

We remain concerned about the rate of false-positive reactions found with the Multi-Test in our study, which we believe was due to the close spacing of the skin testing heads. Because of its wide use, additional studies of the Multi-Test in immediate hypersensitivity skin testing should be performed to examine this question. We look forward to the publication of the study reported here by Mahan et al.

Allen D. Adinoff, MD
Colorado Allergy/Asthma Clinic PC
1450 S. Havana St.
Aurora, CO 80012

Harold S. Nelson, MD
National Jewish Center for Immunology and
Respiratory Medicine
Denver, Colo.

REFERENCES

1. Ownby DR. Computerized measurement of allergen-induced skin reactions. *J ALLERGY CLIN IMMUNOL* 1982;69:536-8.
2. Sussman GL, Harvey RP, Schocket AL. Evaluation of skin test response using two techniques of measurement. *Ann Allergy* 1982;48:75-7.
3. Adinoff AD, Rosloniec DM, McCall LL, Nelson HS. A comparison of six epicutaneous devices in the performance of immediate hypersensitivity skin testing. *J ALLERGY CLIN IMMUNOL* 1989;84:168-74.
4. Dreborg S, Holmstrom M, Nilsson G, Zetterstrom O. Dose-response relationship of allergen, histamine, and histamine releasers in skin prick test and precision of the skin prick test method. *Allergy* 1987;42:117-25.
5. Tipton WR. Influence of histamine controls on skin test with Hymenoptera venom. *Ann Allergy* 1980;44:204-5.
6. Terho EO, Husman K, Kivekas J, Riihmaki H. Histamine control affects the wheal produced by the adjacent diluent control in skin prick tests. *Allergy* 1989;44:30-2.

Was the candy really responsible for the anaphylaxis in a cottonseed-sensitive patient?

To the Editor:

In the letter entitled, "Anaphylaxis apparently caused by a cottonseed-containing candy ingested on a commercial airliner," (*J ALLERGY CLIN IMMUNOL* 1989;84:407) O'Neil et al. considered the candy to be the culprit for the reaction. According to the authors, the patient had ingested a roast beef sandwich and two pieces of candy immediately before the reaction. However, the skin prick tests with the candy extracts were negative (the highest concentration was 5.0 mg/ml), whereas cottonseed extract produced a positive skin test reaction at 0.005 mg/ml. The concentration of the cottonseed extract was thus 1000 times weaker than the candy extract. This could be interpreted to mean that the crucial concentration of cottonseed protein could be <1:1000 in the candy. According to the negative skin prick test results, there was also lack of reactivity of the candy extract in RAST inhibition.

One main use of cottonseed protein is as a flour in bakery products.¹ We have also reported a cottonseed protein-sensitive patient who developed angioedema and urticaria when she ingested bread that contained cottonseed flour.² Because the patient of O'Neil et al. did not react to candy extract, the sandwich that he had ingested before the reaction should also be considered as a possible candidate responsible for the anaphylaxis. Was the bread investigated at all?

Gennadij Malanin, MD
Kirsti Kalimo, MD
Department of Dermatology
University of Turku, SF-20520
Turku, Finland

REFERENCES

1. Plymmer RE. Cottonseed allergy. *Univ Mich Med Bull* 1959;25:220-5.
2. Malanin G, Kalimo K. Angioedema and urticaria caused by cottonseed protein in whole-grain bread. *J ALLERGY CLIN IMMUNOL* 1988;82:261-4.

Reply

To the Editor:

Drs. Malanin and Kalimo raise a critical point in their letter: What was the specific cause of the symptoms experienced by our patient? This question is indeed difficult to answer, particularly since the episode occurred on a commercial airliner where immediate physician evaluation was impossible. Therefore, before the retrospective diagnosis of "food allergy," other potential causes of his symptomatology were eliminated. Failure to demonstrate another cause of the patient's symptoms, coupled with a past history of adverse reactions to certain foods, including candy, suggested that a food was the putative agent. Because of the close temporal association of symptoms with the candy ingestion, this was suspected to be the cause. However, the patient was skin tested with, and has subsequently been able to eat, other putative foods, including beef, peanut, egg white, gliadin, black walnut, chocolate, soybean, β -lactoalbumin, and Brazil nut. Other than candy, we were unable to skin test this patient with the identical foods served to him on the plane; these foods included the bread. It has been our experience, however, with cottonseed-sensitive patients, that they do not report adverse reactions after ingestion of bread.

We agree that the evidence identifying the candy is circumstantial. This is particularly true since the patient did not have a positive skin test to the highest available concentration of candy extract. A limited amount of candy was available for extraction, and because the skin test extract was glycerinated, the maximum concentration that could be used for skin testing was 5 mg/ml.

Although this is a relatively high concentration, it should be remembered that it was a crude extract. We believe that the positive candy RAST ratio (7.4), significant inhibition of the candy RAST by cottonseed extract (80%), and of the