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Grass pollen triggered anaphylaxis in an adolescent boy

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KEY WORDS

Anaphylaxis; grass pollen; adolescent

Summary

Anaphylaxis is a rapid onset serious allergic reaction which may be fatal. It is usually triggered by an agent such as a food, insect sting, or medication, through a mechanism involving immunoglobulin E (IgE) and the high-affinity IgE receptor on mast cells or basophils. Anaphylaxis has been rarely described which results from pollen antigen exposure. Here, we present unusual anaphylaxis, which results from inhaled pollen antigen in a 15-year-old boy.

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Introduction

Anaphylaxis is a severe, acute and potentially life-threatening medical condition, caused by the systemic release of mediators from mast cells and basophils, often in response to an allergen (1,2). The incidence of patients with anaphylaxis presenting to emergency departments is estimated to be approximately 1/1000 to 4/1000 (3,4). Of these presentations, only one-third ends up having an identifiable trigger for the anaphylactic reaction. Food is the most common associated trigger, followed closely by hymenoptera (bee/wasp) stings and medications (5). Here, we present unusual anaphylaxis in an adolescent which inhaled grass pollen while wandering in local picnic area.

Case

A 15-year-old boy, who presented with pruritus, generalized urticaria, angioedema, cough and respiratory distress, was ad-

mitted to our pediatric emergency department on April 2013. It was learned that, almost one hour prior to admission, he went to a local picnic area with his family for wandering. Twenty minutes after entering the area, he suddenly experienced generalized itchy urticaria, angioedema, coughing and respiratory distress. One hour later, in physical examination in pediatric emergency department, generalized urticaria and angioedema on his lips and eyelids were observed. He also complained of nasal pruritus, sneezing, redness of eyes, coughing and dyspnea. The saturation of oxygen was 92%. We examined wheezing on auscultation. His blood pressure and heart rate were normal. The patient was treated with intramuscular adrenaline, oxygen and inhaled salbutamol. Antihistamine (pheniramine maleate) and methylprednisolone were administered. The patient symptoms were started on recovery with this treatment within one hour. Four hours after the treatment, the angioedema and the urticaria had completely disappeared. From the anamnesis, he

didn't eat anything in a few hours before the anaphylaxis. We couldn't find any insect's injury or bite on his skin. A few days later, prick test showed strong grass pollen allergy. Skin prick test was negative for common food allergens and aeroallergens, including *Dermatophagoides Farinae*, *Dermatophagoides Pteronyssinus*, *Aspergillus*, *Cladosporium*, *Alternaria*, Cockroach, Cat Dander. According to his father, plenty of grass was present in the local picnic area where the boy had been wandering. We didn't find any biochemical abnormality in blood tests. Eosinophil count was normal. Total IgE was 146 (0-100 IU/mL). It was learned from the history, his family didn't have atopy and he had been suffering from allergic rhinoconjunctival symptoms especially in spring months. After that, adrenaline autoinjector was prescribed to the patient, and an emergency action plan was explained to the patient and his family. We have followed the patient up in terms of allergic rhinoconjunctivitis. It was examined that he had airway hyperreactivity with spirometer in his follow up.

Discussion

Most episodes of anaphylaxis are triggered through an immunologic mechanism involving IgE, which leads to mast cell and basophil activation and the subsequent release of inflammatory mediators such as histamine, leukotrienes, tryptase and prostaglandins. Although any substance has the potential to cause anaphylaxis, the most common causes of IgE-mediated anaphylaxis are: foods (especially, peanuts, tree nuts, shellfish and fish, cow's milk, eggs and wheat), insect stings and medications (most commonly penicillin). Exercise, non-steroidal anti-inflammatory drugs (NSAIDs), aspirin, opiates, and radiocontrast agents can also cause anaphylaxis, but anaphylactic reactions to these agents often result from non-IgE-mediated mechanisms. In children, anaphylaxis is most often caused by foods, while venom- and drug-induced anaphylaxis is more common in adults. In other cases (idiopathic anaphylaxis), the cause of anaphylactic reactions is unknown (4,6-8). Also, we couldn't explain our patient anaphylaxis with known etiology causes. In our patient, anaphylactic episode was presumably triggered by exposition to grass pollen.

In the literature, similar critical allergic reactions caused by plants pollen have been reported (9). Similar anaphylactic reaction with grass pollen has been reported in a boy by Tsunoda et al (10). Anaphylaxis caused by the direct exposure of abraded skin to grass was reported in a patient with grass pollen allergy and a previous history of contact urticaria (11). Also, a case of anaphylaxis causing respiratory arrest after running in a wheat field (12) and a case of anaphylaxis while on an alpine slide (13) have been reported from different countries.

We would like to draw attention on grass pollens in anaphylaxis etiology as a rare triggering agent.

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