



Brief Clinical Observation

Anisakis infestation: a case of acute abdomen mimicking Crohn's disease and eosinophilic gastroenteritis

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Abstract

Anisakiasis is a rare parasitic disease transmitted to humans by the ingestion of raw fish, which can initially present with acute abdomen. We report the case of a man, a habitual consumer of raw fish, who underwent surgery for acute abdomen, initially attributed to Crohn's disease and then later interpreted as eosinophilic enteritis. Only the subsequent careful histological examination of the surgical specimen, revealing full thickness eosinophilic infiltrate, generally typical of infestation, led to the detection of *Anisakis simplex* larva. In cases of acute abdomen, in the presence of a positive history of raw fish ingestion, it is therefore reasonable to consider the possibility of anisakiasis.

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1. Introduction

Anisakiasis, also known as anisakidosis, is a parasitic disease caused by the third or, rarely, the fourth stage larva of the nematode *A. simplex*. Adult worms are found in the intestine of marine mammals; eggs are passed in the faeces and they hatch to liberate larvae. If ingested by crustaceans, the larvae grow and molt. When infected crustaceans are eaten by fish, the third stage larvae penetrate into the body cavity and muscles of the fish (intermediate host). The ingestion of raw or undercooked contaminated seafood products can transmit the disease to man. Human infestation by *Anisakis* larvae was first reported in The Netherlands by Van Thiel et al. in 1960 [1]. Since then, several cases have been reported in Japan, where there is a large consumption of raw or lightly cooked fish (e.g. sushi and sashimi). In the last few years, however,

several cases of anisakiasis have also been reported in many European countries, Italy being one of these [2,3].

We report a case of intestinal anisakiasis that presented with the picture of acute abdomen, first interpreted as Crohn's disease and then as eosinophilic enteritis.

2. Case report

A 41-year-old man presenting with partial intestinal obstruction evolving into acute abdomen was operated on with resection of the right colon and the terminal ileum. An initial histological examination of the intestinal specimens showed localised infiltrates of eosinophils in the lamina propria, compatible with Crohn's disease; the patient was therefore treated with mesalazin. One year later, the persistence of diarrhoea and abdominal pain led the clinicians to review their diagnosis, submitting the histological examination of the specimen to another pathologist. Eosinophilic gastroenteritis was diagnosed and disodium cromoglycate treatment

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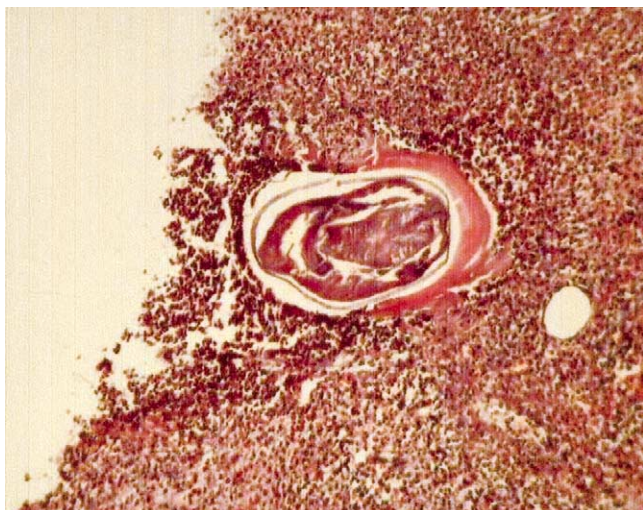


Fig. 1. Eosinophilic infiltrate surrounding an *A. simplex* larva (original magnification 20×).

was suggested. As the symptoms of diarrhoea and abdominal pain persisted, the patient came under our care, 18 months after the operation. His laboratory data, including inflammation parameters and blood count with formula, did not show any alterations. A further microscopic examination of the histological specimen obtained during surgery revealed the presence of full thickness eosinophilic infiltrate, involving the mucosum, muscularis and serosum strata. This finding is not typical of eosinophilic gastroenteritis, but generally compatible with infestation. Meticulous observation of sections of the entire specimen under the microscope led to identification of an *Anisakis* as being responsible for the impressive histological and clinical picture causing surgical intervention (Fig. 1). Finally, a close and targeted study of the patient's history showed that he frequently ate raw fish over a number of years and that he had eaten raw fish (marinated sardines) about 7 days before the onset of the clinical symptoms. Treatment was thus started with pyrantel pamoate, paromomycin, then metronidazole and subsequently low doses of steroids. This therapy led to a complete regression of the clinical symptoms. One year after disinfection treatment, the patient is in generally good health.

