

Nine cases of acute gastric anisakiasis

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From 1983 to 1988, we treated 19 patients with acute gastritis which was highly suggestive of gastritis anisakiasis. Almost all of these patients complained of sharp, periodic, upper abdominal pains which occurred several hours after ingestion of raw fish. Among the 19 patients, 10 anisakis larvae from nine patients were successfully removed by endoscopic forceps. However, in the remaining 10 patients, who also showed the typical clinical course of anisakiasis, we could not find the anisakis larvae endoscopically. All 10 larvae were identified as stage III, anisakis type 1. The intolerable pain was relieved as soon as endoscopic removal of the larvae was accomplished in all nine patients. The purpose of this article was to report the clinical findings and emphasize the importance of early endoscopic management of acute gastric anisakiasis. (Gastrointest Endosc 1989;35:304-308)

Acute gastric anisakiasis caused by gastric mucosal penetration of the anisakis larvae was first reported in 1960 by Van Thiel et al.¹ The disease is acquired by eating infected raw, pickled, salted fish such as herring, mackerel, squid, salmon, bonito, tuna, or cuttlefish. In Japan, many kinds of raw fish are customarily eaten as "Sushi" or "Sashimi." Many cases of anisakiasis in the digestive tract have been reported since the first report in 1963.² Recently, case reports of human anisakiasis have increased, not only from Japan, but also from other countries.³⁻⁶

MATERIALS AND METHODS

From April 1983 to March 1988, 19 patients were diagnosed as suffering from acute gastric anisakiasis from a typical clinical course and endoscopic findings. Of those 19, before the endoscopic examination, 6 patients underwent an upper gastrointestinal (GI) tract radiographic series. Ten anisakis larvae in the gastric mucosa were observed endoscopically. Extraction was successful in nine patients. Three of these nine patients had an upper GI tract series before endoscopic extraction. In this article, the authors report the clinical, radiographic, and endoscopic findings of the nine cases of anisakiasis in which the anisakis larvae were successfully removed.

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Clinical features

The patients ranged in age from 14 to 56 years (mean, 35 years). Women outnumbered men 2:1. All complained of intermittent sharp pain at 15- to 30-min intervals. Some patients experienced nausea, urticaria, chills, or heart burn before the attack. These symptoms occurred within 1.5 to 10 hours (mean, 4.5 hours) after ingestion of raw fish infected with anisakis larvae. Five of the patients reported having eaten mackerel, three had eaten cuttlefish, and one, sea bream (Table 1). Most of the patients were seen between October and May.

Radiological findings

Among the nine patients, three patients had an upper GI series before endoscopic removal of the anisakis larvae. Case 1 showed localized swelling of the gastric mucosa. The mucosal changes resembled intramural tumor with bridging folds (Fig. 1). Case 2 showed gastric mucosal edema as coarse and broad gastritis folds, as in hypertrophic gastritis (Fig. 2). Case 8 showed two anisakis larvae well demarcated as thread-like filling defects in edematous mucosa on the anterior wall of the middle corpus and the antrum (Fig. 3).

Endoscopic findings

In all nine patients who underwent endoscopy, the worms were removed with biopsy forceps and a definite diagnosis of anisakiasis was made. In all our cases except case 8, a single worm partially penetrating into the gastric mucosa was found at the upper or lower part of the corpus near the greater curvature. Local or generalized mucosal edema was also observed in seven patients. One case each of localized mass formation and severe erosive gastritis with bleeding

