

Occupational conjunctivitis caused by sensitization to *Anisakis simplex*

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Anisakis simplex is a fish parasite that causes acute or chronic disease in humans after ingestion of raw or undercooked parasitized fish.¹ However, in recent years hypersensitivity reactions after the ingestion of parasitized fish have been described, mainly urticaria angioedema or even severe anaphylaxis.^{2,3}

We report a patient with perennial conjunctivitis in whom a sensitization to *A simplex* was demonstrated to be the etiologic factor. This article also examines the possibility that *A simplex* may be also an airborne allergen.

CASE REPORT

The patient is a 56-year-old man without previous history of atopy. In the last 2 years he has complained of perennial itching, burning, and redness of the eyes with increased tearing and sometimes a mild discharge. Symptoms are bilateral and perennial but partially improved at home, on weekends, and on holidays. The patient had no cutaneous or respiratory symptoms, and he tolerated all foods (fish included) without problem. He worked at a fresh-fish market for 20 years. Physical examination revealed the presence of bilateral conjunctivitis. Conjunctival culture was sterile.

Skin tests

Skin prick tests were performed with common inhalants (domestic mites, storage mites, mold, pollens, German cockroach, and animal danders), fish (sardine, tuna, cod, hake, and megrim), and *A simplex* (1 mg/mL, IPI). Histamine (10 mg/mL) and saline solution were used as positive and negative controls, respectively. Skin test results were read after 20 minutes. Those with a wheal diameter of 3 mm larger than the negative control were regarded as positive.

Serum IgE

Total serum IgE and specific IgE determinations were performed by use of the CAP System (Pharmacia Diagnostics, Uppsala, Sweden). For this purpose, commercially available immunoCAP of *A simplex* was used.

Conjunctival provocation tests

A conjunctival provocation test (CPT) with *A simplex* was performed according to the recommendations of The European Academy of Allergology and Clinical Immunology Subcommittee on Provocation Tests with Allergens.⁴ One milligram of freeze-dried lyophilized extract was reconstituted at the time of testing by using 1 mL of bidistilled water as diluent. The criteria for a positive test result were congestion of the conjunctival mucosa and itching and watering of the eye and nose. A negative control was done by administering 1 drop of the diluent into the right conjunctival sac.

Abbreviation used

CPT: Conjunctival provocation test

The range of extract dilutions was 0.1 and 1 mg/mL. As control subjects, we tested 2 patients, one with chronic urticaria and *A simplex* sensitization and 1 healthy patient.

RESULTS

Results of skin prick tests with inhalant and food allergens were all negative. Positive reaction with a 9-mm wheal was observed for *A simplex* (7-mm wheal for histamine). High specific IgE values to *A simplex* (16 KU/L) were detected. Total IgE was 64 KU/L.

CPT results with 0.1 mg/mL *A simplex* were negative. Fifteen minutes after the 1 mg/mL dose of *A simplex*, the patient had itching, redness, chemosis, and tearing of the bulbar conjunctiva. The control group had a negative response to the CPT.

DISCUSSION

A simplex is a nematode belonging to the Anisakidae family, found as parasites in fish. Humans can become an accidental host of the larvae by eating the parasitized fish. Recently, various studies have detected an elevated frequency of sensitivity to this parasite, but most cases have been asymptomatic.⁵ The true prevalence of allergic reactions caused by *A simplex* is unknown, but specific IgE antibodies were detected in 33% of atopic dermatitis, 75% of fish-induced urticaria, 36% of urticaria/acute angioedema, 23% of blood donors, and 56% of patients with high total IgE levels.⁵

To date, it has not been suggested that *A simplex* may be an airborne allergen, and no previous cases of patients with symptoms induced by inhalatory exposure to *A simplex* have been reported. In this article we describe a patient in whom conjunctivitis induced by *A simplex* was demonstrated in a CPT. The positive skin prick test response and specific IgE to *A simplex* confirm the allergic mechanism of this reaction. This patient tolerated fish ingestion, and the conjunctiva was the only target organ. This suggests that it is possible that some *Anisakis* antigens may become airborne as aerosols from raw fish.

We conclude that *A simplex* may be an etiologic factor in occupational disease, and it should be considered in fish-market workers and fishmongers.

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