Eosinophilic Gastroenteritis Involving the Distal Small Intestine and Proximal Colon

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Eosinophilic gastroenteritis (EG) is an unusual disorder. It is characterized by eosinophil infiltration of the gut wall histologically and is manifested by gastrointestinal (GI) symptoms clinically. This disease entity preferentially affects the stomach and proximal small intestine. Mucosal layer disease is the most common form of this uncommon disease. We present a case of EG with transmural distal small intestinal and proximal colonic involvement whose clinical symptoms included watery diarrhea, abdominal pain, and body weight loss. Colonoscopy showed non-specific colitis in the proximal colon. Small bowel series showed diffuse jejunal dilatation with wall thickening and rigidity. Abdominal computed tomography also showed a thickened bowel wall with partial ileus and ascites. Diagnosis was established through endoscopic biopsy and ascites paracentesis, while at the same time excluding the possibility of parasite infection. Treatment with prednisolone produced a dramatic response. A high index of suspicion in cases of peripheral eosinophilia with concomitant GI symptoms is needed for the early diagnosis of this uncommon disease. *(Chang Gung Med J 2002;25:56-61)*

Key words: **eosinophilic gastroenteritis.**

Eosinophilic gastroenteritis (EG) is an uncommon disease which was first described by Kaijser in 1937.[1] Since then, fewer than 300 cases have been reported in the literature.[2] The etiology of EG is still unknown, and the pathogenesis is still under investigation. The incidence of EG peaks between the ages of 30 to 50 years, but it can be seen in any age group. There is a slight male predominance.[3] Allergy history is an important feature in EG. Most studies revealed that an average of 50% of EG patients have a history of allergy.[4-6] EG is characterized by eosinophilic infiltration of different layers of the gut wall. Based on the predominant layer to which the eosinophils infiltrate, the disease is classified into (1) mucosal (and submucosal) disease, (2) muscle layer disease, or (3) subserosal (serosal) layer disease.[7] Each category of disease manifests differently. Abdominal pain, nausea, vomiting, and diarrhea are the most common clinical presentations of mucosal disease. Muscular layer disease often presents with pyloric stenosis and intestinal obstruction, while ascites is the typical presentation of subserosal disease.[3,8] Symptoms may be mild and non-specific, or they may present themselves as emergent acute abdomen which needs to be managed surgically.[9] However, very often there is an overlap of symptoms due to multiple layer involvement. EG may involve any part of the GI tract. The stomach is the most common site of involvement (43%),[5] followed by the proximal small intestine. We report a case of EG

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involving the distal small intestine and proximal colon, with the presentation of abdominal pain, diarrhea, and ascites.

CASE REPORT

A 31-years-old man was admitted to our hospital with the complaints of abdominal pain, diarrhea, and body weight loss of 2-month duration. Abdominal pain attacked intermittently with variable duration. It was located in the upper and mid abdomen, along the midline of the body, without radiation. Stool passage averaged 5 to 6 times/day, and was yellowish and watery in character. The patient denied vomiting, bloody stool, fever, or any other systemic symptoms. He had suffered from bronchial asthma since childhood, and had received a right herniorrhaphy 2 decades ago. He took no medication except asthma attack. He had no history of food or drug allergies. Physical examination revealed mild tenderness over the entire abdomen, and digital examination of the rectum was normal. Complete blood count revealed normal red blood cells and platelet counts. White blood cells were 17,300/mm^3, with a differential count of 32% neutrophils, 14% lymphocytes, 6% monocytes, and 47% eosinophils. Serum chemistry was essentially normal with an albumin level of 3.3 g%. Routine stool analysis showed the presence of occult blood and pus, but no parasites or ova were identified. Upper GI endoscopy produced a negative finding with negative histological results in stomach and duodenum after blind biopsy of these areas. However, colonoscopy showed multifocal reddish mucosal changes at the transverse colon, ascending colon and cecum (Fig. 1). Biopsy at these sites revealed acute and chronic inflammation with dense eosinophilic infiltration (Fig. 2). Small bowel series showed diffuse jejunal dilatation with wall thickening and rigidity . Abdominal computed tomography also showed bowel loop dilatation and thickened bowel walls, as well as the presence of ascites (Fig. 3). Ascites study revealed bloody exudates. The white blood cell count in the ascites was 14,800/mm^3, with a differential of 1% neutrophils, 4% monocytes, and 95% eosinophils. Ascites cultures and cytology revealed negative results. Serological studies showed elevated IgE (239 IU/ml). The erythrocyte sedimentation rate, complement level, tumor markers (including CEA, CA19-9, CA-125, and AFP), titers of antinuclear antibody (ANA), and rheumatoid factor were all within normal limits. Bone marrow aspiration and

