CASE REPORT

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A case of eosinophilic gastroenteritis mimicking gastric lymphoma associated with pancreatitis due to duodenal involvement

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A case of eosinophilic gastroenteritis is reported in a 17-year-old woman. The disease has the signs of delayed gastric emptying, vomiting, weight loss, and substantial thickening of the gastric antrum. Histopathology established the diagnosis of eosinophilic gastroenteritis of panmural type. Improvement in the patient's symptoms and laboratory parameters was observed with steroid treatment. The clinicopathological features of this disease are summarized in the discussion.

Key words: Eosinophilic gastroenteritis, gastric outlet obstruction, malignancy

Mide lenfoması şeklinde prezente olan, duodenum tutulumuna sekonder pankreatite neden olan eozinofilik gastrit vakası

Biz eozinofilik gastritis tanısı alan 17 yaşında kadın hastayı bildirdik. Eozinofilik gastrit belirti ve bulguları gecikmiş mide boşalması, bulantı, kilo kaybı ve antrumda kalınlaşma olarak saptandı. Hastanın histopatolojik tanısı panmural tipte eozinofilik gastrit ile uyumluydu. Hastanın semptomları ve laboratuvar parametereleri steroid tedavisi ile geriledi. Hastalığa ait klinikopatolojik özellikleri tartışmada özetledik.

Anahtar kelimeler: Eozinofilik gastrit, mide çıkış obstrüksiyonu, malignite

INTRODUCTION

Eosinophilic gastroenteritis (EG) is an uncommon disorder of unknown etiology. The clinical presentation of EG is protean and may vary depending on the location and depth of involvement of the different layers of the digestive tract. Most patients have peripheral eosinophilia along with raised immunoglobulin E (IgE). Endoscopy and histopathological examination of the biopsies are an essential part of the diagnostic work-up. Microscopic examination of endoscopic biopsy specimens reveals eosinophilic infiltration in the lamina propria, submucosa and occasionally in the deeper layers of the gastrointestinal wall, muscularis propria and serosa. Malignancy is an important differential diagnosis and should be ruled out by appropriate diagnostic modalities. Steroids are the mainstay of treatment in EG, and about 90% patients respond to this therapy; however, in most patients, the symptoms relapse after cessation of therapy.

CASE REPORT

A 17-year-old girl presented with a history of nausea, abdominal pain and weight loss. Clinical examination demonstrated mild abdominal distension, epigastric mass and tenderness. Laboratory tests on admission revealed white blood cell

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count (WBC): 25000/mm^3 (eosinophil 5.7%), C-reactive protein (CRP): 286, and IgE: 5140 IU/L (<120); stool studies were negative for ova, parasites and common pathogens. The histopathologic assessment of the bone marrow biopsy specimen was normal. Esophagogastroduodenoscopy examination showed pearly-white colored thin mucosal nodularity in the esophagus (Figure 1A), thickened gastric folds in the corpus and antrum with antropyloric narrowing (Figure 1B), and a prominent scalloping covered with edematous, erythematous and erosive mucosa in the bulbus (Figure 1C). Postbulbar duodenum mucosa was also mildly hyperemic and edematous. Endoscopic mucosal biopsies from the gastric corpus, antrum (Figure 2A) and the duodenum (Figure 2B) showed intense eosinophilic infiltration.

An enzyme linked immunosorbent assay (ELISA) test (ImuPro 300, Evomed/ R-Biopharm AG, Darmstadt, Germany) was performed to evaluate the potential of IgG-mediated sensitivity for food antigens, and moderate sensitivity to cow's milk and black pepper was detected.

Computerized tomographic (CT) scan of the abdomen showed a significantly thickened gastric wall and minimal ascites in the peritoneal cavity (Figure 3A). Because the endoscopic findings resembled a gastric lymphoma, a positron emission tomography (PET)-CT was performed to differentiate the diagnosis. A hyperactive focus was seen at the gastric wall in PET-CT (Figure 3B). Nodular lesions on the gastric serosa with gross thickening of the stomach wall were seen while performing laparotomy. A laparoscopic full-thickness biopsy

