

*Case Report***Incidental detection of an *Anisakis* larva in continuous ambulatory peritoneal dialysis effluent**Chung-Ho Yeum¹, Seong-Kwon Ma², Soo-Wan Kim², Nam-Ho Kim², Jin Kim³ and Ki-Chul Choi²

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Introduction

Anisakiasis is a parasitic disease of the gastrointestinal tract caused by ingestion of *Anisakis* larvae present in raw or undercooked fish such as sashimi, sushi, ceviche, and lomi-lomi. This disease is not uncommon in Korea, where people habitually eat raw fish [1].

Anisakis larvae commonly lodge in the wall of the stomach, intestine, or colon, causing an inflammatory response and acute symptoms such as sudden abdominal pain, fever, nausea, vomiting, and diarrhoea [2]. Extragastrointestinal anisakiasis is caused by a larva, which escapes the gastrointestinal wall to make lesions in the abdominal cavity, pancreas, ovary, utero-cervix, lymph node, liver, lung, or subcutaneous tissues [3]. It is a rare disease with less specific manifestations and can resemble other intestinal conditions. Recently, a case of continuous ambulatory peritoneal dialysis (CAPD) peritonitis caused by *Anisakis* larvae was reported [4]. However, we observed a patient presenting with *Anisakis* larva in CAPD effluent that had no evidence of peritonitis. He had been showing good tolerance of CAPD except for the development of mild abdominal discomfort 4 weeks previously.

Here we report a case of incidental *Anisakis* larva detection in CAPD effluent with no evidence of peritonitis.

Case

A 30-year-old man, who had been treated with CAPD for 3 years, reported to Chonnam National University

Hospital because of incidental detection of a worm in the CAPD effluent (Figure 1A). He had noticed a living white worm floating in the dialysate effluent during dialysis, which began moving about after recovering from the fluid.

The patient had eaten raw seafood 4 weeks before his visit and had experienced mild abdominal discomfort with feelings of fullness thereafter. Physical examination was unremarkable. Laboratory findings showed a slight elevation of white blood cells (11 000/mm³) with mild eosinophilia (eosinophils, 6.6%), elevated erythrocyte sedimentation rate (114 mm/h), and negative C-reactive protein. The CAPD effluent was clear, and there were no white blood cells in the peritoneal fluid during three separate examinations. Gastro-duodenofiberscopy showed no worms and no evidence of gastric erosion or haemorrhage. Results from an upper gastrointestinal series and a follow-up small bowel study were also unremarkable.

The retrieved worm was 28.4×0.5 mm in size and had a circular thread-like appearance. The anterior end of the larva, the straight oesophagus, ventriculus, and intestine were visible; however, the intestinal caecum and ventricular appendage were not observed. In cross section, the cuticle was thin with a uniform thickness, and muscle cells were of the polymyarian type. Internal organs were composed of the lobular wing-like lateral cord, the excretory cell (renette cell), and the circular intestine (Figure 1B). These morphologic features were diagnostic for the larva of *Anisakis simplex*.

Discussion

Anisakiasis is a common parasitic infection in Korea and Japan, where uncooked fish are commonly consumed in the form of sushi and sashimi [1,2]. Although the most common sites of involvement are the stomach and small bowel, a few cases of large intestine infestation have been described [2]. In extragastrointestinal cases, the larvae escape the wall, producing

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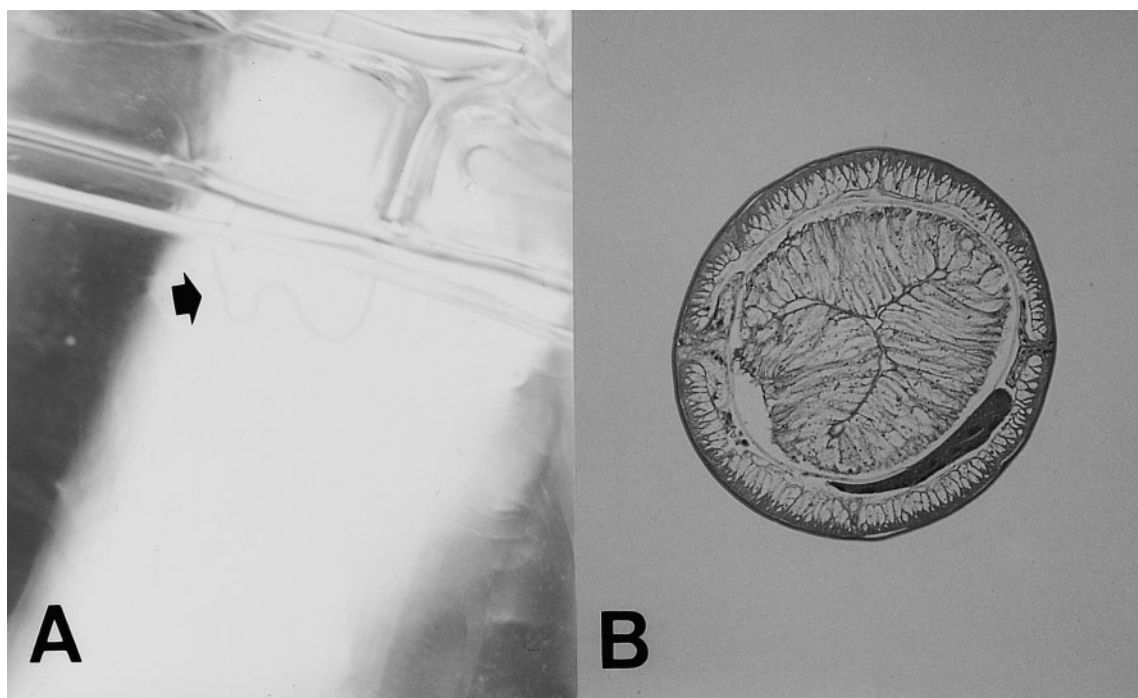


Fig. 1. An *Anisakis* larva (arrow) floating in the CAPD effluent (**A**, no stain, magnification $\times 40$), and its transverse section (**B**, hematoxylin and eosin stain, magnification $\times 100$).

a more insidious disease. Other peritoneal cases have been reported, but none had described visible lesions upon radiologic study, probably because of its small size [3]. In agreement, the present case showed no visible lesions during gastrofiberscopy and small bowel tests.

Muraoka *et al.* [5] demonstrated a relationship between the activities of *Anisakis* larvae and the pH in the stomach. Acidity in the stomach appears to facilitate *Anisakis* larvae growth, and the acidic medium of the CAPD fluid in our study, Gambrosol (Gambro, USA) with pH 5.5, might have provided good milieu for the survival of *Anisakis* larva.

Ohta *et al.* [4] reported a case of CAPD peritonitis caused by *Anisakis* larva. In the present case, however, there was no evidence of peritonitis. Therefore, we should keep in mind that the *Anisakis* larva can be detected incidentally in CAPD effluent

without inflammation, especially in areas where dietary habits include eating raw or improperly cooked seafoods.

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