Table 1.
Nine cases of acute gastric anisakiasis

Case	Patient age/sex	Type of raw fish	Time from ingestion of raw fish to onset of symptoms	Findings of upper GI series	Location of the worm and endoscopic findings
1	35/F	Mackerel with vinegar	3 hours, epigastric pain	Intramucosal tumor-like formation	Posterior wall of the middle corpus. Intramucosal tumor-like formation
2	32/F	Cuttlefish Mackerel	2.5 hours, epigastric pain	Hyperplastic gastritis	Posterior wall of the middle corpus. Moderately edematous and reddish
3	40/F	Mackerel with vinegar	3 hours, urticaria and 10 hours, epigastric pain	—	Posterior wall of the lower corpus. Moderately edematous
4	23/M	Mackerel with vinegar	5 hours, epigastric pain	—	Posterior wall of the middle corpus. Moderately edematous and reddish anterior wall of the upper corpus. Moderately edematous and reddish
5	36/M	Cuttlefish	5 hours, epigastric pain	—	Anterior wall of the upper corpus. Moderately edematous and reddish
6	14/F	Mackerel with vinegar	4 hours, epigastric pain	—	Greater curvature of the middle corpus. Moderately edematous
7	56/F	Sea bream	1.5 hours, burning and epigastric pain	—	Greater curvature of the lower corpus. Moderately edematous
8	38/F	Mackerel with vinegar	2 hours, chill and 7 hours, epigastric pain	Two anisakis larvae and hyperplastic gastritis	Anterior wall of the middle and the anterior wall. Moderately edematous
9	41/M	Cuttlefish Horse mackerel	7 hours	—	Posterior wall of the antrum. Erosive gastritis with bleeding

was observed (Figs. 4 to 6). All cases in our series belonged to type 1 anisakis (stage III) (Figs. 7 and 8). After endoscopic removal, epigastric pain disappeared within a few hours.

DISCUSSION

Anisakiasis of the digestive tract has been reported to affect the stomach in 75% of cases and the intestine in 25%.⁷ Many kinds of raw seafood are habitually eaten by Japanese, and cases of human anisakiasis have mostly been reported from Japan. Recently, several cases from the United States and Europe have

been reported.⁸⁻¹⁰ In Japan, in 1964, Asami et al.¹¹ first reported a granulomatous tumor of the stomach which was infected by anisakis larvae.

In the life cycle of an anisakis, the final hosts of the worm are sea mammals such as dolphins, seals, fur seals, and whales. The ova of the anisakis are spawned by those sea mammals and are passed on to a variety of sea fish such as shrimp, cuttlefish, herring, or mackerel which act as intermediate hosts where the larvae reach stage III in their development.¹²

The most common symptom of this disease is severe

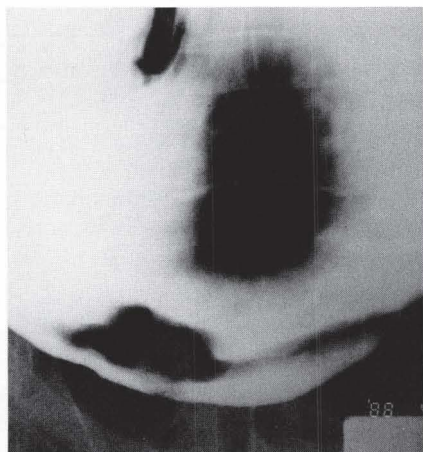


Figure 1. Localized swelling of the gastric mucosa is the same clinical presentation as submucosal tumor with bridging folds (case 1).

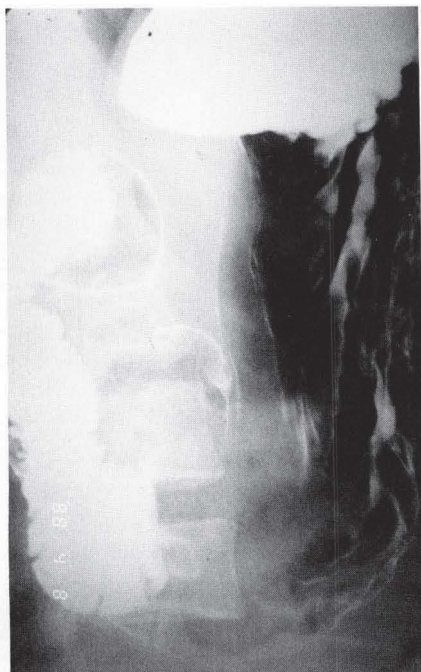


Figure 2. The mucosal swelling caused by extensive edema resembles that seen in hypertrophic gastritis (case 2).

and intermittent epigastric pain. The patients have usually eaten raw fish within 12 hours of onset. In some patients, before the attack, nausea, urticaria, and chilling begin within 1 hour after ingestion of raw fish. Suzuki et al.¹³ classified the clinicopathological changes of gastrointestinal anisakiasis into two types: a fulminant and a mild form. If the patients are previously sensitized by anisakis antigen, drastic clinical symptoms occur characterized by an Arthus-type allergic reaction. If the worm infects a nonsensitized person, the clinical symptoms are mild or absent. All our cases were the fulminant form.

