

Case report

Exquisite food allergy without eating

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S. L. Bahna

Department of Pediatrics, University of South
Florida, and Division of Allergy and Immunology,
All Children's Hospital, St Petersburg, FL,
USA

The past few decades have witnessed an increasing understanding of the role of food allergy in human disease. Nevertheless, controversies still exist in several aspects of this area. One such controversy concerns the body systems that can be the target of food hypersensitivity reactions. Another is the role of noningestant exposure to food in a nonoccupational setting. Both of these aspects are vividly demonstrated in the case presented here.

Key words: egg; fish; food
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Sami L. Bahna
Division of Allergy and Immunology
All Children's Hospital
Box 699
St Petersburg
FL 33731-8920
USA

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Case report

A 6-year-old boy was referred for allergy evaluation because of multiple allergies, including a recent systemic anaphylaxis that had occurred while he was in the vicinity of fried fish. The reaction developed within a few minutes and included wheezing, generalized urticaria, and facial angioedema. It responded well to emergency treatment with epinephrine subcutaneously, followed by oral diphenhydramine and dexamethasone for several days. Similar reactions had occurred on several occasions since the age of 18 months and were related to eating egg, fish, or other seafood, or even inhalation of cooked fish, particularly when fried. Several episodes of acute urticaria occurred upon skin contact with egg white and shrimp. One urticaria episode occurred during a fishing trip within a few minutes of catching a fish. Another episode occurred while the child was in a room next to the kitchen where his mother was cooking with eggs, although he was not aware of that.

The child had had chronic allergic rhinitis since 1 year of age, with some improvement after he received immunotherapy with aeroallergens at the age of 2-3 years. During infancy, he had gastrointestinal

intolerance to conventional infant formulas derived from cow's milk or soybean.

The family history revealed severe allergies in a brother and the mother. The family had moved into a new house 2 years earlier and was applying environmental control measures which, together with antihistamine therapy, had a favorable effect on the upper respiratory allergy but not on his food allergy.

The physical examination was essentially normal, except for signs of allergic rhinitis. The nasal smear was highly cellular, with 80% eosinophils. Serum IgE level was 818 IU/ml (normal for age <50 IU/ml), and RAST was strongly positive to egg white and moderately positive to codfish, crab, and shrimp. No other allergens were tested by RAST. Epicutaneous testing with commercial extracts of 40 foods and 90 inhalants showed many significant reactions (Table 1). The extracts of the offending foods were intentionally tested in high dilutions (1:1000 or 1:2000 w/v).

Strict avoidance of egg, fish and other seafood, and walnut was emphasized, together with appropriate control of home environment and avoidance of cats, dogs, and horses. Immunotherapy with the offending mite and pollens was prescribed. Pharmacologic therapy consisted of antihistamines for al-

Table 1. Examination of a 6-year-old boy with multiple allergies, including severe reactions to foods by ingestion, inhalation, and contact

Nasal smear	Highly cellular, 80% eosinophils
Serum IgE level	818 IU/ml (normal < 50 IU/ml)
RAST positivity	High to eggwhite Moderate to codfish, crab, and shrimp
Epicutaneous tests	
Food reactions	Very large to egg white Large to catfish, shrimp, and walnut Moderate to crab and salmon
Inhalant reactions	Large to <i>D. farinae</i> , Hormodendrum, and grass pollens Moderate to dander of cat, dog, and horse, and pollens of trees and weeds

lergic rhinitis and injectable epinephrine to treat any recurrence of anaphylaxis.

The family was living in another town, and I did not see the child again until 2 years later. He was following all items of the management plan except immunotherapy. Accidental exposures to the offending foods caused only oropharyngeal itching, urticaria, or mild systemic anaphylaxis. He was even able to eat a few shrimp at a time, without significant symptoms. The main concern at this visit was the chronic nasal symptoms. Epicutaneous testing was repeated, and the reactions to inhalants were very similar to those at the previous evaluation. The skin reactions to foods were still large to egg white and crab, but had become negative to catfish, salmon, and shrimp. Both the child and his family preferred to continue dietary elimination rather than subject him to challenge testing. They desired, however, to implement the aeroallergen immunotherapy for allergic rhinitis.

Two months later, he had wheezing that responded well to bronchodilator therapy. Spirometry, although done in the absence of symptoms, confirmed reversible obstructive airway disease. Appropriate antiasthma management resulted in normal spirometric measurements within a few months.

Discussion

This case presentation is very illustrative of the extent to which food hypersensitivity can be exhibited in a single patient, considering the multiplicity of target organs, offending foods, and routes of exposure. Of particular interest is the occurrence of systemic anaphylaxis after exposure to very minute amounts of inhaled food allergens, even from un-

cooked food at a distance from the patient. The reactions were so rapid and severe, and occurred so often that it was not advisable to subject the child to challenges (1).

Severe food hypersensitivity reactions by inhalation or skin contact are probably rare outside the occupational setting, yet they can be very striking. Carlston (2) reported the case of a woman with exquisite peanut allergy who developed severe nasal symptoms and acute bronchospasm on a flight when peanuts were served to other passengers. The same patient had a reaction at her own wedding reception when peanuts were displayed in another floor in the building.

Systemic reactions to skin contact with food are also very unusual. Another patient of mine is an egg-sensitive infant who developed severe generalized urticaria after playing with a pan that had just been used to prepare dough that contained egg. Jarmoc & Primack (3) reported the case of a milk-sensitive infant who was hospitalized with systemic anaphylaxis that developed immediately after the application of a diaper rash ointment (Diaperene®) that contained 5% calcium caseinate. Systemic anaphylaxis occurred in a nurse who ate psyllium-containing cereals for the first time. Her only previous exposure to psyllium had been dispensing a psyllium-containing laxative for many years without any symptoms (4).

Such striking examples of food allergy should alert us to the role of inhalation and skin contact in provocation of symptoms and possibly in inducing sensitization. In most such cases, the reactions are not sufficiently striking for a relationship to be noticed. It is quite possible that inhalation plays a role in a patient who develops a reaction while eating a hot meal. In such a patient, the diagnostic oral blind challenge testing, particularly with freeze-dried food powder, does not mimic the natural exposure and might fail to reproduce the symptoms.

References

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