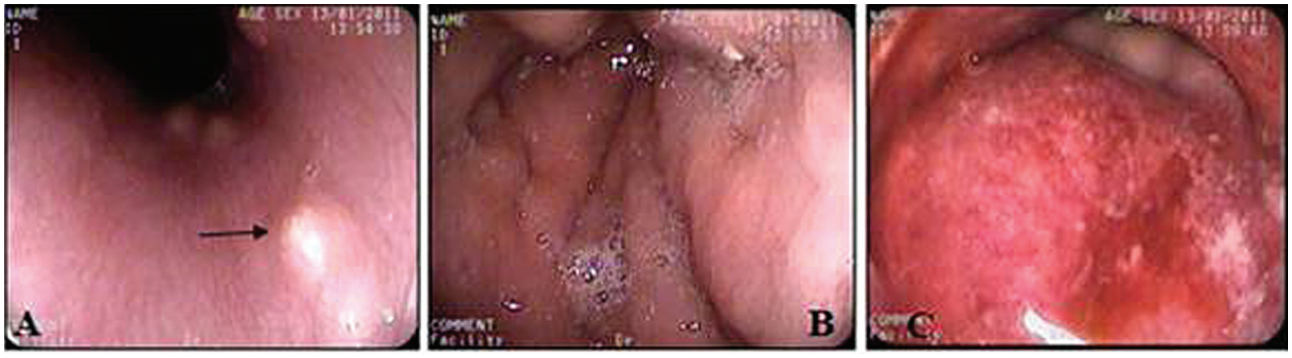

Figure 1. Endoscopic appearances showing pearly white colored thin mucosal nodularity in the esophagus **(A)**, erythematous, hypertrophied and thickened gastric folds in the stomach **(B)**, and a prominent scalloping covered with edematous, erythematous and erosive mucosa in the bulbus **(C)**.

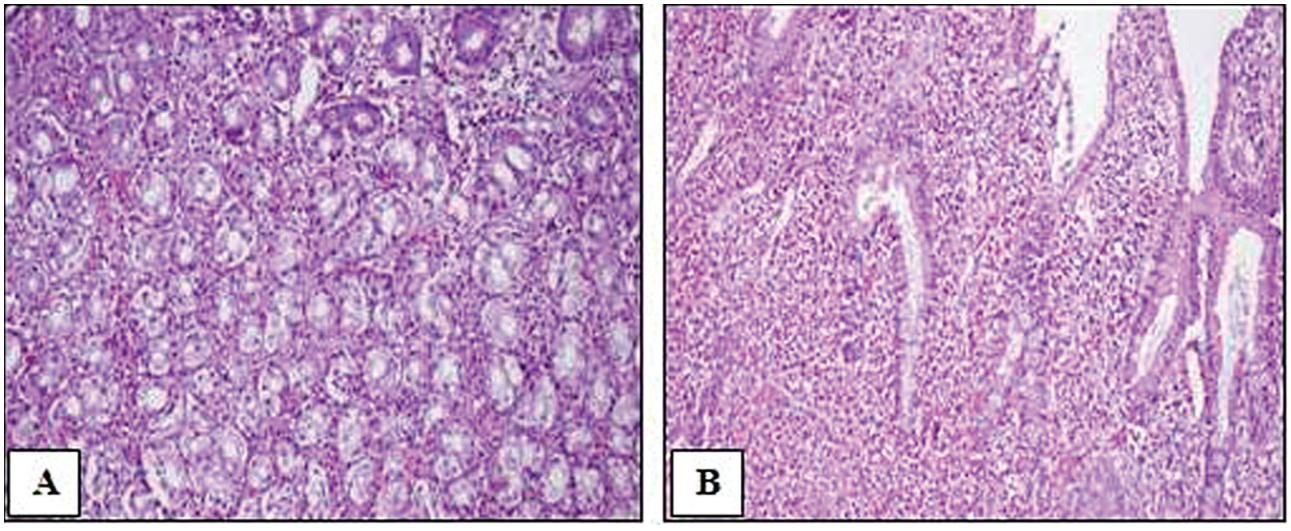

Figure 2. Panel A (antrum) and panel B (duodenum) show eosinophilic infiltration of biopsy samples (>50/HPF, hematoxylin and eosin stain, x200).

from the stomach and the lymph nodes was taken for definite diagnosis. On light microscopy of the biopsy specimen, the serosa of the stomach was densely infiltrated with eosinophils. While PPD and radiologic examinations for tuberculosis infection were performed before steroid treatment, icterus and pancreatitis developed in the patient. Abdominal ultrasonography revealed thickening of the duodenal wall and the distal choledochus causing a dilatation of intrahepatic and extrahepatic bile ducts with jaundice and edematous pancreatitis. After starting the therapy with steroid (prednisone 40 mg/d), her symptoms due to gastric outlet obstruction, abdominal pain and jaundice resolved and pancreatic enzymes, bilirubin levels and eosinophilic count normalized. Table 1 demonstrates the biochemistry results of the patient before and after the steroid therapy.

