A Case of Gastritis Associated with Gastric Capillariasis

This report is about the case of gastritis associated with capillariasis. The patient was a 52-yr-old Korean woman who occasionally ate raw fish and chicken. She complained of mild abdominal pain and nausea, but not diarrhea. An endoscopic examination revealed an exudative flat erosive change on the gastric mucosa of the antrum. She was microscopically diagnosed as chronic gastritis with numerous eosinophil infiltrations. The sectioned worms and eggs in mucosa were morphologically regarded as belonging to the genus *Capillaria*. This is the first case of gastric capillariasis reported in the Republic of Korea.

**Key Words**: Capillaria; Stomach; Biopsy; Endoscopy

**INTRODUCTION**

The members of the genus *Capillaria* that have been recorded in human beings are; *Capillaria hepatica*, *C. aerophila*, and *C. philippinensis*. These three species cause hepatic, pulmonary, and intestinal capillariasis, respectively (1, 2). Moreover, cases of human infection by *C. philippinensis* appear to be spreading geographically, and in particular, intestinal capillariasis is being increasingly reported in Asia (3). In the Republic of Korea, two indigenous and three imported cases of intestinal capillariasis have been reported since 1993 (4, 5).

*Capillaria* species parasitize various parts of the host alimentary system, mainly the small intestine and stomach, but rarely the esophagus and rectum (6). Although the stomach is an appropriate habitat for some *Capillaria* species, no case of human stomach infection has been reported. Therefore, physicians and parasitologists do not consider *Capillaria* species as an etiologic agent of gastritis in man. This paper describes our experience with an unusual case of human gastric capillariasis.

**CASE REPORT**

On October 31, 2006, a 52-yr-old Korean woman attended the outpatient clinic for a health checkup. She lived in Jangheung-gun, Jeollanam-do, a county located on the south coast. She recalled eating raw fish, i.e., gizzard shad (*Konosirus punctatus*), purple pike conger (*Muraenesox cinereus*), and snakehead (*Channa argus*). The former two species were eaten on August 10, 2006 and the latter during mid-August, 2005. She had also eaten raw chicken, which she had slaughtered, at the beginning of September, 2006. She had not traveled to any foreign country.

According to her medical history, she had been diagnosed as having hypertension in 2005. About seven years previously, she had experienced episodes of abdominal pain, and was attributed to gastritis by a local clinic. When she presented at our clinic for a health checkup, she complained of abdominal pain of approximately 3 months duration, which was sometimes accompanied by nausea, but not by vomiting, diarrhea, borborygmus, fever, or weight loss. In order to relieve this symptom, she had taken some antacids, which were obtained over-the-counter, several times a month before presentation. She also had an itching rash of one week’s duration that primarily involved a forearm. On physical examination, her pulse rate was regular and her blood pressure was 138/95 mmHg. No abdominal mass was palpated, and the liver and spleen were not enlarged. The blood biochemistry data was as follows: hemoglobin 13.7 g/dL, serum glucose 102 mg/dL, GOT 23 IU/L, γ-GPT 15 IU/L, and total cholesterol 189 mg/dL. Routine urine analysis findings were in the nor-
mal range. Stool occult blood was negative, and chest radiography findings were normal. Since a parasitic infection was not considered at that time, no blood eosinophil count or stool examination for nematodes was performed.

By upper gastrointestinal endoscopy, the esophagus and duodenum appeared grossly normal. However, at the posterior wall of the antrum, the gastric mucosa showed an exudative flat erosive change (Fig. 1). Microscopically, the biopsied specimen disclosed mild mucosal destruction with an irregular surface and focal surface erosion. Multiple sections of adult female nematodes were observed, usually in the superficial gastric mucosa. The worms lived in the epithelial layer of the glands and in adjacent tissues of the lamina propria, and had caused inflammatory cell infiltration (Fig. 2). Many eosinophils were observed around the worms (Fig. 3). In cross sections through the uterus, female worms were 52.5-62.5 μm (mean 57.6 μm) in diameter. Stichosome was found in the

Fig. 1. Endoscopic finding of the stomach showing an exudative flat erosive change on antral mucosa.

Fig. 2. Three sectioned worms in the superficial portion of the gastric mucosa. Adult female worms with eggs in the uterus had invaded the epithelial layer of the glands and adjacent tissues of the lamina propria causing inflammatory cell infiltration (H&E stain, × 100).

Fig. 3. Cross and tangential sections of eggs observed in the uterus. In egg cross-sections, egg shell striations were arranged radially. In tangential-sectioned eggs, striations formed a network resembling a net with irregular meshes (inset: × 400) (H&E stain, × 200).

Fig. 4. Longitudinal sections showing stichosome in the worm anterior (H&E stain, × 100).

Fig. 5. Extra-uterine eggs embedded in the gastric mucosa. Inconspicuous flattened bipolar mucoid plugs and egg shell striations were clearly observed in longitudinal-sectioned eggs (H&E stain, × 400).
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The uterus was prominent and occupied most of the pseudocoelemic cavity (Fig. 2, 3). It usually contained several eggs, which had a striated shell and inconspicuous flattened bipolar plugs (Fig. 3, 5). No developing larvae were observed in any uterine or extra-uterine eggs. In tangential-sectioned eggs, eggshell striations formed a network, which resembled a net with irregular meshes (Fig. 3). Eggs dimensions were 57,2-60.0 × 24.0-30.5 μm (average 58.5 × 26.0 μm). Based on the microscopic features of the worms and eggs, the nematodes were assigned to Capillaria species. We recommended albendazole administration, at 800 mg/day for two weeks. However, during this treatment no discharged worms or eggs were detected in feces. The gastric pain disappeared in two weeks, and after one year on medication the patient was healthy.

DISCUSSION

A definitive diagnosis of gastrointestinal capillariasis is made by identifying eggs or adults in stools, biopsy specimens of infected organs, or by autopsy (1, 7). In the present case, worms were found to have characteristic stichosome in esophageal sections. Cross-sectional female adult worms were found to have characteristic stichosome in infected organs, or by autopsy (1, 7). In the present case, eggshell striations formed a network, which resembled a net with irregular meshes (Fig. 3). Eggs dimensions were 57.2-60.0 × 24.0-30.5 μm (average 58.5 × 26.0 μm). Based on the microscopic features of the worms and eggs, the nematodes were assigned to Capillaria species. We recommended albendazole administration, at 800 mg/day for two weeks. However, during this treatment no discharged worms or eggs were detected in feces. The gastric pain disappeared in two weeks, and after one year on medication the patient was healthy.

Some fresh- or brackish-water fish are considered to be natural intermediate hosts for various Capillaria species (1, 2). The source of capillariasis infection was unclear in the present case. Our patient had consumed raw freshwater fish (about one year previously) and brackish-water fish (about three months previously). Thus, in view of the onset of her gastric symptom, the two species of brackish-water fish, namely, the gizzard shad or the purple pike conger, which were both caught in coastal waters, were probably responsible. These two fish are commonly eaten raw in Korea. Another possible source of infection was the raw chicken meat she had eaten two months previously. Some fish-eating birds, including the chicken, are potential definitive hosts and autoinfection has also been reported in birds (10).

In conclusion, we describe an accidental gastric infection caused by Capillaria species. It was probably due to the consumption of raw fish. An endoscopic biopsy revealed superficial gastritis with eosinophil infiltration. Unlike intestinal capillariasis, gastric capillariasis extremely rare in man. Its clinical symptoms are nonspecific, and for these reasons the infection is easily overlooked by patients and even by physicians. However, the possibility of gastric involvement should be carefully considered in gastritis patients infected with Capillaria species.

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