

## A case report of anaphylaxis after contact with raw potato in a 4-year-old boy

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### ABSTRACT

Although white potato is very common nutrition, allergic reactions to potato are rarely seen and allergy to uncooked potato has been reported mainly in adults. In this article, we present the case of a 4-year-old male patient who admitted to the Emergency Unit with complaints of urticaria, angioedema, and vomiting. The boy was just playing with raw potatoes just before the onset of his complaints. Therefore, tests were performed with uncooked potato and found to be positive. Our case points towards the importance of heat-labile allergens. Even the patient is able to eat a cooked form of suspicious food, tests for the raw form of the same food must be conducted.

**Keywords:** *Anaphylaxis, Hypersensitivity, Skin tests, Solanum tuberosum.*

White potato (*Solanum tuberosum*) is a very common ingredient in the diet of infants in Mediterranean countries. Its cooked form is one of the first solid foods introduced, usually around the age of 4-6 months [1]. Allergy to raw potato has mainly been described in adults; especially, in housewives with itching and rhinoconjunctivitis symptoms during the peeling of potatoes. The prevalence of raw potato sensitivity was found to be around 64% in the study of Chiriac et al [2]. It is generally caused by heat-labile allergens displaying immunoglobulin E cross-reactivity with tree pollen [3].

Allergic reactions to potato are uncommon, and allergy to uncooked potato has been reported mainly in adults [4,5]. Here, we report the case of a 4-year-old boy who developed anaphylaxis within minutes after contact with raw potato. We aimed to point on the importance of heat-labile allergens in this case report.

### CASE REPORT

A 4-year-old boy was admitted to the Emergency Unit with complaints of urticaria, angioedema, vomiting and marked pallor within minutes after contact with raw potato. This was his first known contact with raw potato, but he was able to eat cooked potatoes. His past history revealed that he had suffered from atopic dermatitis since 6 months of age and was treated with topical steroids intermittently and emollients for optimal skincare. He had also delayed-type egg allergy diagnosed at 11-months of age.

Based on the clinical features, he was diagnosed as having anaphylaxis (Fig. 1). The patient was treated with 0.01 mg/kg epinephrine shot and other supportive drugs such as steroids and antihistaminics properly and referred to the pediatric allergy outpatient clinic.

Three months later after his initial reaction, allergy skin test was performed with a commercial potato extract solution using standard methods and found positive (3x3 mm wheal and flare reaction). Serum specific Immunoglobulin E for potato was 12.4kU/L (normal <0.35 kU/L). Additionally, prick-to-prick skin test with fresh potato test was also done and found to be positive (15x15 mm wheal and flare reaction) (Fig. 2). Skin prick tests for birch tree, latex, apple, pear, kiwi and peanut were negative.

### DISCUSSION

Food allergy is the most common cause of anaphylaxis in children, with the usual foods including peanut, tree nuts, egg, shellfish, and milk [6]. Vegetables are the members of the class “minor allergen nutrition” which can cause allergic reactions



Figure 1: Skin lesions of the patient at admission.



**Figure 2: Prick-to-prick skin test with fresh potato (15x15 mm wheal and flare reaction).**

in sensitized people. Tomato, pepper, potatoes, and aubergine belong to the Solanaceae family and are frequently consumed all over the world. Although Turkey is one of the countries where potato is commonly consumed, potato allergy is rarely seen. Potato sensitivity was studied for the first time in 1966 as an occupational allergen among housewives [3]. In later years, the potato has been shown to cause all kinds of allergic reactions from urticaria to anaphylaxis [4,5].

Potato is one of the foods implicated in latex-fruit syndrome. In adults, allergy to the raw potato is mainly known as a manifestation of oral allergy syndrome in patients with pollen and latex allergy [7]. In contrast, our patient's skin tests and serum Immunoglobulin E results for birch tree, latex, apple, pear, kiwi and peanut were negative. Both cooked and raw forms of potato can cause allergies.

We performed a deep literature search in PubMed using the terms as "anaphylaxis" AND "potato" and we found that the immediate reactions to contact with raw potato have been reported more frequently in adults, especially in housewives, usually in the form of oral contact dermatitis or contact urticaria [4]. Publications related to potato allergy in children are mostly in the form of case reports [1].

Our patient had gastrointestinal and cutaneous signs and symptoms at admission. A work-up quickly ruled out infective, metabolic and cardiac disorders. Thus an allergic reaction was suspicious and got a treatment of anaphylaxis. In his medical history, he has been diagnosed atopic dermatitis at 6 months of age and delayed-type egg allergy at 11 months age. This atopic story enhanced the suspicion of an allergic reaction. Atopic dermatitis is individually a risk factor for the development of both sensitization to food and confirmed food allergy [8]. A study from Switzerland has shown that the prevalence of food allergy is 33.8% in 74 children with atopic dermatitis [9].

When the parents were questioned, his mother told us that he was playing with raw potatoes just before the onset of his complaints. Although he was able to eat cooked potato, the raw potato was still a suspicious one. Beausoleil JL *et al* [5] has reported a case just like ours, who has developed anaphylaxis after

contact with raw potato. Differences between clinical outcomes of cooked potato and raw potato may be due to the exclusion of some heat-labile allergens with cooking. Therefore, the skin prick test for raw potato was performed for our patient and found to be positive. For confirmation of the diagnosis, serum specific Immunoglobulin E and prick-to-prick skin test was also performed and both were found to be positive.

A few studies showed that various combinations of serum prick tests, serum specific Immunoglobulin E tests, and atopy patch tests improved the sensitivity and specificity over the use of individual tests [10]. According to the story of our patient, we did not perform these tests with cooked potato extract. In a study from Belgium, cooked potato extract was used in skin prick tests for selected atopic patients on the basis of cooked potato allergy suspicion. Even heat-labile allergens were excluded with cooking; skin responses have been observed in 7 of 8 patients [1]. Although the gold standard for diagnosing a food allergy is an oral food challenge test, we did not conduct that for ethical reasons. Additionally, performing a challenge test must be avoided in patients who have recently experienced a life-threatening reaction [8].

After the diagnosis, diet elimination for cooked potato has not recommended as the responsible agent was a raw potato. We recommend a strong avoidance from contact with raw potato. Although our patient was diagnosed with potato allergy at 4 years age, tolerance to the potato is generally achieved at around 4 years of age [11]. Therefore in a follow-up visit, repetition of the skin prick test was planned.

## CONCLUSION

To our knowledge, this is the second case of anaphylaxis to contact to raw potato. Our case points towards the importance of heat-labile allergens. Even the patient is able to eat the cooked form of suspicious food, tests for the raw form of the same food must be conducted.

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