DISCUSSION

Eosinophilic gastroenteritis (EG) is an uncommon inflammatory disease, characterized by the eosinophilic infiltration of the gastrointestinal tract (1), and more cases have been described in pediatric populations. Any part of the gastrointestinal tract from the esophagus to the rectum may be involved, but the stomach is the most frequently involved organ (43% of cases) (2). Clinical presenta-

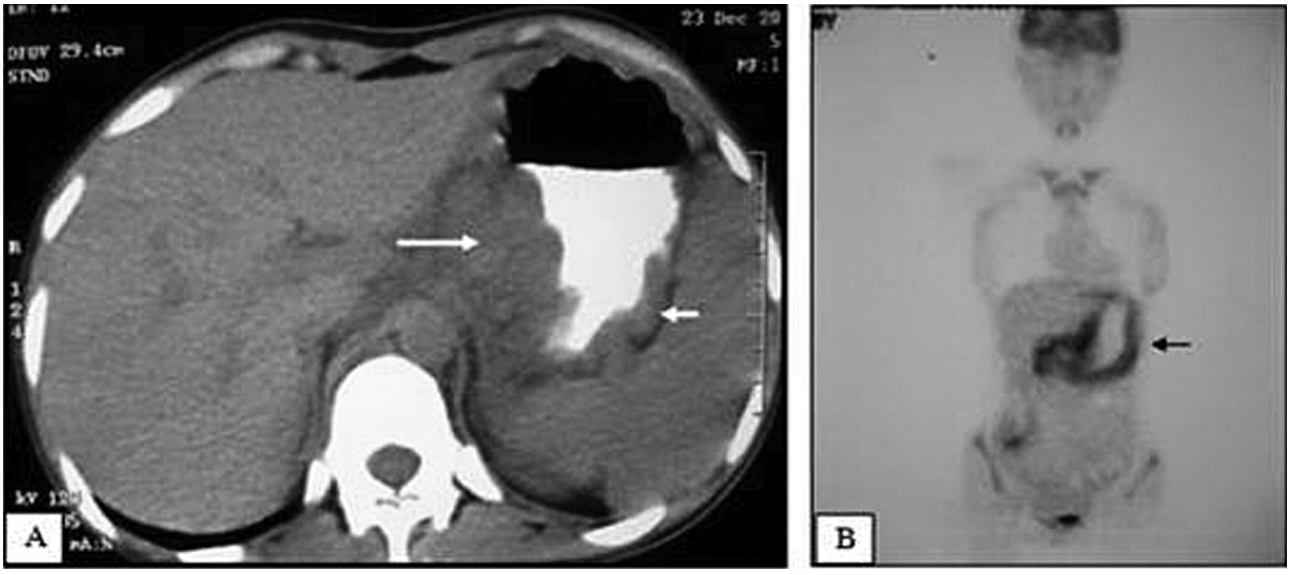

Figure 3. Computed axial tomographic scan image revealed a thickened gastric wall (arrow) **(A)**. Coronal PET CT image demonstrated inflammation of the gastric wall **(B)**.

Table 1. Biochemistry results of the patient before and after the steroid therapy

	Before therapy	4 weeks after therapy	8 weeks after therapy	Normal
AST	37	69	14	(5-34 U/l)
ALT	128	101	18	(5-55 U/l)
ALP	259	50	50	(40-150 U/l)
GGT	185	22	22	(<32 U/l)
T. Bil	7.7	1.6	0.27	(0.2-1.2 mg/dl)
D. Bil	5.8	1.4	0.15	(0-0.5 mg/dl)
Amylase	764	43	51	(25-125 U/l)
Lipase	1037	380	120	(0-190 U/l)
CRP	288	61.7	3	(< 5 mg/dl)
Albumin	2.8	3.2	3.4	(3.2-4.5 gr/dl)
IgE	5140	837	95	(<120 KIU/l)

AST: aspartate aminotransferase, ALT: alanine transaminase, ALP: alkaline phosphatase, GGT: gamma-glutamyltransferase, T. Bil: total biluribine, D. Bil: direct biluribine, CRP: C-reactive protein, IgE: immunglobuline E

tion depends on the affected site of gastrointestinal tract and depth of the bowel wall involved. EG can be seen with gastric outlet and duodenal stricturing, resulting in a gastric outlet obstruction. Malignancy is an important differential diagnosis and should be ruled out by appropriate diagnostic modalities. Surgeons and pathologists should be aware of peculiar presentations of this condition. In Turkey, only one case of this form has been reported (3).

