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급성 침윤성 장관 고래회충유충증에 의한 소장폐쇄

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Small Bowel Obstruction Caused by Acute Invasive Enteric Anisakiasis

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Anisakiasis usually occurs in the stomach and can easily be diagnosed by digestive tract endoscopy as opposed to enteric anisakiasis which is very rare and difficult to be diagnosed definitively. The most important and useful tool in diagnosing enteric anisakiasis is obtaining an accurate patient history of having eaten raw fish before the onset of symptoms. We report a case of small bowel obstruction caused by acute invasive enteric anisakiasis. A 60-year-old woman visited the emergency room suffering from sudden abdominal pain. She had eaten raw fish 1 day before the onset of symptom. Radiologic studies showed small bowel obstruction. However, no definitive cause could be found. An emergency laparotomy revealed edematous and dilated proximal jejunum and a focal stenosis of the distal jejunum. Segmental resection of the jejunum was performed, and histopathological examination revealed enteric anisakiasis. The patient was discharged on the 7th day after surgery following an uneventful course of recovery. **(Korean J Gastroenterol 2010;56:192-195)**

Key Words: Anisakiasis; Intestinal obstruction

Introduction

Anisakiasis, a parasitic disease which may infect humans following the consumption of raw fish,[1] usually occurs in the stomach and can easily be diagnosed by digestive tract endoscopy. Enteric anisakiasis, on the other hand, is very rare, and a definitive diagnosis is difficult until laparotomy is performed for the treatment of acute abdominal symptoms.[2,3] The most important and useful tool in diagnosing enteric anisakiasis in a patient with signs of acute abdominal symptoms is obtaining an accurate history which includes eating raw fish prior to the onset of these symptoms. We report here on the case of a 60-year-old woman who had small bowel obstruction caused by acute invasive enteric anisakiasis.

Case Report

A 60-year-old woman visited the emergency room presented with a sudden onset of diffuse abdominal pain, nausea and a temperature of 37.5°C. She had no significant medical history, except eating raw fish 1 day prior to admission. On physical examination, she had direct and rebound tenderness on the

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whole abdomen accompanied with abdominal distension. Laboratory tests revealed a high white blood cell count of 17,600/mm^3 with no eosinophils. Simple film of the abdomen showed a dilatation of the small bowel and air-fluid level (Fig. 1). An abdominopelvic computed tomography (CT) scan showed a dilated jejunum and target shaped bowel thickening of the distal jejunum with luminal narrowing, but the cause of the obstruction was unclear (Fig. 2). An emergency laparotomy was performed, which revealed edematous change and focal stenosis of the distal jejunum (Fig. 3). The affected segment of distal jejunum, measuring 20 cm in length, was resected.

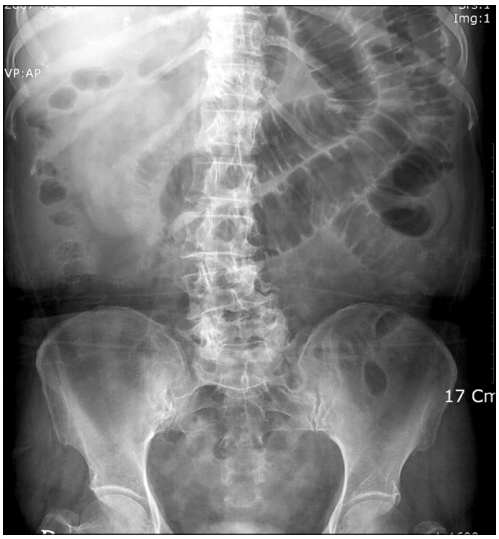

Fig. 1. Plain abdominal radiography showed dilatation of the small bowel.

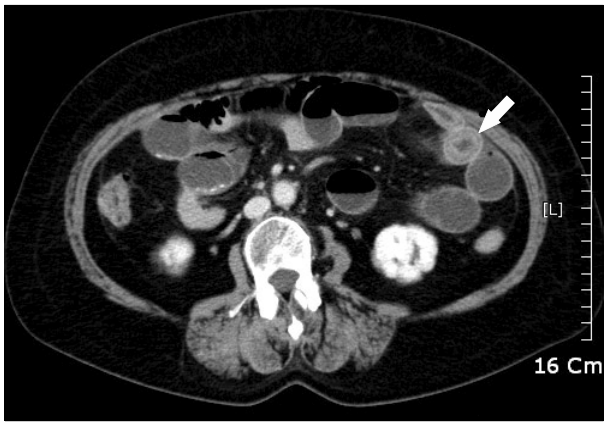

Fig. 2. Abdominopelvic CT showed dilated small bowel loops filled with fluid and target shaped wall thickening of the jejunum (arrow) with luminal narrowing.

