

## A Case of Gastroenteritis Associated with Gastric Trichuriasis

A rare human case of gastroenteritis and eosinophilic ascites associated with gastric trichuriasis is described. The patient was a 32-yr-old woman who was working in a farm near Pohang, Korea. She complained of abdominal pain, diarrhea, and vomiting. Endoscopic examination found focal linear hyperemia on the mucosa of the stomach antrum, and endoscopic biopsy confirmed eosinophilic inflammation of the mucosa and submucosa of the stomach, terminal ileum, and cecum. The biopsy specimen of the stomach included a female *Trichuris trichiura* which was covered by many inflammatory cells on its surface. Ascites and intestinal wall thickening was found by CT scan, and Douglas pouch centesis aspirated bloody ascites which included many eosinophils. She was medicated with prednisolone and albendazole and cured. She is the first case of eosinophilic inflammation of the gastrointestinal tract and ascites associated with trichuriasis in the stomach.

Key Words : Gastroenteritis; Eosinophilia; Ascites; Trichuris; Stomach

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### INTRODUCTION

Eosinophilic gastroenteritis is an uncommon disease, which causes a variety of gastroenteritis symptoms and eosinophil infiltration of the gastrointestinal wall (1). It is frequently associated with peripheral eosinophilia, ascites and malabsorption, but rarely with an obstruction of intestinal tract or bile duct, esophagitis, pancreatitis, and pneumonia. In addition, elevated IgE antibody titer is common (2). The precise mechanism of this disease is unclear, but is known to involve an IgE-mediated hypersensitive reaction to certain types of food or drugs (3, 4). Helminthic infection may cause same clinical condition but is not included in category of the eosinophilic gastroenteritis. The clinical cases of similar gastroenteritis associated with infection of *Ancylostoma caninum* (5), *Ascaris lumbricoides* (6), and larval *Anisakis simplex* (7) have been known.

We herein describe our experience of a patient suffering from eosinophilic gastroenteritis and ascites, who was diagnosed with gastric trichuriasis.

### CASE REPORT

A 32-yr-old woman was admitted to Dongguk University Pohang Hospital, Pohang, Korea on 14 March 1998, complaining of periumbilical abdominal pain, diarrhea, and vomiting of one month duration. She visited a private clinic and received medications, but the symptoms got worse and

she was transferred to the Dongguk University Hospital. She lived in the suburbs of Pohang with her husband and a son, all of whom were healthy, and worked at an agricultural farm with her husband. She had stayed at her home or the farm without exception for 3 months before onset of the disease. Human feces was not used as a fertilizer at the farm, and she did not smoke or drink alcohol, but did eat raw vegetables frequently.

She was ill-looking and pale at admission. Her abdomen was soft, and a soft tender mass of 3 × 2 cm was palpable below the umbilicus, but other physical and neurological findings were normal. A laboratory examination showed normal blood chemistry but the leukocyte count was elevated to 14,100/μL and eosinophils were 2,397/μL (17%). Serum hepatitis B surface (HBs) antigen was positive and total IgE antibody in serum was elevated at 78.7 IU/L, but other blood chemistry was in normal range. An allergic reaction test to food (MAST<sup>®</sup>, Korea food panel 86316) showed no specific reaction. About 200 mL of ascites fluid was aspirated by Douglas pouch centesis, and found to be grossly bloody and serous, with an LDH level of 240 μ/L, carcinoembryonic antigen of 0.5 ng/mL, and pH 7.0. RBCs in the ascites fluid were counted 8,450/μL and WBC 2,450/μL with 92% eosinophils. Fecal examination showed no helminth eggs or protozoan cysts. CT scan of the abdomen showed ascites and thickening of the small bowel wall but no mass (Fig. 1). A barium study of the small intestine and chest radiography also showed no abnormality.