3. Discussion

Anisakiasis is a rare parasitic disease, although its incidence has considerably increased in the last few years to the extent of being considered a 'leading problem' in Japan, where hundreds of cases are diagnosed every year. The first case identified in Italy dates back to 1996 and several cases have been reported since then. The increased recognition of this parasitic disease in Europe is probably due to an increased consumption of raw fish, perhaps due to an increase in the number of Asian restaurants and increased awareness in physicians because of its possible role in some acute and

chronic intestinal diseases. After initial human infestation through the ingestion of raw or undercooked contaminated seafood products, the larvae of the nematode *A. simplex* can be either expelled by vomiting or stools, or can penetrate the wall of the gastrointestinal tract, especially the stomach and the small intestine. Nevertheless, cases involving colon and extraintestinal organs such as the peritoneum, lungs, lymph nodes, ovaries, liver, pancreas and spleen have been recently reported [3]. Anisakiasis presents in most cases with an acute picture, generally due to invasion of the gastric wall. This profile is characterised by severe abdominal pain, fever, nausea and vomiting and diarrhoea or, less frequently, by acute urticaria and anaphylactoid reactions within hours after consuming *A. simplex*-infested fish [4]. Rarely, anisakiasis can occur in a chronic form, generally due to the involvement of the small intestine, where eosinophilic inflammatory infiltrates with granuloma around the larvae induces tumour formation and gastrointestinal obstruction [5], as occurred in our patient. Although it has been reported that the larvae can remain alive at this level for months, even years, typically they die within a few weeks. In this case, however, antigens released by the dead larvae triggered an immune response with formation of an eosinophilic infiltrate [2]. The chronic form generally presents weeks to months after infestation, suggesting that, in our case, the clinical picture was not the result of the reported ingestion of raw fish a week before the onset of the symptoms, but more probably it was due to a previous consumption in view of the dietary habits of our patient. Several epidemiological studies suggest that different geographical areas are associated with a different localisation of the larva; in Japan, in fact, the acute gastric form prevails (95%), while in Europe, as in our case, the chronic intestinal form seems to be more frequent [6].

A confirmed etiological diagnosis is based exclusively on the direct finding of the nematode larva in the relative organ. Gastric anisakiasis can be diagnosed in most cases by direct observation of the parasite by endoscopy (larva adhering to a mucosa presenting oedema, hyperaemia and sometimes ulcerations). On the contrary, diagnosis of intestinal anisakiasis is often very difficult. In these cases, indirect serological tests, both specific (skin-prick test and specific IgE) and non-specific (leucocytosis, hypersedimentation, eosinophilia), can provide useful diagnostic indications; however, the reliability of the former is weakened by possible cross-reactions with other helminthes, while the latter is often not present.

In acute gastric form, endoscopy can represent a valid diagnostic tool, and at the same time early endoscopic removal of larvae becomes the elective treatment [7]. In the chronic form, the surgical or laparoscopic excision of the granuloma is the chosen treatment [8]. More recently, the use of benzimidazole derivatives, like mebendazole or albendazole, has been suggested; whether the use of these drugs alone can lead to a complete resolution of the clinical picture remains a controversial issue [9].

To our knowledge, only a few studies have been published on the long-term treatment of patients who continue to present major symptoms even after surgery. We think that also after the removal of the intestinal tract with the larva, it can be useful, as in our case, to administer antiparasitic and immunomodulating drugs. In particular, in a habitual eater of raw fish, the antiparasitic therapy makes it possible to eliminate any larvae missed during surgery and which could cause less evident but limiting symptoms for the patient. In our opinion, this approach is too important, not only to resolve persistent symptoms but also because it has recently been suggested that *A. simplex* may be implicated in carcinogenetic processes of the gastrointestinal tract since certain antigenic fractions have mutagenic and tumour-promoting activity [10]. Finally, the use of drugs with an immunomodulating activity may prove useful in a pathological condition characterised by an inflammatory response triggered as a result of the infestation but which is subsequently self-supporting, as suggested also in post-infectious irritable bowel syndrome [11].

As far as the prevention of anisakiasis is concerned, some methods for the preparation of fish have been suggested which kill any larvae that may be present (heated to at least 60 °C for >1 min, or frozen at <−20 °C for >24 h). In Holland, where this treatment is very carefully carried out, the disease has been virtually eradicated [12].

In conclusion, the incidence of anisakiasis is probably higher than reported, since a number of cases might not be diagnosed and others might heal spontaneously. Our case suggests that human anisakiasis must be taken into account in the differential diagnosis of acute abdominal syndromes in subjects who have ingested raw or undercooked fish. Histopathologists should consider the possibility of this parasitic infection when confronted with an eosinophilic granuloma of the digestive tract, mesentery or peritoneum. Underestimating this possibility, as was the case in our patient, can lead to a considerable delay in diagnosis with con-

sequent possible disadvantages for the quality of life of the patient.

Conflict of interest statement

None declared.

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