The disorder is classified into primary or secondary subtypes. Primary EG is defined as a disorder of unknown etiology with eosinophilia and is strongly associated with concomitant atopic diseases, food allergies and family history of allergies in about 25-75% of all cases. Secondary EG is reported to occur in the gastrointestinal tract in parasitic and bacterial infections, irritable bowel disease (IBD), hypereosinophilic syndrome, autoimmune diseases, celiac disease, connective tissue diseases, vasculitis, some neoplasms, after solid organ transplantations, or due to adverse effects of certain drugs (4). There are no specific symptoms or laboratory tests for diagnosing EG. EG is associated with peripheral blood eosinophilia in nearly 30-80% of the cases, but may be absent in as many as 20% of all cases (5). IgE levels are more likely to be high in children with EG than in adults. Skin testing for food allergy may help in the management but has a minor role in the diagnosis. Endoscopic features of EG may include prominent mucosal folds, mucosal hyperemia, ulcerations, or nodularity. The diagnosis is established by demonstrating eosinophilic infiltration on biopsy obtained during endoscopy. A common histological feature includes increase in the number of eosinophils (>20/high power field [HPF]) in the lamina propria. Patchy involvement of the bowel as well as the difficulty of obtaining diagnostic biopsies in muscular or serosal disease may result in false-negative specimens (5). Laparoscopic full-thickness biopsies may be indicated (6). The lack of involvement of other organs and the exclusion of other causes of eosinophilia supported this diagnosis. Our patient demonstrated almost the whole spectrum of endoscopic features including mucosal erythema, nodularity, and thickening of folds. Eosinophilic infiltration (>50/HPF) was observed in the endoscopic biopsy from the stomach and the duodenum and also in the biopsy performed after laparotomy.

Although a symptomatic EG case was cured with H. pylori eradication in the literature (7), the association of EG with *H. pylori* remains unclear (8,9). Our patient failed to improve symptomatically and endoscopically after successful *H. pylori* eradication.

Eosinophilic gastroenteritis (EG) may coexist with pancreatitis and eosinophilic cholangiopathy (10-12). Eosinophilic infiltration may cause edema, fibrosis and distortion in the ampulla and periampullary duodenum and cause pancreatitis. When the hepatobiliary system is involved and radiological and clinical picture are compatible with cholangitis, cholecystitis or hepatitis may be observed. The exact risk of acute pancreatitis is difficult to assess, as both under- and over-reporting may occur, but the lifetime risk for the individual patient could well be as high as 1-2% (13). The most conspicuous finding in our patient was the massive eosinophilic infiltration of the gastric and duodenal wall, which may have led to the obstruction of the biliary and pancreatic ducts.

Positron emission tomography (PET) is currently in widespread clinical use for the detection of certain primary malignant tumors as well as metastatic lesions. Initial animal and human data suggest that the noninvasive imaging technique using 18F-fluorodeoxyglucose (FDG) and PET may help in identifying gastrointestinal inflammation (14,15-20). A prominent pathologic uptake in the stomach and duodenum wall was observed in the PET scan of our patient, and after this finding, it was decided to take a laparoscopic full-thickness biopsy.

Corticosteroids are the mainstay of the treatment in EG, and about 90% of patients respond to this therapy (4,5,21). In most patients, symptoms relapse after withdrawal of therapy. Avoiding the dietary intake of food implicated by skin prick or food allergy test and use of an elemental diet have been reported to have a variable effect; elimination of presumed dietary articles is unhelpful in most cases (1,4,22,23). Azathioprine may be helpful as a steroid-sparing agent in patients requiring high doses for maintenance. Other therapeutic options include sodium cromoglycate, ketotifen, leukotriene inhibitors, 4-mercaptopurine, and immunomodulators like alfa interferons. Preclinical studies have identified a contributory role for the cytokine interleukin (IL)-5 and eotaxin, providing a rationale for specific disease therapy (24,25). Our patient responded well to a six-week course of prednisone 40 mg/d with ketotifen 500 mg/d tapered down to a maintenance dose of 16 mg/d (4 mg every 2 weeks).

Eosinophilic gastroenteritis is a rare disorder and may simulate gastric carcinoma, which should be investigated by appropriate diagnostic modalities. Endoscopic-guided biopsy followed by histopathology is indispensable for a correct diagnosis. Currently, steroids appear to be the mainstay of treatment, but in most patients, symptoms relapse after withdrawal of treatment.