Gastrofiberscopy and colonoscopy were performed on the

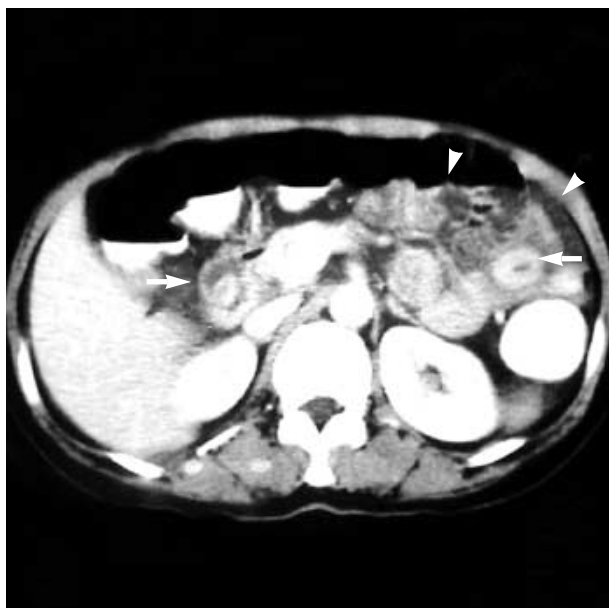


Fig. 1. CT scan found thickened wall of the duodenum and ileum (arrows) and ascites (arrowheads).

4th and 7th hospital days respectively. Gastrofiberscopy observed normal mucosa but two linear hyperemic points were found at the antrum (Fig. 2). No helminth was definitely noticed by fiberscopy and biopsy was done at the antrum and other sites. The stomach biopsy, involving 6 samples of the mucosa, revealed chronic superficial gastritis with infiltration of many eosinophils into the mucosa and submucosa at the antrum and at the stomach angle (Fig. 3A). One mucus-like piece of the biopsied materials showed an obliquely sectioned roundworm with a diameter of 2 mm (Fig. 3B). The thick body section showed a pseudocoelomic cavity encircled by the body wall with a thick outer chitinous surface. The body cavity contained numerous eggs (Fig. 3C), which measured  $52.3 \times 25.2 \mu\text{m}$  and were barrel-shaped with two polar mucoid plugs. The section demonstrated that the round body was connected to the slender esophageal part, which was 0.4 mm in diameter. This slender section included many dark stained stichocytes in a row, which formed the stichosome (Fig. 3D). In addition, host inflammatory cells were found stuck to the cuticular surface (Fig. 3C, D). These morphological characteristics and measurements identified the roundworm as a female *Trichuris trichiura*. The histopathological sections of the colonoscopic biopsy of the cecum and the terminal ileum also revealed chronic non-specific inflammation in the mucosa and submucosa with significant eosinophil infiltration.

Under the impression of eosinophil-associated gastroenteritis caused by gastric trichuriasis, she was treated by oral medication with prednisolone at 40 mg/day from 21 to 25 March 1998, and also with albendazole at 800 mg/day for 4 days. At this stage, she was clinically much improved and