Kusuhara et al.¹⁴ reported in their 226 patients with acute gastric anisakiasis that gastric mucosal edema was seen in 78%. Localized swelling of the gastric mucosa was seen in 19.8%. In 56.3% of their cases, anisakis larvae could be demonstrated. The stomach mucosa of anisakiasis shows local or generalized mucosal edema with or without erosion or tumor formation.

Severe epigastric pain disappears rapidly after endoscopic removal of the larvae. If the anisakis larvae cannot be removed, the symptoms will continue for a few days until the worms die in the penetrated gastric mucosa.¹⁵ There are some reports of surgical intervention due to peritonitis with abscess formation because of stomach or intestinal perforation, or intestinal obstruction.^{6,9,16,17}

All our nine cases were diagnosed during September and May. Kusuhara et al.¹⁴ reported that half of their cases were seen in early spring. Sugimachi et al.¹⁵ reported in their 174 cases of stomach anisakiasis that 96% of patients were seen between February and May. This may be related to a seasonal increase in consumption of raw fish or to the prevalence and numbers of anisakis larvae in fish hosts.⁵

Radiographically, swelling of the antral folds and widening of the gastric angle with irregular marginal indentation has been observed. Endoscopy has proved to be the most effective approach for correct diagnosis.^{14,15} It is very important to perform endoscopic extraction of larvae. Early endoscopy is highly rec-

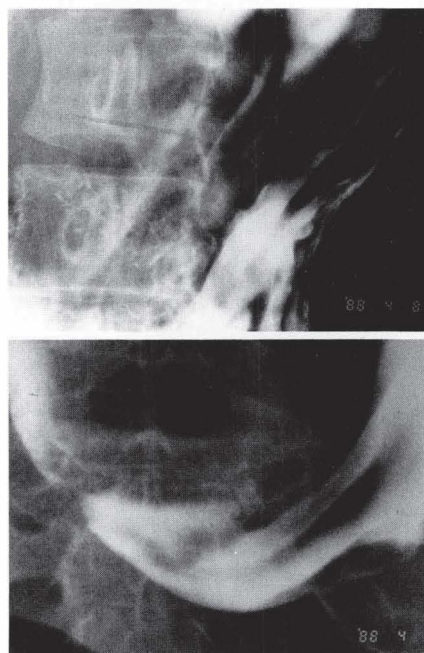


Figure 3. The thread-like signs caused by anisakis larvae are shown on the middle corpus and the antrum in the same patient (case 9).

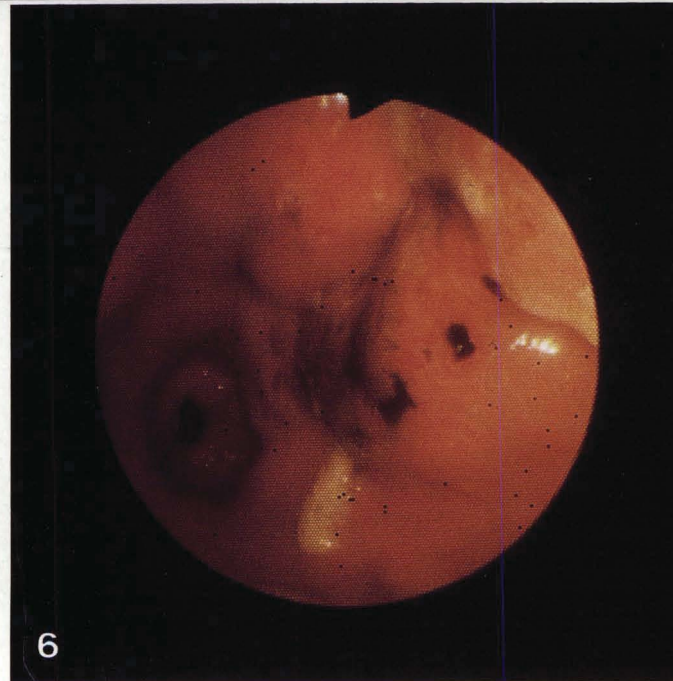
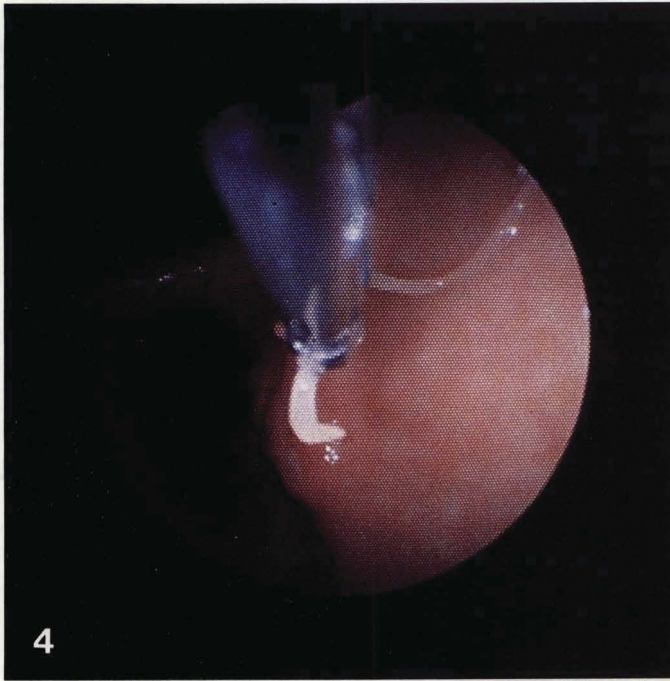


