Particularities in a Child With Cashew Nut Allergy

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Abstract
Food allergy affects many young children and tree nut allergy is accountable for a large number of severe, life-threatening anaphylactic reactions. Cross-reactivity can occur not only with foods that are in the same biological family but also between certain fruits or vegetables and latex (latex–fruit syndrome). We present the case of a previous healthy 5-year-old girl referred to Pediatric/Allergology Consultation after an episode of sialorrhea, perioral urticarial rash, tongue swelling, and immediate vomiting after oral contact with cashew nut. Investigation revealed the following: positive skin prick test to walnut and positive specific IgE for cashew nut, walnut, hazelnut, and almond. ImmunoCAP ISAC was positive for storage proteins of walnut and hazelnut (Jug r 1 e Cor a 9) and for a specific allergen of latex (Hev b 3). It is interesting that anaphylaxis was the first manifestation of allergy in a healthy child. Also, we emphasize the importance to latex sensitization with potential future clinical relevance and the sensitization to Hev b 3, which is not documented to be involved in cross-reactivity phenomena/latex–fruit syndrome or present in an otherwise healthy child.

Keywords
allergy/immunology, cashew nut allergy, cross-reactivity, latex sensitization, Hev b 3

Case Report
A 5-year-old Caucasian girl with no significant past medical history and with a family history of allergic disease (mother and 7-year-old brother with allergic rhinitis to pollens) was referred to Pediatric/Allergology Consultation after an episode of sialorrhea, perioral urticarial rash, tongue swelling, and immediate vomiting after oral contact with cashew nut. The previous year she had an episode of labial swelling after ingesting a chocolate with hazelnut.

Initial diagnostic exams revealed a positive skin prick test to walnut (wheat mean diameter 5 mm; same as histamine diameter) and specific IgE for cashew nut 21.1 kU/L; walnut 10 kU/L; hazelnut 2.94 kU/L, and almond 0.46 kU/L. For a better understanding of the clinical situation, we performed ImmunoCAP ISAC that was positive for storage proteins of walnut and hazelnut (Jug r 1 e Cor a 9) and for a specific allergen of latex (Hev b 3). It is interesting that anaphylaxis was the first manifestation of allergy in a healthy child. Also, we emphasize the importance to latex sensitization with potential future clinical relevance and the sensitization to Hev b 3, which is not documented to be involved in cross-reactivity phenomena/latex–fruit syndrome or present in an otherwise healthy child.

A challenge test was performed with a latex glove: first with finger glove and then with whole glove, which were negative.

Treatment included strict elimination of peanuts and tree nuts from diet and self-injectable adrenaline.

Discussion
In this case, we described a previously healthy child, with no history of allergic disease, which presented as first manifestation of allergy and anaphylactic reaction that occurred after contact with a tree nut and also was sensitized to a latex allergen (Hev b 3) that is not associated with cross-reactivity to tree nuts.¹ Further investigation with ImmunoCAP ISAC has shown the presence of Jug r 1 e Cor a 9, which are storage proteins and therefore justifies the severity of the initial reaction. These

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proteins are, in fact, responsible for life-threatening reactions as they are generally resistant to proteolysis and denaturation.\(^2\)

As stated, it was also unexpected that ImmunoCAP ISAC revealed positive for Hev b 3—a specific allergen of latex. In fact, in the general pediatric population the sensitization and allergy to latex are rare.\(^3\) In one study with 1877 children of 7 years old submitted to skin prick test with latex, only 4 children were sensitized.\(^4\) When present is children, latex allergy is usually found in risk groups, such as children with atopic background and specially children with spina bifida who undergo multiple surgeries from birth and, who are prematurely and frequently exposed to latex. In these children, the prevalence of latex allergy varies from 1% to 49%, and it can reach 72%.\(^5,6\) In adults, it is often present in atopics with a personal or family history of dermatitis, asthma, or allergic rhinitis.\(^7\)

Depending on the studied population and the diagnostic method, it is estimated that about 30% to 50% of individuals who are allergic to latex also have an associated hypersensitivity to some plant-derived foods, especially tropical fruits.\(^8\) This association is called latex–fruit syndrome, and it occurs more often in adults and not children and usually the sensitization to latex precedes the sensitization to fruits, but the opposite has also been described. Cross-reactivity of panallergen in foods is a lot more frequent in those with allergens that are usually found in health care workers (Hev b 2, 5, 6, 02, and 13) and can originate milder reactions as the oral allergy syndrome.\(^9\) We emphasize that Hev b 3 has not been documented as an allergen involved in the latex–fruit syndrome. Adding to all this, Hev b 3 is an allergen that is usually associated with children with meningocele, and not healthy children.

Management in this case involved the education of family and the child to avoid all nuts and nut-containing products. Since she had an anaphylactic reaction, she is less likely to outgrow her allergy than children with milder reactions.

Following the guidelines of the European Academy of Allergology and Clinical Immunology, a self-injectable adrenaline device was prescribed.\(^9\) The relative indications in this case were the following: tree nut allergy, reaction to a small quantity of a food, and living far from a medical facility. The early signs of an allergic reaction that could result from accidental exposure and how to use the self-injectable adrenaline device were explained.

**Conclusion**

In this case and despite being asymptomatic, latex sensitization has a potential future clinical relevance. Precautions should be taken when a latex-sensitive patient undergoes surgery or dental treatment. The operating room or dental surgery should be latex-free. No latex gloves should be used and the patient should be the first case of the day, the only exception to this is a lifesaving situation. Family should be provided with written information. The sensitization to Hev b 3, a major allergen of latex, which is not involved in cross-reactivity phenomena/latex–fruit syndrome neither present in a child without other precedent, is an unexpected finding in this case.

**Declaration of Conflicting Interests**

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