Anisakis simplex allergy and nephrotic syndrome

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ABSTRACT

Background: Anisakis simplex is a helmintic parasite of fish and shellfish that can induce in humans, after consumption, an immunoallergic response with multiorganic affectation, especially cutaneous (urticaria and angioedema), gastrointestinal and anaphylactic symptoms. Nephrotic syndrome can be produced by helmintic infection, especially schistosomiasis.

Objective: To report the unusual case of nephrotic syndrome associated to an allergic response to *A. simplex*.

Methods: A 60-year-old woman suffered from nephrotic syndrome three weeks after a generalized urticaria, angioedema and nauseas episode, following a raw anchovy's ingestion. Etiological study of nephrotic syndrome and urticaria/angioedema, cutaneous test, serum total and specific IgE determination, IgE-immunoblotting, and HLA typing were performed for diagnostic evaluation.

Results: Prick-test with *A. simplex* extract was positive. It was observed a significance increase of total IgE to the three weeks of anchovy's ingestion and then it diminished progressively. Specific IgE to *A. simplex* was > 100 UI/ml. Immunoblotting to *A. simplex*, revealed the existence of IgE-binding proteins with molecular mass ranging from 20 kDa to 99 kDa. Class I HLA expressed by the patient was type HLA-B12. Other secondary causes of nephrotic syndrome were carefully ruled out.

Conclusions: These data suggest, for the first time, the association between allergy to *A. simplex* and nephrotic syndrome.

Key words: nephrotic syndrome, allergy, *Anisakis simplex, urticaria, angioedema*

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INTRODUCTION

Helmintes are able to induce different diseases in humans, by direct action of the parasite, by the immunologic response induced in the host or by both mechanisms. *Anisakis simplex* is a worm, common parasite of fish and shellfish, acquired by humans by eating raw or undercooked fish which contain the third stage larvae of *A. simplex*.

Parasitic activity of the living larva in humans is called anisakiasis and symptoms are produced by penetration of the gastrointestinal mucosa by the larvae. In this sense, cases have been described of eosinophilic gastroenteritis, granulomas and abscesses with eosinophilia, fever and abdominal pain, acute appendicitis, mechanical ileus, gastritis and epigastric pain. Other organs like lungs, spleen, liver, pancreas, peritoneum, lymph nodes, amygdales and oesophagus are rarely affected. The survival of the larva usually does not exceed few weeks at the most.

Gastro allergic anisakiasis[1,2] is an acute and auto-limited reaction induced by the living larva, in which abdominal symptoms (nauseas, vomits, abdominal pain, diarrhoea) coexist with hypersensitivity symptoms, such us urticaria, angioedema and ana-

phylaxis. Diagnosis is made by: *1)* suggestive anamnesis after raw or undercooked fish consumption; *2)* gastroscopy; *3)* total IgE increase; *4)* significance levels of specific IgE to *A simplex* and *5)* peripheral eosinophilia (non constant).

Anisakiasis prophylaxis can be made by freezing all fish destined to consumption during 48 hours, or by industrial smoking at 60 °C at least for 10 minutes. However, termostabile proteins from *A. simplex* are also able to induce urticaria, angioedema or anaphylaxis by ingestion[3], behaving like a real food allergy, in which prophylaxis would be to avoid the consumption of any kind of fish and shellfish.

In addition occupational asthma and conjunctivitis, contact dermatitis and arthralgia/arthritis by *A. simplex* exposition have been described also.

Nephrotic syndrome (NS) is characterized by albuminuria, hypoalbuminemia, hyperlipidemia and edema and it is the common final point of diverse pathological processes which alter permeability of glomerular capillary wall. Nephrotic range proteinuria (> 3 g/day) is characteristic of glomerular diseases, and it is observed rarely in tubulo-intersticial and vascular diseases of the kidney. It could be suffered as a primary or secondary consequence of multiple illnesses, like helmintic parasite infection by filarias[4], *Echinococcus*[5], *Strongyloides*[6] and specially *Schistosoma*[7-9].