Figure 4. The worm penetrated on the anal side of the gastric mucosa. Its tail was located on the oral side.

Figure 5. The sessile, polypoid lesion is like an intramural tumor with bridging folds. Anisakis larva being removed from the top of the edematous mucosa (case 1).

Figure 6. Severe erosive gastritis with bleeding was seen on the antrum (case 10).

ommended for patients who are suspected to have acute gastric anisakiasis, primarily those who have ingested raw fish within 12 hours before the onset of symptoms.

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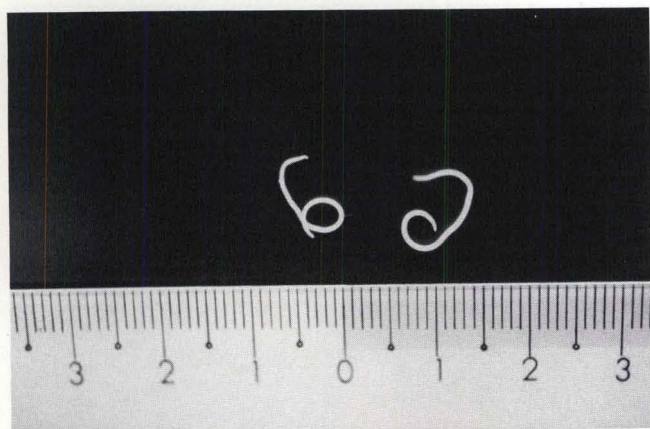


Figure 7. Anisakis larvae measure 25 mm $\times$ 0.7 mm in diameter (extracted from case 8).

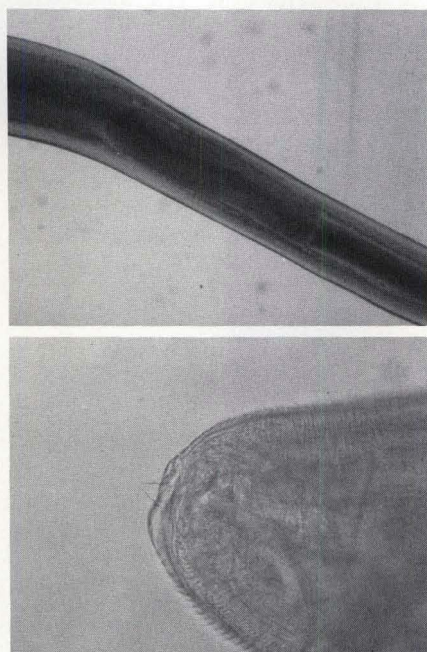


Figure 8. Stomach and tail of anisakis; simple ventriculus (above, $\times 50$). The tail with mucron (below, $\times 400$) is characteristic of anisakis type 1.

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