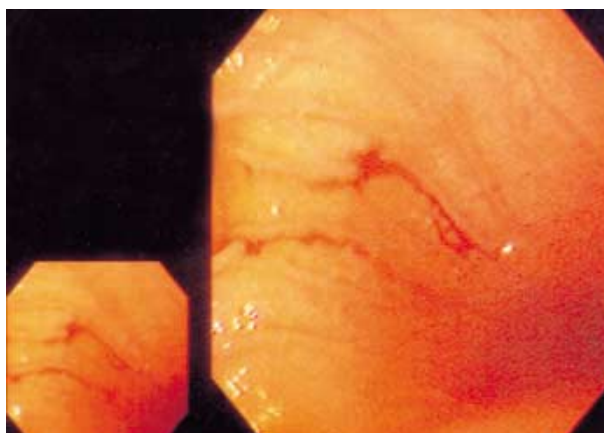


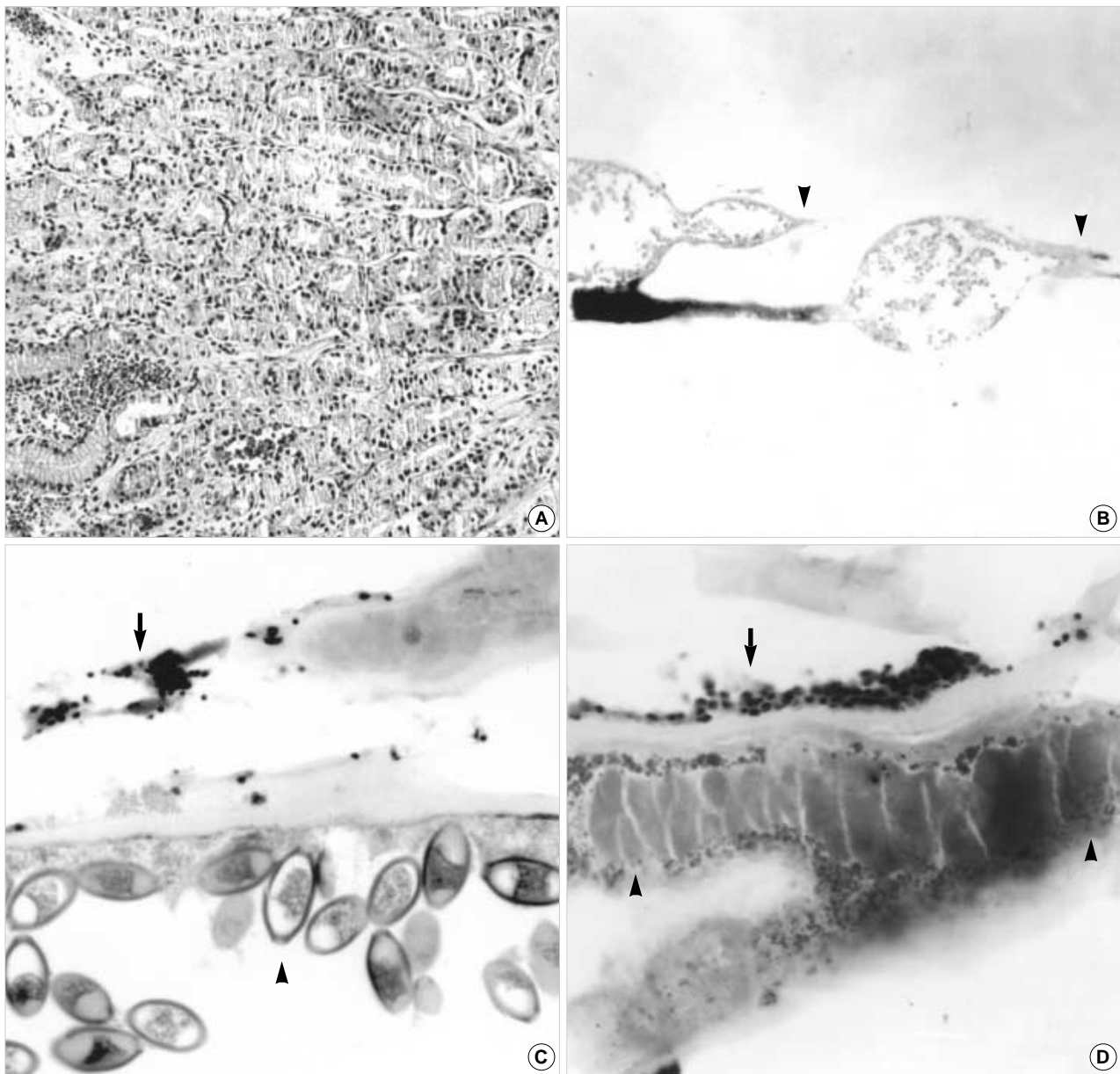
Fig. 2. Endoscopic finding of the stomach antrum showing two sites of linear hyperemia on the mucosa. Biopsy material on this site had included a whipworm.

discharged on 27 March 1998 (14th day). Two months later her physical status much improved and blood cells counted WBC  $5,800/\mu\text{L}$  and eosinophils  $400/\mu\text{L}$  (7%). When followed-up again on 27 December 2000, she was healthy.

