

Eosinophilic gastritis due to *Anisakis*: a case report

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SUMMARY

Background: the parasite *Anisakis simplex* is a helminth included in the nematode class. When man eats raw or rare fish and cephalopods infested by *Anisakis* larvae, he can acquire the parasitic disease (anisakidosis). The parasite can also originate manifestations of immediate IgE mediated hypersensitivity in patients with sensitisation to it.

Methods and results: we present the case of a 14 year old boy diagnosed of eosinophilic gastritis after endoscopic examination and biopsy associated to recurrent abdominal pain. After allergologic study, a type I hypersensitivity mechanism against *Anisakis simplex* is confirmed by means of prick test, antigen specific IgE determination and antigen specific histamine release test. Sensitisation against fish proteins is ruled out as well as parasitic infestation.

Conclusions: in this case report we demonstrate a type I hypersensitivity mechanism against *Anisakis simplex* in a patient diagnosed of eosinophilic gastritis. This can be suspected in cases of gastritis or non filiated enteritis with a torpid evolution following the conventional treatment and especially if the onset of the symptoms is related with the intake of fish. The therapeutic success was reached when fish and shellfish were taken out of the diet. After two years without seafood ingestion our patient is asymptomatic and the allergologic study has been normalised.

Key words: Eosinophilic gastritis. *Anisakis simplex*. Prick test. Antigen-specific IgE. Histamine release test.

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INTRODUCTION

The parasite *Anisakis simplex* is a helminth included in the nematode class, of the Ascaridae superfamily, belonging to the Anisakidae subfamily together with the *Pseudoterranova* and *Contracaecum* genders. It has been noticed that the nematodes *Anisakis*, *Pseudoterranova* and *Contracaecum* live in the digestive tract of big marine mammals; several fish and cephalopods act as intermediary hosts (1). When man eats raw or rare fish infested by *Anisakis* larvae, he can acquire the parasitic disease (Anisakidosis) (2-4). This clinical manifestation can develop either in an invasive manner, when the parasite gets into the mucosa, dwells in the submucosa and gives place occasionally to pyrosis, epigastralgia, nausea, vomits, diarrhea and abdominal pain or it enters the tissues staying in a non-invasive manner in the digestive tract and being usually asymptomatic.

Van Thiel described the first case of human anisakiasis in Holland in 1960 (5, 6) although it is Japan where this disease has been most frequently described, due to the common intake of raw fish (7).

Nevertheless, the parasite can also originate manifestations of immediate IgE-mediated hypersensitivity in patients with sensitisation to it if it is ingested in larval phase. Several cases of urticaria, angioedema and/or anaphylactic shock have been described in Spain after intake of parasitized fish in patients with *A. simplex* sensitisation (4, 8-11).

We present the case of a 14 year old boy diagnosed of eosinophilic gastritis after endoscopic exploration and biopsy due to recurrent abdominal pain, who was sent to our Department for an allergologic study.

CASE REPORT

The patient had presented recurrent abdominal pain for several years that he related to anxiety and nervousness, as well as aerophagia and meteorism. He referred three recent episodes of abdominal pain, the last one accompanied by vomits, malaise and tiredness with no other symptomatology, reason why an endoscopy and biopsy were done. Some minimal pointy lesions were observed in the gastroscopy with signs of recent hemostasis in fundus and body of stomach, and a small erythematous area at prepyloric level, being then diagnosed of slight erosive gastritis. The biopsy of gastric mucous showed an active process of chronic inflammation with a predominance of eosinophils in the lamina propria. He followed treatment with cimetidine and omeprazole with no clinical improvement, and he was sent to our Department for study with the diagnosis of eosinophilic gastritis.

In the history on his dietetic habits, a rejection to fried eggs was observed due to gastric trouble after its intake; nevertheless the patient tolerated boiled eggs, as well as milk and fish. Sometimes after intake of shellfish the patient presented episodes of acute abdominal pain, although he did not have aversion to molluscs or crustaceans. After the endoscopic study the patient avoided intake of eggs and shellfish, experiencing an important improvement.

The results of the stool culture, oxyuriasis and serology of the larva *Migrans Visceral* were negative.

In the allergologic study, we performed intradermal skin tests with a standard battery of allergens including food antigens (fish, shell-fish, fruits, vegetables, nuts, legumes, milk, eggs and cocoa) and inhalant allergens (animal epithelium, mites, air moulds and pollen). We also tested the antigen fractions of egg separately (white, yolk, ovalbumin) and the following fish and shell-fish: anchovies, red mullet, sardine, bream, sole, hake, cod, clam, squid, prawns and big prawns. The results were negative. We increased the allergologic study by performing prick test with extract of *Anisakis simplex* with a result of papule of 5 × 4 mm.