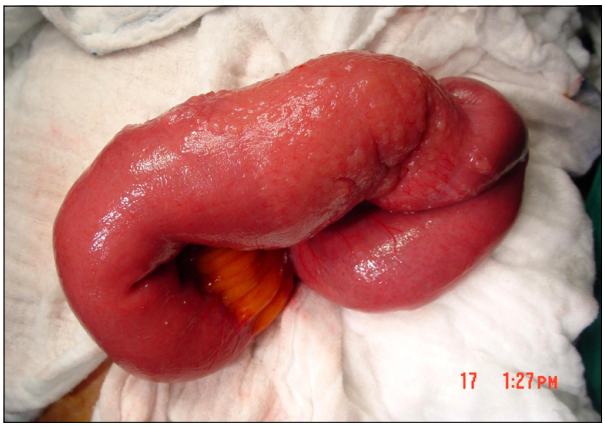

Fig. 3. Operative finding showed focal stenosis of the distal jejunum and inflammatory change around the stenotic lesion.

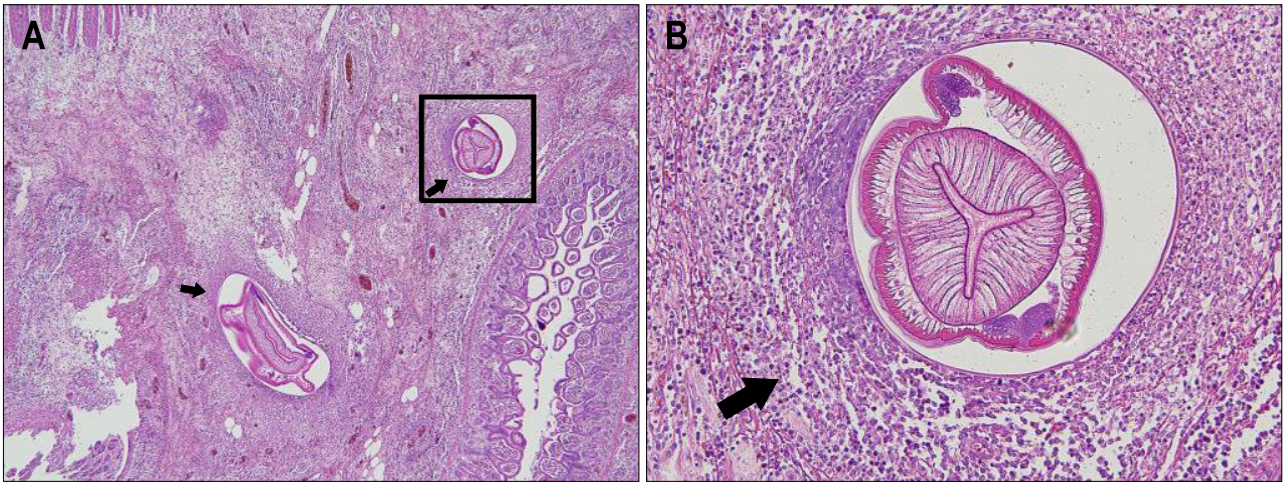

Fig. 4. Histopathologic findings showed the severe infiltration of inflammation and edema in all layers of the intestinal wall with a submucosal eosinophilic granuloma around larvae (arrows), which were findings of anisakiasis (A) (H&E ×40), and magnification view of square showed eosinophilic granuloma around anisakiasis larva (B) (H&E ×200).

Histopathological examination showed severe infiltration of inflammatory cell, edema in all layers of the intestinal wall, and submucosal eosinophilic granulomas with anisakiasis larvae, confirming the diagnosis of anisakiasis (Fig. 4). The patient was discharged on the 7th day after surgery following an uneventful course of recovery.