## DISCUSSION

We believe that the present patient is the first case of gastroenteritis of the entire digestive tract from the stomach to the colon associated with gastric trichuriasis. She suffered from abdominal pain, diarrhea, vomiting, eosinophilia, and ascites but the symptoms much improved within a week after beginning of treatment. The eosinophilia subsided 3 months after treatment with steroid and anthelmintics, and thus the possibility of primary hypereosinophilic syndrome was excluded. Endoscopic biopsy found eosinophil infiltration in the mucosa and submucosa of the stomach, terminal ileum and colon, which suggested involvement of the whole gastrointestinal tract. Serosal side of the tract might also have been involved because eosinophilic ascites was found. Her abdominal pain at admission is considered to have been caused by eosinophilic inflammation of the serosa or peritoneum as well as the mucosal inflammation. The small soft mass which was palpable near her umbilicus at admission might be the intestinal loop with thickened wall. CT scan confirmed thick wall of the duodenum and ileum, which was compatible with previous record of eosinophilic gastroenteritis (1). The present case showed the exact clinical findings of eosinophilic gastroenteritis but not defined because helminthic infection was associated.

It is rare to find a whipworm, which usually lives in the cecum, in the stomach. The measurements and shape of the body, slender esophageal part and eggs in the uterus indicate the worm is a female *Trichuris trichiura*. The stichosome observed in the slender body part is a characteristic structure of adenophorean nematodes, but others of same taxa, such



**Fig. 3.** Biopsy finding of the stomach mucosa, H&E stained. (A) Non-specific inflammation of the mucosa and submucosa with infiltration of many eosinophils ( $\times 150$ ). (B) A sectioned whipworm recovered from the stomach of the present case, which consisted of the body and slender esophageal part (arrowheads) ( $\times 15$ ). (C) The barrel-shaped eggs (arrowhead) are in the body section and inflammatory cells are on the surface of the esophageal part (arrow) ( $\times 600$ ). (D) The stichosome in the esophageal part is distinctive, (arrowheads) and many human inflammatory cells (arrow) adhere to the cuticular surface ( $\times 600$ ). These characteristics identify it as a female *Trichuris trichiura*.

as *Trichinella*, *Capillaria* and *Dioctophyma* are excluded by the measurements and shape of worms and eggs.

The recovered worm had an intact structure and many inflammatory cells adhered to its cuticular surface, which suggests that the worm was living in close contact with the gastric mucosa. It was not recognized as a helminth during endoscopic observation but was regarded as mucus and biopsied. Usually ectopic parasitism by a helminth triggers severe tissue reaction, and the whipworm in the stomach mucosa

may have induced severe eosinophilic inflammation throughout the entire intestinal tract. The inflammatory reaction was found directly related with a Th2-type immune response to the attachment of the parasitic nematode to the gastrointestinal wall (7). Although the clinical manifestations and the histopathological findings of the gastrointestinal tract mucosa were so serious, the endoscopic finding of the stomach was rather mild and of no specific findings. If the whipworm had been noticed during the endoscopy, any specific

finding might be pursued.

The case described herein is clinically one of eosinophilic gastroenteritis with involvement from the stomach to the colon with eosinophilic ascites. However, a whipworm was found in the stomach, which might have been the causative agent of the clinical episode of the case. It is hard to explain how the adult whipworm was in the stomach but the competent worm might have been only a few in the stomach or intestine because fecal examination showed no eggs.

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