

Occupational generalised urticaria and allergic airborne asthma due to *anisakis simplex*

Enrico SCALA
Mauro GIANI
Lia PIRROTTA
Emma Cristina GUERRA
Silvia CADONI
Carlo René GIRARDELLI
Ornella DE PITÀ
Pietro PUDDU

E. Scala, M. Giani, L. Pirrotta, E.C. Guerra, S. Cadoni, C.R. Girardelli, O. De Pità, P. Puddu: Dept. of Immunodermatology, Allergy & Clinical Immunology, Istituto Dermatologico dell'Immacolata, I.D.I.-IRCCS, Rome, Italy.

Reprints: E. Scala.

Fax: (+39) 06 66464435

e-mail: e.scala@idi.it

Anisakis simplex (AS), a fish and cephalopodes parasite, may cause allergic reactions in humans on eating and/or handling contaminated fish. We present a case of occupational hypersensitivity to AS in a woman employed in a frozen-fish factory. She showed both generalised urticarial rash and asthmatic symptoms after work place exposure. All these symptoms immediately disappeared after work place exposure was ceased. The presence of a positive skin prick test and high specific IgE values confirmed a hypersensitivity to *anisakis*. This is the first case reported of both occupational generalised urticaria and allergic airborne asthma due to AS in the same patient. We suggest that AS could be an important cause of occupational asthma and/or urticaria in the fish industry. (*Key words: anisakis simplex, occupational hypersensitivity, airborne asthma.*)

Case report

A 48-year-old non atopic woman, a worker in a frozen-fish factory, employed in washing and cutting several types of fish (cod, tune, salmon and shrimp), after 4 months developed a generalized urticarial rash accompanied by dry cough, dysphonia and dyspnea. These symptoms improved on Sundays, days on which she did not handle fish. Spirometry study revealed a moderate obstructive pattern (FEV₁, 68%). All those symptoms completely disappeared after work place exposure was ceased.

Two months later, the patient was referred to our outpatients clinic. After obtaining the patient's written consent, an allergy study was carried out. The patient had no personal nor family history of allergy. Furthermore, since childhood, the patient had never eaten any fish.

Skin prick tests (SPT) were negative with all inhalant allergens tested (including *Dermatophagoides Pteronyssinus*, *Dermatophagoides Farinae* and German cockroach), food allergens (including several fish extracts: cod, tune, salmon and shrimp), but strongly positive with AS extract (ALK-Abello A/S, Horsholm, Denmark). The saline solution produced a negative result and histamine 1 mg/ml epicutaneous prick test resulted in an 8 mm wheal with flare. Similar results were obtained also evaluating specific IgE that were negative for all the allergens tested, but strongly positive for AS (92 KU/l, CAP system FEIA, Pharmacia Upjohn, Uppsala, Sweden). Moreover, SDS-PAGE IgE immunoblotting confirmed the specific pattern of AS hypersensitivity [1, 2]. Spirometry study showed a normal respiratory function (FEV₁, 110%).

Discussion

Anisakis simplex (AS) is a nematode parasite of fish, crustaceans and cephalopods, belonging to the *anisakidae* family, that may cause IgE mediated reaction after the ingestion of raw or undercooked parasitized fish [3-6]. However, these allergic reactions may also occur when the fish has been properly cooked, and hence these allergens are thought to be heat-stable.

Rhinitis or bronchial asthma due to seafood ingestion or exposure to cooking vapors are quite common among subjects suffering from seafood allergy and among workers exposed to lobsters and shrimps [7]. In a similar way, inhalation of particles of AS may cause respiratory or conjunctival symptoms [8, 9]. Allergenic cross reactivity between AS and several dust mite species or other nematodes (*i.e.* German cockroach), presumably due to tropomyosin, have been widely demonstrated [11, 12]. By contrast our patient was negative to all the other allergens tested.

The occurrence of urticarial and asthmatic symptoms after employment in a frozen-fish factory, the regression of symptoms after discontinuation of work place exposure and, finally, the SPT positivity and the presence of specific IgE versus AS in the absence of other sensitisation, led us to strongly suggest that our patient had an occupational allergy due to inhalation of airborne AS allergens. Therefore, we recommend considering AS as an important and maybe underestimated cause of occupational type I hypersensitivity in the fish industry.

To our knowledge, this is the first case reported of both

Article accepted on 13/2/01



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