

Clinical case of anaphylaxis with sublingual immunotherapy: house dust mite allergen

Anthony M. Van Dyken, MBBS, BScApp, DRANZCOG^a,
Peter K. Smith, BMedSci, MBBS, FRACP, PhD^b, and
Tara L. Fox, PhD, BBehS^c

Clinical Implication

- Clinical report of anaphylaxis after administration of sublingual immunotherapy for house dust mite allergen.

TO THE EDITOR:

The safety and efficacy of sublingual immunotherapy (SLIT) is well established for treatment of allergic rhinitis and asthma, which permits the use of this therapy away from directly supervised medical care.^{1,2} There are rare case reports of serious adverse events, including anaphylaxis; however, there have been questions of the contribution of anxiety with throat irritation, and the oral immunotherapy that was used seemed to be an unusual composite mixture.³⁻⁵ We report a case of anaphylaxis associated with SLIT to standard commercial preparation house dust mite (HDM) allergen. The patient was an 8-year-old boy with a history of allergic rhinitis and allergies to pistachio and/or cashew nut and HDM that were diagnosed by a pediatric allergist. He had experienced a serious allergic reaction to tree nuts in the past and was prescribed an epinephrine autoinjector. Skin prick testing confirmed the diagnosis and identified HDM allergen as the likely trigger for allergic rhinitis. The decision was made to commence SLIT (standardized extract of *Dermatophagoides pteronyssinus*:*Dermatophagoides farinae* 50%:50%; Stallergenes, Antony, France).

SLIT had been established for 18 months with 300 IR/mL HDM allergen (maintenance of 8 presses 3 times per week) with the dose held sublingually for 2 minutes and then swallowed. The treatment was performed in the morning 10 minutes before any oral intake. During these doses, oral irritation was frequent, although mild. On the morning of the reaction, the child had woken early and eaten a dry breakfast cereal 20 minutes before SLIT administration. He was otherwise well and had no symptoms before immunotherapy dosing. After the immunotherapy dose had been held sublingually for 2 minutes, the child swallowed the liquid, and, within 1 minute, he complained of itching, tongue swelling, throat tightness, feeling of lightheaded, and shortness of breath. The parents, one of whom was a medical student and the other a physician, noted facial flushing and angioedema of the tongue, fauces, and lips as well as dysphonia, dysphagia, stridor, respiratory distress (including audible wheeze), tachycardia, and agitation. Within 5 minutes of onset of symptoms, the parents believed that their child was undergoing an anaphylactic reaction and administered a single dose of 0.3 mg epinephrine via autoinjector. Within 5 minutes of administration of epinephrine, the symptoms had resolved. The child was taken to the hospital via ambulance and was observed for 4 hours with full resolution of symptoms. The serum tryptase

level was not measured. A medical review confirmed several small mucosal lacerations in the mouth of the patient.

The cereal did not contain nuts in the ingredient list nor was there an advisory warning label that the cereal may contain nuts. Cashews and pistachio are banned from the house, so nut consumption risk was low. Both the cereal box and immunotherapy bottles had been previously opened and were in use by the patient. A report to the manufacturer confirmed the safety of the batch of immunotherapy that the patient was using. Given the efficacy of the immunotherapy before the reaction, doses were gradually recommenced after review by the treating allergist. The patient already had an epinephrine autoinjector device because of his nut allergy. After a further 18 months of administration with strict adherence to protocols, there have been no further incidents. Dosage was at 3 presses daily rather than 8 presses 3 times a week. A lower, more-frequent dosing is now recommended for 300 IR HDM by the manufacturer.

In this case, it is hypothesized that the consumption of a dry breakfast cereal before SLIT resulted in mucosal lacerations that might have allowed rapid absorption of concentrated allergen, which triggered an anaphylactic reaction. Although blood pressure and serum tryptase levels were not recorded, the clinical picture from reliable medical witnesses and response to treatment makes the diagnosis of anaphylaxis most probable and meets criteria identified by the European Academy of Allergology and Clinical Immunology in their position paper on the management of anaphylaxis in childhood⁶ and the world allergy organization anaphylaxis guidelines.⁷ The median time for symptoms from tree nut ingestion is reported to be 2 minutes,⁸ and no symptoms were present before administration of the immunotherapy. It is appreciated that nut reactions can occur in the time window that the patient reacted. Although we believe that the reaction was due to a combination of SLIT and mucosal laceration, nut allergy or idiopathic anaphylaxis remains as an alternate explanation.

The details of this case provide important insights for clinical practice. Despite the efficacy and relative safety of sublingual immunotherapy,^{1,2} adverse reactions can occur.^{5,9} Therefore, patient education remains an important component of prescribing SLIT and should include information regarding risks of both minor¹⁰ and serious adverse events. The estimated risk of anaphylaxis with SLIT is approximately 1 episode per 100 million doses.⁵ This case illustrates a potential risk of an unexpected large dosage of allergen from what we believe was secondary to mucosal laceration after eating. In this case, immunotherapy was successfully continued with appropriate administration. Although patients who routinely undergo SLIT do not require self-injectable epinephrine, if they have had anaphylaxis as a consequence of SLIT, they must have epinephrine available and a proper management plan. If there are mucosal lacerations or oral inflammation present in the mouth, then it would be prudent to withhold immunotherapy dosing until there is healing.

^aPrivate Practice, Murwillumbah NSW 2484, Australia

^bClinical Medicine, Griffith University, Southport, Australia

^cPrivate Practice, Varsity Lakes, QLD 4227 Australia

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Corresponding author: Peter K. Smith, BMedSci, MBBS, FRACP, PhD, Clinical Medicine, Griffith University, 17/123 Nerang St, Southport 4215, Australia. E-mail: pksm@me.com.

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