REFERENCES

1. Khan S, Orenstein SR. Eosinophilic gastroenteritis. Gastroenterol Clin North Am 2008; 37: 333-48.
2. Naylor AR. Eosinophilic gastroenteritis. Scott Med J 1990; 35: 163-5.
3. Gökcan H, Uruç I, Selçuk H, et al. A case of eosinophilic gastritis secondary to ulcerative colitis. Turk J Gastroenterol 2010; 21: 69-70.
4. Khan S. Eosinophilic gastroenteritis. Best Pract Res Clin Gastroenterol 2005; 19: 177-98.
5. Talley NJ, Shorter RG, Phillips SF, Zinsmeister AR. Eosinophilic gastroenteritis: a clinicopathological study of patients with disease of the mucosa, muscle layer, and subserosal tissues. Gut 1990; 31: 54-8.
6. Talley NJ. Eosinophilic gastroenteritis. In: Feldman M, Friedman LS, Sleisenger MH, eds. Gastrointestinal and liver disease: Pathophysiology/diagnosis/management. Philadelphia, PA, USA: Saunders, 2002; 1972-82.
7. Papadopoulos AA, Tzathas C, Polymeros D, Ladas SD. Symptomatic eosinophilic gastritis cured with Helicobacter pylori eradication. Gut 2005; 54: 1822.
8. Kalantar SJ, Marks R, Lambert JR, et al. Dyspepsia due to eosinophilic gastroenteritis. Dig Dis Sci 1997; 42: 2327-32.
9. Muller MJ, Sewell GS. Coexistence of eosinophilic gastroenteritis and Helicobacter pylori gastritis: causality versus coincidence. Dig Dis Sci 2001; 46: 1784-6.
10. Maeshima A, Murakami H, Sadakata H, et al. Eosinophilic gastroenteritis presenting with acute pancreatitis. J Med 1997; 28: 265-72.
11. Euscher E, Vaswani K, Frankel W. Eosinophilic pancreatitis: a rare entity that can mimic a pancreatic neoplasm. Ann Diagn Pathol 2000; 4: 379-85.
12. Duseja A, Nada R, Dhiman RK, et al. Eosinophilic cholangiopathy – a case report. Dig Dis Sci 2005; 50: 1422-5.
13. Lyngbaek S, Adamsen S, Aru A, Bergenfeldt M. Recurrent acute pancreatitis due to eosinophilic gastroenteritis. Case report and literature review. JOP 2006; 7: 211-7.
14. Neurath MF, Vehling D, Schunk K, et al. Noninvasive assessment of Crohn's disease activity: a comparison of 18F-fluorodeoxyglucose positron emission tomography, hydromagnetic resonance imaging, and granulocyte scintigraphy with labeled antibodies. Am J Gastroenterol 2002; 97: 1978-85.
15. Bicik I, Bauerfeind P, Breitbach T, et al. Inflammatory bowel disease activity measured by positron-emission tomography. Lancet 1997; 350: 262.
16. Lemberg DA, Issenman RM, Cawdron R, et al. Positron emission tomography in the investigation of pediatric inflammatory bowel disease. Inflamm Bowel Dis 2005; 11: 733-8.
17. Loffler M, Weckesser M, Franzius C, et al. High diagnostic value of 18F-FDG-PET in pediatric patients with chronic inflammatory bowel disease. Ann N Y Acad Sci 2006; 1072: 379-85.
18. Louis E, Ancion G, Colard A, et al. Noninvasive assessment of Crohn's disease intestinal lesions with 18F-FDG PET/CT. J Nucl Med 2007; 48: 1053-9.
19. Meisner RS, Spier BJ, Einarsson S, et al. Pilot study using PET/CT as a novel, noninvasive assessment of disease activity in inflammatory bowel disease. Inflamm Bowel Dis 2007; 13: 993-1000.
20. Skehan SJ, Issenman R, Mernagh J, et al. 18F-fluorodeoxyglucose positron tomography in diagnosis of paediatric inflammatory bowel disease. Lancet 1999; 354: 836-7.
21. Lee M, Hodges WG, Huggins TL, Lee EL. Eosinophilic gastroenteritis. South Med J 1996; 89: 189-94.
22. Daneshjoo R, J Talley N. Eosinophilic gastroenteritis. Curr Gastroenterol Rep 2002; 4: 366-72.
23. Yun MY, Cho YU, Park IS, et al. Eosinophilic gastroenteritis presenting as small bowel obstruction: a case report and review of the literature. World J Gastroenterol 2007; 13: 1758-60.
24. Hogan SP, Mishra A, Brandt EB, et al. A pathological function for eotaxin and eosinophils in eosinophilic gastrointestinal inflammation. Nat Immunol 2001; 2: 353-60.
25. Foster PS, Hogan SP, Ramsay AJ, et al. Interleukin 5 deficiency abolishes eosinophilia, airways hyperreactivity, and lung damage in a mouse asthma model. J Exp Med 1996; 183: 195-201.