Total IgE following the Pharmacia ImmunoCAP System method was 44.8 kU/l and antigen specific IgE to ovalbumin, white and yolk of egg, squid hake was negative. Antigen specific IgE to *Anisakis simplex* was 85.3 kU/l (class 5). Histamine release test (by means of the fluorometric method in total blood) against hake, squid and fractions of the egg was negative, and against *Anisakis simplex* the result was 30%. The biochemical and haematological determinations performed were within normal levels

for the age of the patient, with a percentage of eosinophils in the blood test of 4.3%.

Our patient has followed a diet without seafood ingestion. Now, he is asymptomatic and the results of the allergologic study, two years later, has been normalised: total IgE is 23.6 kU/l, antigen specific IgE to *Anisakis simplex* is 31.5 kU/l (class 2), and intradermal skin test with extract of *Anisakis simplex* is negative.

DISCUSSION

Nowadays the symptoms originated by infestation of *Anisakis simplex*, due to the intake of raw or very rare fish is clearly differentiated from the allergic sensitisation to this parasite which can be triggered independently from how the fish is cooked and its previous treatment, since as demonstrated in previous articles, the allergenic proteins involved are thermostable and depend more on sequential than on conformational antigenic determinants (9, 10). Therefore, from an allergologic point of view and considering the frequent presence of fish in our diet, it is really difficult to avoid sensitisation to this parasite (12). As a consequence, it is basic to maintain suspicion of sensitisation to *Anisakis* in the cases of patients with urticaria and/or angioedema, or either anaphylactic reaction after intake of fish and cephalopods. Nevertheless, at sight of the case report presented, our suspicion of possible allergenic sensitisation against *Anisakis simplex* can also include cases of gastritis or non-filiated enteritis with a torpid evolution following the conventional treatment and especially if the onset of the symptoms is related with the intake of fish.

The allergologic tests performed *in vivo* and *in vitro* are reliable in the diagnosis of *Anisakis simplex* and are commercially available (13). Although the final diagnosis can only be confirmed by means of oral double-blind provocation test against placebo with the *Anisakis simplex* antigens, this test was not performed since it is risky and we did not find it necessary considering the results obtained from the clinical history, the biopsy and the allergologic tests.

In conclusion, in this case report we demonstrate a type I hypersensitivity mechanism against *Anisakis simplex* by means of *in vivo* test (skin test) and *in vitro* test (specific IgE and histamine release test) in a patient diagnosed of eosinophilic gastritis; also we ruled out the possibility of sensitisation to the fish proteins by the tests previously mentioned. No parasitic infestation was observed which could justify the clinical symptomatology. The therapeutic success was reached when fish and shellfish were

taken out of the diet. After two years without seafood ingestion our patient is asymptomatic and the allergologic study has been normalised.

RESUMEN

Introducción: el parásito *Anisakis simplex* es un helminto incluido en la clase de los nematodos. Cuando una persona ingiere algún pescado o cefalópodo infestado por larvas de *Anisakis* puede sufrir anisakidosis. El parásito puede también originar manifestaciones de hipersensibilidad inmediata mediada por IgE en pacientes sensibilizados.

Material y métodos: presentamos el caso clínico de un varón de 14 años diagnosticado de gastritis eosinofílica tras examen endoscópico y biopsia, asociado a dolor abdominal. Tras el estudio alergológico, se confirmó un mecanismo de hipersensibilidad tipo I frente a *Anisakis simplex* por medio de prick test, determinación de IgE antígeno específica y test de liberación de histamina antígeno específica. Se descartó sensibilización frente a proteínas de pescado, así como parasitación intestinal. Después de dos años sin ingerir productos marinos nuestro paciente se encuentra asintomático y el estudio alergológico se ha normalizado.

Conclusiones: en este caso clínico demostramos un mecanismo de hipersensibilidad tipo I frente a *Anisakis simplex* en un paciente diagnosticado de gastritis eosinofílica.

Podemos sospechar sensibilización frente a este helminto en aquellos casos de gastritis o enteritis no filiadas que evolucionan tórpidamente con los tratamientos habituales, especialmente si la sintomatología se relaciona con la ingesta de pescado o marisco. El éxito terapéutico se consigue con la exclusión de pescado y marisco de la dieta.

Palabras clave: Gastritis eosinofílica. *Anisakis simplex*. Prick test. IgE antígeno específica. Test de liberación de histamina (TLH).

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