach and intestine are affected.

Having peripheral eosinophilia along with gastrointestinal symptoms can provide a useful clue for the diagnosis of EoGE, but it cannot be relied upon as a definitive diagnostic criterion [4,12,16]. Some studies have shown that peripheral eosinophilia may not be present in all EoGE patients, so the absence of this symptom should not discourage doc-

tors from performing an endoscopy with biopsies when EoGE is suspected. In our case, CBC showed increased eosinophil (15.5%) and decreased lymphocytes (13.1%) percent. On the other hand, higher levels of fecal eosinophilic cationic protein (ECP), serum ECP, and eosinophil-derived neurotoxin (EDN) have been observed in patients with EoGE compared to those with other inflammatory bowel diseases like ulcerative colitis and Crohn's disease [17]. In contrast, stool calprotectin was 49 ng/mL (normal range < 50) in our patients.

Conclusion

EoGE is an uncommon and heterogeneous disorder defined by eosinophilic infiltration of the GI tract. This disease does not typically involve a specific part of the GI and generally affects both stomach and intestine. This study reported the first case of EoGE where only the jejunal part of the intestine was involved in pathology and other parts of the GI tract were spared, but imaging showed findings indicative of simultaneous involvement of serosal areas.

Author contribution

A. D., A. S. M. S., N. R. and A. M. conceived and designed the evaluation. A. D., A. S. M. S., N. R., and A. M. helped to collect clinical data, draft the manuscript, and revise the manuscript.

Data availability

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Patient consent

Informed consent for participation in the study and publication was obtain from the patient.

REFERENCES

[1] Kinoshita Y, Oouchi S, Fujisawa T. Eosinophilic gastrointestinal diseases-Pathogenesis, diagnosis, and treatment. Allergol Int 2019;68(4):420–9.
[2] Zhang M, Li Y. Eosinophilic gastroenteritis: a state-of-the-art review. J Gastroenterol Hepatol 2017;32(1):64–72.
[3] Uppal V, Kreiger P, Kutsch E. Eosinophilic gastroenteritis and colitis: a comprehensive review. Clin Rev Allergy Immunol 2016;50:175–88.
[4] Kinoshita Y, Furuta K, Ishimaura N, Ishihara S, Sato S, Maruyama R, et al. Clinical characteristics of Japanese patients with eosinophilic esophagitis and eosinophilic gastroenteritis. J Gastroenterol 2013;48:333–9.
[5] Mansoor E, Abou Saleh M, Cooper GS. Prevalence of eosinophilic gastroenteritis and colitis in a population-based study, from 2012 to 2017. Clin Gastroenterol Hepatol 2017;15(11):1733–41.
[6] Abassa K-K, Lin X-Y, Xuan J-Y, Zhou H-X, Guo Y-W. Diagnosis of eosinophilic gastroenteritis is easily missed. World J Gastroenterol 2017;23(19):3556.
[7] Chehade M, Kamboj AP, Atkins D, Gehman LT. Diagnostic delay in patients with eosinophilic gastritis and/or duodenitis: a population-based study. Allergy Clin Immunol Pract 2021;9(5):2050–9 e20.
[8] Chehade M, Tan J, Gehman LT. Gastroenterology practice patterns contribute to missed diagnoses of eosinophilic gastritis and duodenitis. Gastro Hep Advances 2023;2:334–42.
[9] Abe Y, Sasaki Y, Yagi M, Yaoita T, Nishise S, Ueno Y. Diagnosis and treatment of eosinophilic esophagitis in clinical practice. Clin J Gastroenterol 2017;10:87–102.
[10] Kaijser R. Allergic disease of the gut from the point of view of the surgeon. Arch Klin Chir 1937;188:36–64.
[11] Klein NC, Hargrove RL, Sleisenger MH, Jeffries GH. Eosinophilic gastroenteritis. Medicine (Baltimore) 1970;49(4):299–319.
[12] Ko HM, Morotti RA, Yershov O, Chehade M. Eosinophilic gastritis in children: clinicopathological correlation, disease course, and response to therapy. Off J Am Coll Gastroenterol 2014;109(8):1277–85.
[13] Reed C, Woosley JT, Dellon ES. Clinical characteristics, treatment outcomes, and resource utilization in children and adults with eosinophilic gastroenteritis. Dig Liver Dis 2015;47(3):197–201.
[14] Zhang L, Duan L, Ding S, Lu J, Jin Z, Cui R. Eosinophilic gastroenteritis: clinical manifestations and morphological characteristics, a retrospective study of 42 patients. Scand J Gastroenterol 2011;46(9):1074–80.
[15] Chen M-J, Chu C-H, Lin S-C, Shih S-C, Wang T-E. Eosinophilic gastroenteritis: clinical experience with 15 patients. World J Gastroenterol 2003;9(12):2813.
[16] Straumann A, Simon HU. The physiological and pathophysiological roles of eosinophils in the gastrointestinal tract. Allergy 2004;59(1):15–25.
[17] Bischoff SC, Mayer J, Nguyen Q-T, Stolte M, Manns MP. Immunohistological assessment of intestinal eosinophil activation in patients with eosinophilic gastroenteritis and inflammatory bowel disease. Am J Gastroenterol 1999;94(12):3521–9.