

Anaphylactic Reactions to Peanut Butter

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Issues this article will address

- Management of acute allergic reactions/anaphylaxis
- Food and nut allergies: presentation and incidence
- How to decrease the chances of peanut allergy

Salient Points

- Foods most often responsible for food-associated anaphylaxis are peanuts and tree nuts such as walnuts, hazelnuts, almonds, cashews and brazil nuts.
- Unlike food allergy, nut allergy can be a life-long risk.
- Children from families with a food allergy history should eliminate all nut and peanut products from their diet for 3 years, and mothers should not consume peanut products while breast feeding.
- An emergency plan and self-injectable adrenaline should be available at all times for individuals at risk of anaphylaxis.
- The majority of food-associated anaphylactic reactions occur at home.

Key words: Nut allergy · Food-induced anaphylaxis · Adrenaline · IgE antibody

Introduction

New Zealand is facing an allergic epidemic. Of the 12,400 New Zealanders who wear Medic Alert Bracelets, half are allergy sufferers and the greatest proportion of these individuals are children.[1] Peanuts are believed to be the leading cause of food allergy in the western world.[2] Peanut products such as peanut butter, peanut butter sandwiches, and peanuts in cakes and biscuits are increasingly being served as snacks and quick meal substitutes to infants and toddlers. This exposes them to peanut very early in life and increases the risk of allergy due to their immature gut.

The majority of true food allergies in children are caused by milk, eggs, and soy products and these allergies remain for a short period of time in the child's life.[2] Most such children grow out of it but allergies caused by nuts behave differently. A study of individuals who were allergic to peanuts found them to be just as clinically allergic 14 years later.[2] Therefore, it appears that nut allergy, which is closely associated with anaphylaxis, is a life-long risk.

Mechanism and Causes

Allergic reactions to food are mediated by IgE antibodies. Persons who have an atopic tendency produce IgE-specific antibodies to certain proteins to which they are exposed. The antibodies bind to mast cells and when a food protein to which the person is allergic is ingested, the IgE recognises it on the surface of the mast cells. When activated, the mast cells release preformed mediators such as histamine and leukotrienes into the surrounding tissues. The symptoms of IgE-mediated responses typically involve the skin in the form of urticaria and angioedema. The involvement of the respiratory system is manifested in the form of rhinorrhoea and bronchospasm, while gastrointestinal system involvement manifests as vomiting and diarrhoea.

CASE PRESENTATION

Master TC, an 8-year-old Pacific Islander male child presented to our Accident and Medical clinic. He was brought in by his mother who stated that her aunt had unknowingly offered the

child biscuits that contained peanuts half an hour ago, and the aunt was not aware of the child's allergic condition. He had developed an itchy rash all over his body and had started to wheeze. He had a past history of asthma and known allergy to peanuts, but no history of anaphylaxis. There was no stridor, vomiting or diarrhoea. On examination, he appeared flushed and his whole body was covered with an urticarial rash. He was restless, afebrile but tachycardic (110/min) and hypotensive (BP 92/58 mm Hg). Respiratory examination revealed widespread wheeze, a respiratory rate of 28/min, and oxygen saturation of 96%. He was given oxygen, IV fluids, and intramuscular adrenaline (0.01 mL of a 1:1000 solution per kg) until he stabilised, and was then put onto a salbutamol nebuliser before being transferred to hospital in an ambulance for further management and observation.

Discussion

Anaphylaxis is a life-threatening medical emergency that requires quick recognition and urgent treatment. Failure to promptly recognise and treat patients can result in death. Anaphylaxis is a dramatic multiorgan reaction associated with IgE-mediated hypersensitivity.

Foods most often responsible for food-associated anaphylaxis are peanuts and tree nuts such as walnuts, hazelnuts, almonds, cashews, and brazilnuts, and shell fish.[3,4] Until 1988, deaths from allergic reactions to food were considered rare. Sampson et al.[4] reported a total of 6 deaths due to food-associated anaphylactic reactions. All these individuals had histories of other severe allergy, asthma, and allergic rhinitis as well as the food allergy. All knew that they were allergic to specific foods such as peanuts, nuts, crab, milk or eggs. All ate the allergenic food accidentally in situations where a small amount of food was disguised in a prepared product such as a cake (40%), restaurant meal (30%), or candy (15%). In 92% of cases, the food was eaten in a public place such as a school, restaurant or cafe. The main message of this study was that food-induced anaphylaxis can be decreased by avoiding the offending food diligently and treating the symptoms quickly. Prompt administration of adrenaline was recommended.

