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RESEARCH LETTER

Are skin prick tests really safe? A case of anaphylaxis caused by skin prick testing with inhalant allergens

To the Editor,

Skin prick test (SPT) which is widely used to demonstrate an immediate IgE-mediated allergic reaction is a major diagnostic work-up in the field of allergic diseases.¹⁻³ SPT is cheap, easily performed and provides a response within a few minutes. This test is generally considered a very safe procedure.⁴ Although the frequency of systemic reactions caused by extracts of inhalant allergens is extremely low, it is slightly increased if food, latex, drug, or hymenoptera venom extracts are used.⁵ It is reported that the overall risk of inducing anaphylaxis due to SPT is less than 0.02%.^{6,7} Here, we report an unexpected case of anaphylaxis induced by SPT that was performed with commercial inhalant extracts in an asymptomatic asthmatic boy.

A nine-year-old boy admitted to our outpatient clinic of pediatric allergy unit because of chronic cough and recurrent wheezing episodes. The boy had attended the emergency unit of our hospital twice in the previous two months complaining of wheezing and cough symptoms and he was treated with inhaled beta 2 agonists and steroids. His brother also had physician-diagnosed asthma. Physical examination of the case was completely normal. Pulmonary function tests were also in normal limits. As he was symptom free and he had no remarkable finding in the examination, SPT was performed on the same day of admission with commercial extracts (Allergopharma, Rheinbek, Germany) of *Dermatophagoides pteronyssinus*, *Dermatophagoides farinae*, grasses, tree pollens, cereals, wild grass pollens, animal danders, molds and a positive (histamine chlorhydrate 1%) and a negative (saline solution) control. The total number of allergens evaluated in this patient was 12. The allergens were applied on the forearms of the patient with the prick-puncture method using single point lancets. Five minutes after the SPT, the patient became pale, urticarial lesions began on his face, cough and respiratory distress started. His pulse rate was 150/min and the blood pressure found as 70/45 mmHg. He was immediately treated with intramuscular epinephrine

1:1000 (0.01 ml/kg), oral cetirizine (0.25 mg/kg), methylprednisolone (1 mg/kg/dose, intramuscular) and inhaled beta 2-agonists. He felt better in 5 min; respiratory distress and hypotension were fully recovered in 15 min. The SPT resulted strongly positive with pseudopodia for house dust mites, with whealing and erythema greater than the histamine reaction sizes of erythema/whealing: histamine 20/8, *D. pteronyssinus*, 25/12, *D. farinae* 25/15 mm). Laboratory investigations were performed one day after the anaphylaxis. Total IgE level was 310 kU/L, specific IgE levels (CAP System; Pharmacia, Uppsala, Sweden) were positive for *D. pteronyssinus* (90 kU/L, class 5) and *D. farinae* (92 kU/L, class 5).

Skin tests are considered a safe diagnostic procedure. Recent surveys suggest that the overall risk of inducing anaphylactic reactions by SPT is less than 0.02%.^{6,7} Systemic reactions and fatalities have been reported mainly in association with intradermal testing.³ Based on the literature, the risk of fatality due to SPT is extremely remote, and severe/anaphylactic reactions are rare.⁸ In a large epidemiologic survey, Turkeltaub and Gergen found no anaphylactic reactions after SPT.⁹

Anaphylaxis during skin tests with inhalant allergens has been published very rarely. Lin et al.⁶ reported two cases of non-fatal systemic reaction induced by intradermal skin testing, and three reactions after SPT were described by Valyasevi et al.⁵ with inhalant allergens. Vanin et al. also reported an eight-year-old asthmatic boy who developed an anaphylactic reaction after SPT performed with commercial extracts like in our case.¹⁰

We present a child who developed an anaphylactic reaction after SPT with commercial inhalant extracts in this article. The clinical diagnosis based on signs and symptoms such as respiratory symptoms and hypotension occurred 5 min after the SPT. Vasovagal reaction was not considered in this patient because he had urticaria and respiratory distress which are not expected findings in vasovagal reaction. In addition, all of the symptoms improved in a short time with anaphylaxis treatment.

Although SPT are generally accepted as very safe procedures, it should be known that these tests have a potential risk of anaphylaxis even in asymptomatic pediatric patients as reported in this case. Physicians should be aware of this potential danger and they should always avoid performing these tests if they do not have the necessary emergency equipment and medications available.

Ethical disclosures

Patients' data protection. Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data and that all the patients included in the study have received sufficient information and have given their informed consent in writing to participate in that study.

Right to privacy and informed consent. Right to privacy and informed consent. The authors have obtained the informed consent of the patients and/or subjects mentioned in the article. The author for correspondence is in possession of this document.

Protection of human subjects and animals in research. Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this investigation.

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