Discussion

The disease of anisakiasis, first reported by Van Thiel in 1960,[1] is caused by the third stage larvae of the *Anisakis* spp, mainly *A. simplex*, and to a much lesser extent *A. physeteris*, after the ingestion of raw or insufficiently cooked fish. The adult *Anisakis* lives in the stomach of marine mammals such as whales and dolphins. Crustaceans are the first intermediary hosts. The second intermediary hosts include various species of fish and some cuttlefish. Humans are only accidentally contaminated.[1,4]

Anisakiasis is classified as a luminal and an invasive form, according to the presence of bowel wall invasion by *Anisakis* larvae. The luminal form does not cause major clinical symptoms, but the invasive form can.[4] The invasive form is subdivided into gastric and intestinal type, according to the penetration site. Cases of gastric anisakiasis (95% of cases) are more common than enteric anisakiasis, and the latter is rarely reported.[2-5] Our case had the enteric- invasive type of anisakiasis, found in the jejunum, which was a very rarely involved site. Only 1 case of the acute invasive enteric anisakiasis of jejunum was reported in Korea.[6]

The pathology of anisakiasis is mainly due to two mechanisms: allergic reactions and direct tissue damage. The former range from isolated urticaria and angioedema to life-threatening anaphylactic shock associated with gastrointestinal symptoms. Allergic reactions can occur after primary infection of *Anisakis* as allergens in the food. Direct tissue damage is due to parasite invasion of the gut wall, development of eosinophilic granuloma, or perforation.[2,7] Sudden abdominal pain occurs within 12-72 hours after the ingestion of raw fish in cases of acute gastric anisakiasis. In these instances, the larvae can be seen directly by gastroscopy and removed with a biopsy forcep. Chronic anisakiasis of the stomach may mimic peptic ulcer, chronic gastritis, and gastric cancer. Patients with enteric anisakiasis have diffuse and colicky abdominal pain within several days after ingesting raw fish. It has been reported that anisakiasis is usually a self-limiting disease cured by conservative management for 1-2 weeks after the onset of symptoms. However, small bowel obstruction by anisakiasis is not considered to be an alarming sign.[2-5] Matsuo et al.[8] suggested that early laparotomy is needed in the case of severe intestinal stenosis resulting from anisakiasis. They treated two patients with severe stenosis of the small intestine caused by anisakiasis with long-term conservative management. Eventually, surgical intervention was performed on the 23rd and 35th days in the hospital, respectively. So, they suggested that early laparotomy should be considered in the cases of patients with severe intestinal stenosis resulting from anisakiasis.

Histopathological examination of the resected specimens revealed the intestinal wall had been completely damaged by the inflammatory reaction of anisakiasis, and the damage was irreversible, thereby suggesting that laparotomy is indicated in cases of severe small bowel stenosis caused by intestinal anisakiasis. Because enteric anisakiasis is usually a self-limiting disease, despite these reports, some argue that an early surgical approach should be avoided in cases where a small bowel obstruction suggests the possibility of intestinal anisakiasis.[9,10]

It is important for surgeons to make a decision whether or not to operate in cases of bowel stenosis by considering clinical and radiological aspects. A positive result on a serological test has been shown to be helpful when diagnosing; however, positive IgE values against anisakiasis in subjects without symptoms of allergy cannot be considered a reliable indicator. This antibody has been detected in 25% of healthy controls and lacks specificity as a result of cross-reactivity with other parasite antigens, and it is not generally available and therefore of limited benefit in early diagnosis.[2,11] Increased eosinophil levels are observed in less than half of the patients with anisakiasis, and when the eosinophil levels are increased, they tend to be normal on the 1st hospital day and gradually become enhanced later.[10,12,13] This case showed normal eosinophil level, and the eosinophil count is not likely to be a useful tool in diagnosing enteric anisakiasis.

Imaging modalities have been reported to be useful to diagnose enteric anisakiasis. Typical CT findings include a relatively long segment of symmetric wall thickening with luminal narrowing and diffuse contrast enhancement of the involved segment.[14] However, the most important diagnostic clue of enteric anisakiasis is a history of raw fish ingestion within 3 days, which may be missed if of the physician do not have knowledge or awareness of risk regarding anisakiasis. The diagnosis of intestinal involvement in cases of anisakiasis is a

difficult matter, and often only confirmed on histological specimens. As a result, enteric anisakiasis is misdiagnosed and underestimated as a cause of acute abdominal symptoms, and most patients undergo laparotomy. Anisakiasis should be kept in mind as a differential diagnosis in cases of acute abdominal pain, in which the patient reports a history of eating raw fish before the onset of symptoms.

We hope this report prompts physicians and radiologists to consider the possibility of anisakiasis when examining cases of small bowel obstruction, and we are convinced that efforts made to identify the cause of anisakiasis will help patient treatment and decision-making.

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