In a study of 95 episodes of anaphylaxis in 76 children, Novembre et al.[7] found that food was responsible for 57% of cases, while drugs caused reactions in 11%, hymenoptera venom in 12%,

and latex in 1%. Most of the cases of anaphylaxis occurred at home. The most frequent manifestations in children with food anaphylaxis were gastrointestinal symptoms, whereas cardiovascular symptoms were rare. A study conducted by Sporik et al.[5] at the Royal Children's Hospital in Melbourne found that of 4070 children who had been tested for food allergy, 1601 were sensitised to peanut and 590 suffered from tree nut allergy. Of these, 920 children aged under 24 months were sensitised to peanut, while 270 were sensitised to tree nuts such as almonds, cashews and walnuts.

In an editorial in the British Medical Journal, Sampson et al.[6] recommended that to decrease the incidence of peanut and other nut allergy, the first step should be to identify families with food allergies and advise the parents to eliminate all nuts and peanut products from their children's diets for three years, and advise mothers who are breast feeding to eliminate all peanut and nut products from their own diet. Children under the age of three who are allergic to peanut should avoid peanuts and nut products for at least 5 years.

In case of accidental ingestion of the allergen, there should be an emergency treatment plan available to the parents and caregivers. All individuals who are at risk of anaphylaxis should be provided with self-injectable adrenaline. The most convenient adrenaline device to use at home and at school are autoinjectors such as 'EpiPen'. The parents, the patient, and any caregivers should be provided with information about the allergy, how to recognise it, and how to administer adrenaline, and they should be given a detailed emergency plan for transporting the patient to a medical facility.

Useful Link

Allergy NZ (<http://www.allergy.org.nz>) is an organisation that provides educational materials for families and individual who suffers from allergies.

References

1. Weekend Herald. Deadly sensitive. July 2001, p. E5.

2. Bock SA, Atkins FM. The natural history of peanut allergy. *J Allergy Clin Immunol* 1989;83:900-04.
3. Yunginger JW, Sweeney KG, Sturner WQ, Giannandrea LA, Teigland JD, Bray M, et al. Fatal food induced anaphylaxis. *JAMA* 1988;260:1450-02.
4. Sampson HA, Mendelson LM, Rosen JP. Fatal and near fatal anaphylactic reaction to food in children and adolescents. *N Engl J Med* 1992;327:380-84.
5. Sporik R, Hill D. Allergy to peanuts, nuts and sesame seeds in Australian children. *BMJ* 1996;313:1477-8.
6. Sampson HA. Managing peanut allergy. *BMJ* 1996;312:1050-1.
7. Novembre E, Cianferoni A, Bernardini R, Mugnaini L, Caffarelli C, Cavagni G, et al. Anaphylaxis in children: clinical and allergologic features. *Pediatrics* 1998;101(4):e8.

Further Reading.

- Romano A, Di Fonso M, Giuffreda F, Quarantino D, Papa G, Palmieri V, et al. Diagnostic work up for food dependent and exercise induced anaphylaxis. *Allergy* 1995;50:817-24.
- Pumphrey RSH, Stanworth SJ. The clinical spectrum of anaphylaxis in North West England. *Clin Exp Allergy* 1996;26:1364-70.
- Ewan PW. Clinical study of peanuts and nuts allergy in 62 consecutive patients. *BMJ* 1996;312:1074-8.
- Sicherer SH, Burks AW, Sampson HA. Clinical features of acute allergic reaction to peanuts and tree nuts in children. *Pediatrics* 1998;102:6-8.
- Hourihane J, Warner JO. Benign allergic reactions should not be treated with adrenaline. *BMJ* 1995;311:1434.
- Simons FE, Gu X, Johnston LM, Simons KJ. Can epinephrine inhalation be substituted for epinephrine injection in children at risk for systemic anaphylaxis? *Pediatrics* 2000;106(5):1040-4.
- Lee JM, Greens DS. Biphasic anaphylactic reactions in pediatrics. *Pediatrics* 2000;106:762-6.
- Tariq SM, Stevens M, Matthews S, Ridout S, Twiselton R, Hide DW. Cohort study of peanut and tree nut sensitisation by age of 4 years. *BMJ* 1996;313:514-7.