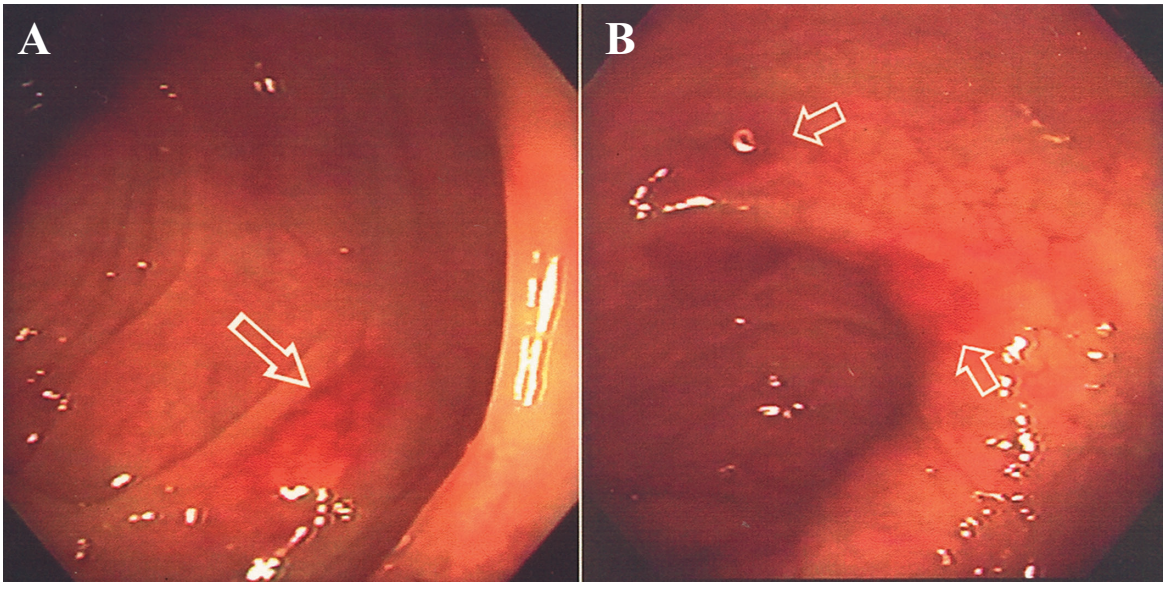

Fig. 1 Endoscopic examination revealing multifocal flat erythematous mucosal changes (left) and depressed erythematous mucosal changes (right) over the proximal colonic mucosa.

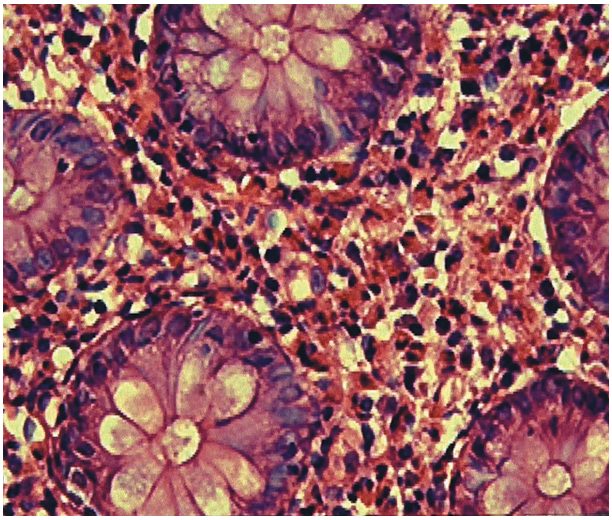

Fig. 2 Histological examination of the colonic biopsy specimen showing dense eosinophilic infiltration of the colonic mucosa. (H & E¡ 40)

