

Key words: contact urticaria; cross-reactions; occupational; oral allergy syndrome.

Case Report

A 23-year-old female with rhinitis was referred to us in 2006 for further evaluation of her immediate type of allergy to raw fish. Her past history included mild atopic dermatitis and hand eczema in childhood. The patient had worked in a sushi bar since 2003. In 2004, when she ate sea bream, she first noticed discomfort sensation of her oral cavity. Thereafter, she had similar episodes to conger and eel in the same year, and to sardine and horse mackerel in 2005. Oropharyngeal irritation and facial angioedema occurred within 15 min after eating raw fish. In addition, she gradually developed an urticarial eruption, which was occasionally associated with diarrhoea or asthma. Since then, she had strictly avoided eating these raw fish. No ordinary contact urticaria to fish or anaphylactic shock was noticed.

On examination, the peripheral blood sample showed normal counts of leukocytes (4800/ μ l; normal, 3100–9700/ μ l) and eosinophils (144/ μ l, 3%; normal, 0.1–6.7%). Total immunoglobulin E (IgE) level was slightly high (200 U/ml; normal, <170 U/ml) but specific IgE antibodies against tuna, salmon, mackerel, cuttlefish, horse mackerel, and sardine were all negative. We performed prick-by-prick test with raw fish for sushi. Among them salmon (3 mm), flounder (10 mm), conger (6 mm), sea bream (5 mm), amberjack (3 mm), and tuna (7 mm) yielded positive results (>1/2 wheal diameter of histamine). Therefore, we diagnosed the patient as having oral allergy syndrome (OAS) caused by raw fish. After avoiding eating raw fish, she got well and did not have any symptom of OAS.

Discussion

OAS is a clinical entity that remains unfully defined but its clinical importance has been rapidly increasing. Latex-fruit syndrome is the prototype of OAS, and sensitization with Latex leads to oral allergy to fruits (1). Because the oral cavity and intestinal tract are tolerance-inducible sites when exposed to external allergens, sensitization should be achieved on other sites such as skin and conjunctiva in OAS. OAS occurs within

minutes of ingestion and presents as burning, swelling and itching of lips, tongue, mouth, or throat. Other symptoms that are only rarely seen include rhinoconjunctivitis, angioedema, asthma, anaphylactic shock, and their combination (2).

Our patient had oral and pharyngeal symptoms to a number of raw fish with positive prick-by-prick tests to those fish. In contrast to food-dependent allergic reactions induced via gastric or intestinal absorption, where digestion may promote the antigenicity of foods, OAS is most likely induced by exposure to native non-modified allergens (3).

The major skin manifestations evoked by occupational exposure to seafood are eczematous contact dermatitis and contact urticaria, mostly located on the hands and forearms (4, 5). Our patient was probably sensitized with raw fish during working in a sushi bar. Ordinarily, OAS occurs as a result of cross-reactivity with other contactants or pollen such as rubber latex (2). Because sensitization does not successfully occur via oral mucosa, the patient seems to have been sensitized by direct hand contact with raw fish. When she came to our hospital, her hands were intact but the atopic past history and potential skin barrier disruption of her hands support this speculation.

As has been reported in fish allergy (6), she showed broad antigenic cross-reactivity among fish. She worked in a Japanese sushi bar and was exposed to many types of fish. The possibility remains that she was sensitized with other fish that did not appear in the present history. It has been suggested that parvalbumin is an antigenic molecule for fish allergy (7). This common substance might be an allergen in our patient. She exhibited positive prick test results for other types of fish than those to which she was exposed, supporting cross-reactivity and providing beneficial information on avoidance. It should be kept in mind that raw fish can be one of the causative foods for OAS.

References

1. Blanco C, Carrillo T, Castillo R, Quiralte J, Cuevas M. Latex allergy: clinical features and cross-reactivity with fruits. *Ann Allergy* 1994; 73: 309–314.
2. Chang Y C, George S J, Hsu S. Oral allergy syndrome and contact urticaria to apples. *J Am Acad Dermatol* 2005; 53: 736–737.

Oral allergy syndrome caused by raw fish in a Japanese sushi bar worker

Contact Dermatitis 2007; 56: 369–370

Kazunari Sugita, Kenji Kabashima, Daiki Nakashima and Yoshiki Tokura

Department of Dermatology, University of Occupational and Environmental Health, Japan, 1-1 Iseigaoka, Yahatanishi-ku, Kitakyushu 807-8555, Japan

Oral allergy syndrome (OAS) is a complex of symptoms induced by exposure of the oral and pharyngeal mucosa to food allergens. A 23-year-old female presented in 2006 with oropharyngeal irritation and facial angioedema occurring within 15 min after eating raw fish. Her medical history was significant for mild atopic dermatitis and hand eczema. She had worked in a sushi bar since 2003. Clinical symptoms and positive prick-by-prick test to raw fish confirmed the diagnosis of OAS. It is likely that, our patient was sensitized by direct hand contact with raw fish.

3. Mari A, Ballmer-Weber B K, Vieths S. The oral allergy syndrome: improved diagnostic and treatment methods. *Curr Opin Allergy Clin Immunol* 2005; 5: 267–273.
4. Jeebhay M F, Robins T G, Lehrer S B, Lopata A L. Occupational seafood allergy: a review. *Occup Environ Med* 2001; 58: 553–562.
5. Aasmoe L, Bang B, Andorsen G S, Evans R, Gram I T, Lochen M L. Skin symptoms in the seafood-processing industry in north Norway. *Contact Dermatitis* 2005; 52: 102–107.
6. Helbling A, Haydel R Jr, McCants M L, Musmand J J, El-Dahr J, Lehrer S B. Fish allergy: is cross-reactivity among fish species relevant? Double-blind placebo-controlled food challenge studies of fish allergic adults. *Ann Allergy Asthma Immunol* 1999; 83: 517–523.
7. Van Do T, Elsayed S, Florvaag E, Hordvik I, Endresen C. Allergy to fish parvalbumins: studies on the cross-reactivity of allergens from 9 commonly consumed fish. *J Allergy Clin Immunol* 2005; 116: 1314–1320.

Address:

Kazunari Sugita, MD
Department of Dermatology
University of Occupational and
Environmental Health, Japan
1-1 Iseigaoka
Yahatanishi-ku
Kitakyushu 807-8555
Japan
Tel: +81 93 691 7445
Fax: +81 93 691 0907
e-mail: k-sugita@med.uoeh-u.ac.jp