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RESEARCH LETTERS

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 boys 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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Successful oral tolerance induction to cow's milk in a child with allergy to extensively hydrolysed formula

To the Editor,

Cow's milk allergy (CMA) is the most frequent food allergy in childhood.[1] Treatment consists of cow's milk proteins eviction, with the use of an extensively hydrolysed milk formula (eHF) being the first option in most cases, due to its good tolerance, availability and cost.[1] Few cases of IgE-mediated allergy to eHF have been reported[2–6] but oral tolerance induction (OIT) has not been previously described in children with allergy to eHF.

We report the case of a boy, referred to our Immunoallergy department in 2010, at the age of five years, whose parents reported a severe IgE-mediated CMA diagnosed at six months of age following an episode of anaphylaxis, with generalised urticaria, angio-oedema, rhinoconjunctivitis and wheeze after yoghourt ingestion, and vomiting after eating a milk-containing puree. The child began cow's milk avoidance and was started on an eHF (Aptamil®Pepti Junior, Milupa). However, several episodes of reproducible urticaria occurred immediately after eHF introduction, for which it was stopped and a soy milk formula was prescribed. At that time the child had specific IgE (ImmunoCAP®, Phadia – Thermo Fisher Scientific, Uppsala, Sweden) positive for whole cow's milk (55.2 kU/L), casein (54.8 kU/L), β-lactoglobulin (BLG) (16.6 kU/L) and α-lactalbumin (ALA) (42.9 kU/L), and negative for soy. Due to food protein-induced enterocolitis syndrome with soy milk, manifesting as recurrent diarrhoea beginning three weeks after soy milk introduction, the child was started on an aminoacid formula (Neocate®, Nutricia), which he maintained at the time of the consultation with good tolerance and adequate growth. The parents reported several episodes of contact urticaria on occasional mucocutaneous contact with cow's milk, and no episodes of accidental cow's milk ingestion.

The child also presented with symptoms of asthma since early childhood, controlled with inhaled fluticasone through a spacer device, mild persistent rhinitis treated with nasal mometasone furoate, mild atopic dermatitis and a family history of atopy (father and brother with asthma and rhinitis).

Skin prick tests (SPT) (Laboratorios Leti, Madrid, Spain) at the age of five years were positive for whole cow's