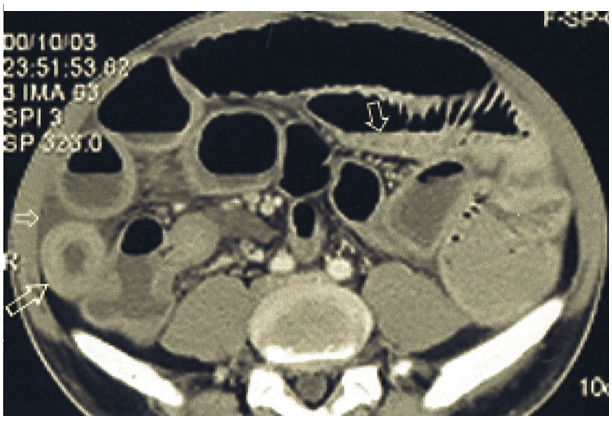

Fig. 3 Abdominal computed tomography showing a thickened and dilated bowel wall with air fluid level from the jejunum down to the ascending colon area (left lower and right arrows). The presence of ascites is also shown (left upper arrow).

biopsy were done and showed no evidence of malignancy.

The patient was placed on low-dose steroid therapy (prednisolone 10 mg b.i.d.) and the response was dramatic. Clinical symptoms resolved within 1 week, and the patient was then discharged uneventfully. Prednisolone 10 mg b.i.d. was used for a total of 2 weeks, and then was tapered to 5 mg b.i.d. over 1 month. Subsequent out-patient-department follow-up revealed normalization of the white cell count and eosinophilic count, as well as resolution of ascites and colonic mucosal changes; a further colonoscopic biopsy showed resolution of the eosinophilic infiltration.

DISCUSSION

Isolated colonic involvement is a rare presentation of EG. Only 28 cases of colonic involvement were reported until 1992.[10] Cecum and ascending colon are the most common sites of involvement. The incidence of colonic involvement decreases distally.[11] It was reported that there is a slight female preponderance in cases of colonic EG.[12] Our review of the literature shows that colitis is the most common clinical presentation of colonic EG (54%), followed by a colon mass or tumor (31%), and intestinal obstruction (23%).[10,12,13] Other presentations include colonic intussusception, appendicitis, acute abdomen, colon perforation, rectal bleeding, and iron deficiency anemia.[14-16]

EG involving more than one site of the GI tract is not uncommon. In Naylor's report, 36% of cases presented with 2 or more sites of the disease;[5] involvement of the entire digestive tract has also been reported.[17] EG with concomitant involvement of the small intestine and colon, however, is not often reported in the literature. This shows that the reported cases of concomitant small intestine and colon involvement are far fewer than those of isolated colonic involvement. Our case is one of concomitant jejunal, ileal, and colonic involvement. Intestinal obstruction[10,18] is the most common clinical presentation for such cases (50%). Other clinical presentations include vague abdominal pain and diarrhea. Our case had all of these symptoms.

To establish a diagnosis of EG, the following criteria must be fulfilled: (1) GI symptoms are present, (2) eosinophilic infiltration of the GI is tract demonstrated at biopsy, (3) no eosinophilic involvement of multiple organs outside the GI tract is seen, and (4) no parasitic infestation is present.[3] Most often, the disease attacks intermittently, but there are also cases with chronic illness.