CASE

We present a case of a 60-year-old woman, housewife, non atopic, who suffered from arterial hypertension and was dealt with fosinopril a year ago. She referred periodic episodes of generalized urticaria and facial angioedema during the last years, which were controlled after treatment with antihistamines and systemic steroids. She suffered from another generalized urticaria episode, accompanied of facial angioedema and nauseas which needed emergence assistance nine hours after eating raw anchovies. Three weeks later hypoproteinemia, (5.4 g/dl), hypoalbuminemia (2.5 g/dl), and increase of α-2 and β-globulins was observed. Later she exhibited edemas in legs and eyelids, dyspepsia and general discomfort. In analysis, proteinuria (892.5 mg urine protein/day) and hypercholesterolemia were detected. Blood pressure and renal function were normal. A diet in absence of fish and seafood and urticaria-angioedema and nephrotic syndrome study were instituted. Six months later proteinuria rose up to 7.7 g urine protein/day (microalbuminuria of 1564 mg/dl and urine protein of 2672 mg/dl) and oral cyclosporin A (Sandimmun® Neoral) 3 mg/kg/day treatment was established with a spectacular and quickly decreases of the urine protein level (fig. 1). This treatment was maintained dur-

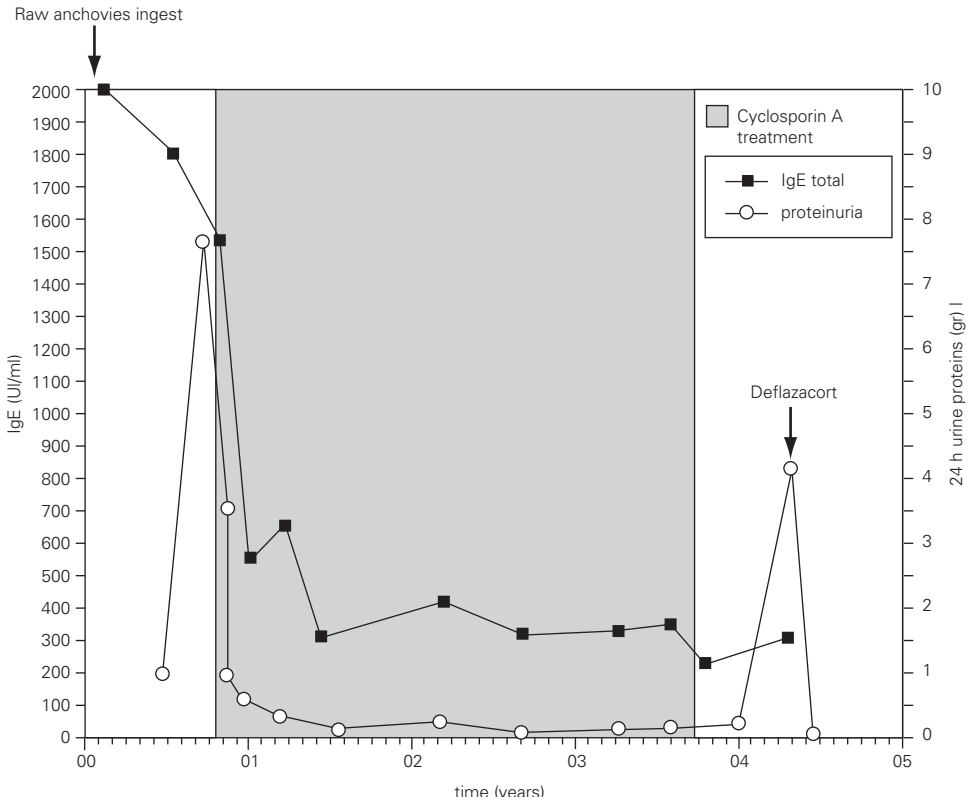

Figure 1.—Values of serum total IgE and urine protein. The total IgE was raised three week after the ingestion of raw anchovies and it decreased progressively to the six months. A great and rapid fall of urine proteins levels and total IgE was observed after initiation of cyclosporin A (CsA) treatment 3mg/kg/day. Seven months after CsA suppression, nephrotic syndrome relapsed and treatment with deflazacort was established.