



Letter

Delayed anaphylaxis secondary to allergy skin testing

A 59-year-old, white man presented to our office on December 4, 2012, for further evaluation of allergic rhinitis and asthma. He was recently evaluated in a local emergency department for an asthma exacerbation. He reported that pollens, dampness, dusty environments, weather changes, upper respiratory tract infections, and smoke would trigger asthmatic symptoms. The patient experienced seasonal allergic rhinitis symptoms in the spring and fall, which would usually respond to antihistamine therapy. The patient reported a systemic reaction to an insect sting more than 40 years ago but never underwent a formal evaluation and had no further insect sting reactions since that initial episode.

The patient denied any history of food allergy, drug allergy, urticaria, angioedema, eczema, latex sensitivity, allergic contact dermatitis, nasal polyps, and aspirin sensitivity. His medical history revealed hypertension and transient ischemic attack. His medications included beclomethasone hydrofluoroalkane (HFA), 80 μ g 2 puffs twice daily; albuterol HFA, 2 puffs on an as-needed basis; aspirin, 81 mg/d; and valsartan, 160 mg/d. Physical examination on the lung revealed bibasilar expiratory wheezes, but spirometry results were within normal limits, with a forced expiratory volume in 1 second of 4.02 L (105% predicted) and a ratio of forced expiratory volume in 1 second to forced vital capacity of 85%. No bronchodilator response was noted. The patient underwent allergy skin prick testing with commercial allergenic extracts and was noted to have 4-plus wheal-and-flare reactions to grass pollens and 3-plus wheal-and-flare reactions to tree pollens and dust mites.

Approximately 30 minutes after arriving home (2 hours after skin prick tests), the patient developed burning and itching of the palms, nasal congestion, itchy eyes, bilateral orbital edema, and erythema of the face. He also experienced wheezing and a throat-closing sensation but denied any restriction in talking or swallowing. Confirmatory pictures of the face, neck, arms, and hands were taken by the patient. The patient denied any food intake or medication administration during this 2-hour interval. The patient was directed to the nearest emergency department, where he was noted to have angioedema of the face, diffuse urticaria, and expiratory wheezing. His blood pressure was 160/100 mm Hg, and his heart rate was 100/min. He appeared dyspneic, with a respiratory rate of 24/min and an oxygen saturation of 97% on room air. A serum tryptase level was not measured, and although clearly indicated, epinephrine was not administered. The patient was treated with diphenhydramine, intravenous corticosteroids, and famotidine and discharged after 4 hours of observation.

Allergy skin prick testing is a common first-line diagnostic test for the evaluation of allergies induced by aeroallergens, foods, Hymenoptera venoms, and drugs. Overall, allergy skin testing is considered a safe diagnostic procedure with a small risk of systemic reactions.

Most fatalities from 1895 to 1980 were associated with biologic products that are no longer used, such as horse serum–derived tetanus or diphtheria toxins or pneumococcal antiserum.¹

Since 1980, the occurrence of systemic reactions, at least with skin prick testing for inhalant allergen extracts has decreased markedly. The available literature suggests that the overall risk of inducing anaphylactic reactions by skin prick testing is less than 0.02%.² The risk, however, is slightly increased when skin testing for foods, drugs, or Hymenoptera venom.³ The risk of fatality secondary to skin testing is also unusual. Lockey et al⁴ reported 6 deaths associated with allergy skin testing. In 5 cases, the patient had a history of asthma, and all 6 patients underwent intradermal skin testing. In a questionnaire survey study from practicing allergists, Reid et al⁵ reported no fatalities with skin testing from 1985 to 1989.

In a retrospective study from January 1992 to June 1997 of more than 18,000 patients, Valyasevi et al³ found 6 systemic reactions of which 3 reactions occurred with skin testing for inhalant allergies. In 1 of these 3 patients, a concomitant positivity to latex was also noted. All patients with systemic reactions had asthma, and 2 patients had uncontrolled asthma with wheezing during the physical examination before skin testing.

Most systemic reactions usually occur within 30 minutes and typically respond to the administration of injectable epinephrine and oral antihistamines. Valyasevi et al³ described one patient whose reaction started 75 minutes after the allergy skin testing was performed. This patient also responded appropriately to epinephrine and antihistamines. In addition, the 6 mortalities from intradermal testing reported by Lockey et al⁴ all had the onset of the systemic reaction within 20 minutes. The European experience with systemic reactions to allergy skin testing is similar to the US experience, whereby the risk of a systemic reaction to skin testing is rare but present.⁶

Angiotensin-converting enzyme inhibitors and angiotensin receptor blockers inhibit the metabolism of angiotensin, bradykinin, and substance P. Greater risk of more serious anaphylaxis might exist in patients receiving these drugs because of possible compromise in compensatory activation of the renin-angiotensin system. Although angiotensin-converting enzyme inhibitors are associated with more severe anaphylaxis during allergy immunotherapy,⁷ no evidence exists that valsartan or other angiotensin receptor blockers are associated with increased risk of anaphylaxis.⁸

To our knowledge, the patient described is the first patient to have a systemic reaction 2 hours after skin prick testing. Because patients are usually observed for 30 to 45 minutes during the skin testing process, the incidence of delayed systemic reactions may be underreported. The patient should be instructed on signs and symptoms of a systemic reaction after skin testing, and a potential action plan should be reviewed with the patient during the skin testing.

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