Endoscopy is an important tool for the evalua-

tion and diagnosis of EG. Endoscopic findings vary widely. Abnormal endoscopic findings include prominent mucosal folds, hyperemia, ulcerations, and nodularity. In EG that involves the terminal ileum or colon, aphthoid ulcers may also be seen, most commonly at the cecum and ascending colon.[3] To establish a diagnosis of EG, endoscopic biopsy is often done. Because EG involvement is usually patchy in character, multiple biopsies from both the normal and abnormal mucosa have to be done. In our case, multiple non-specific hyperemic mucosal lesions were found with colonoscopy and biopsies from these areas revealed dense eosinophil infiltration, further confirming our diagnosis.

Radiographic findings of EG are often nonspecific and variable. The most common abnormal radiographic findings, including sonography, barium study, and computed tomography, may show thickened GI folds, bowel obstruction, or dilatation.[4,6]

Laboratory study often reveals peripheral eosinophilia in EG patients (67% - 100%).[4,6,19] This is not a universal finding and thus does not constitute a prerequisite for diagnosis. However, a finding of peripheral eosinophilia and concomitant GI symptoms should raise the suspicion for EG. Iron deficiency anemia and positive occult blood in the stool are also commonly found, probably due to mucosal involvement with GI blood loss.[3,5] Stool analysis is an important part of the laboratory investigation, as exclusion of parasitic infestation is needed for diagnosis.

In EG patient with ascites, paracentesis followed by ascites study often provides a diagnosis. Typically, the ascites is exudative in nature, with a high eosinophilic count, and may sometimes be bloody.[3] In our case, the ascites was shown to be exudative in character with marked eosinophilia.

Treatments for EG vary due to the heterogeneity of symptoms and the sporadic nature of the disease in most patients. For patients with mild symptoms and intermittent attacks, reassurance and expectant observation may be the only measures needed.[8] For patients with a history of food intolerance or allergies, an elimination diet is worth trying.[3] It is successful sometimes, but relapse is rather common. For the remaining patients, steroid administration is the most important and successful treatment. Most patients dramatically respond to steroids. The recommended dose is prednisolone 20-40 mg q.d. in the morning for 1-2 weeks. The dose is then tapered off over several weeks. In our case, prednisolone 10 mg b.i.d. was prescribed for 2 weeks, then tapered off to 5 mg b.i.d. over 1 month. Resolution of symptoms and colonic hyperemia as well as ascites was found 3 weeks after treatment. The eosinophil count returned to normal 2 weeks after treatment. Some patients may experience relapse after cessation of steroids. The relapse rate after steroid cessation varies, but relapse rate as high as 83% have been reported and are worth noting.[6] Low-dose steroids (usually 5-10 mg/day) is needed for maintenance in these patients. Mast cell stabilizers such as sodium cromoglycate and ketotifen[3,15] are also used for the treatment of EG, especially in those patients who are not steroid responsive, or in cases where use of steroids is contraindicated. Apart from these, use of the leukotriene-receptor antagonist, montelukast,[20] and certain immunosuppressive agents such as azathioprine and hydroxyurea[3] have also been reported. However, the efficacy of these medications is unknown. In all cases of EG, surgery should be avoided as far as possible since recurrence after surgery is often found. Surgery should be reserved for those with significant bleeding, perforation, and GI obstruction that are refractory to medical treatment.[5,8] For patients who received surgery, adjunctive use of steroids as part of the treatment regimen decreased the recurrence rate from 67% to 25%.[2]

In conclusion, EG is an uncommon disease of unknown etiology; it is important to recognize because treatment is available in most cases. It should be highly suspected in cases with presentations of peripheral eosinophilia and concomitant GI symptoms.

REFERENCES

1 Kaijser R. Zur Kenntnis der allergischen Affektioner desima Verdanungskanal von Standpunkt desima Chirurgen aus. Arch Klin Chir 1937;188:36-64. [German]
2. Shweiki E, West JC, Klena JW, Kelley SE, Colley AT, Bross RJ, Tyler WB. Eosinophilic gastroenteritis presenting as an obstructing cecal mass-a case report and review of the literature. Am J Gastroenterol 1999;94: 3644-5.
3. Talley NJ. Eosinophilic gastroenteritis. In MH: Sleisenger, JS Fordtran, eds. Gastrointestinal and Liver Disease. Pathophysiology, Diagnosis, Management. 6th

ed. Philadelphia: WB Saunders, 1998:1679-88.
4. Vitellas KM, Bennett WF, Bova JG, Johnson JC, Greenson JK, Caldwell JH. Radiographic manifestations of eosinophilic gastroenteritis. Abdom Imaging 1995;20:406-13.
5. Naylor AR. Eosinophilic gastroenteritis. Scott Med J 1990;35:163-5.
6. Lee CM, Changchien CS, Chen PC, Lin DY, Sheen IS, Wang CS, Tai DI, Sheen-Chen SM, Chen WJ, Wu CS. Eosinophilic gastroenteritis: 10 years experience. Am J Gastroenterol 1993;88:70-4.
7. Klein NC, Hargrove RL, Sleisenger MH, Jeffries GH. Eosinophilic gastroenteritis. Medicine 1970;49:299-319.
8. Lee M, Hodges WG, Huggins TL, Lee EL. Eosinophilic gastroenteritis. South Med J 1996;89:193-4.
9. von dem Borne PA, Kramer MH, Vermeijden JR. Acute abdominal pain and eosinophilia, two cases of eosinophilic gastroenteritis. Neth J Med 1999;54:197-201.
10. Wellinger J, Meyer A, Saraga EP, Hessler C, Knobel P. Eosinophilic gastroenteritis: two case reports. Helv Chir Acta 1992;59:321-4.
11. Schoonbroodt D, Horsmans Y, Laka A, Geubel AP, Hoang P. Eosinophilic gastroenteritis presenting with colitis and cholangitis. Dig Dis Sci 1995;40:308-14.
12. Minciu O, Wegmann D, Gebbers JO. Eosinophilic colitis-an unusual cause of acute abdomen. Case report and literature review. Schweize Med Wochenschr 1992;122:1402-8. Review (German)
13. Takeyama Y, Kamimura S, Suzumiya J, Oh K, Okumura M, Akahane H, Maruyama H, Nawa Y, Ohkawara T, Kikuchi M. Case report: eosinophilic colitis with high antibody titre against Ascaris suum. J Gastroenterol Hepatol 1997;12:204-6.
14. Box JC, Tucker J, Watne AL, Lucas G. Eosinophilic colitis presenting as a left-sided colocolonic intussusception with secondary large bowel obstruction: an uncommon entity with a rare presentation. Am Surg 1997;63:741-3.
15. Stringel G, Mercer S, Sharpe D, Shipman R, Jimenez C. Eosinophilic gastroenteritis. Can J Sur 1984;27:182-3.
16. Fraile G, Rodriguez-Garcia JL, Beni-Perez R, Redondo C. Localized eosinophilic gastroenteritis with necrotizing granulomas presenting as acute abdomen. Postgrad Med J 1994;70:510-2.
17. Matsushita M, Haijiro K, Morita Y, Takakuwa H, Suzaki T. Eosinophilic gastroenteritis involving the entire digestive tract. Am J Gastroenterol 1995;90:1868-70.
18. Zora JA, O'Connell EJ, Sachs MI, Hoffman AD. Eosinophilic gastroenteritis: a case report and review of the literature. Ann Allergy 1984;53:45-7.
19. Kalantar SJ, Marks R, Lambert JR, Badov D, Talley NJ. Dyspepsia due to eosinophilic gastroenteritis. Dig Dis Sci 1997;42:2327-32.
20. Neustrom, Mark R, Friesen, Cranis. Treatment of eosinophilic gastroenteritis with montelukast. J Allergy Clin Immunol 1999;104:506.

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