Wei Chern Gavin Fong, Joanne Walsh, Adam T Fox and Tom Marrs

Management of nut allergy in primary care

WCG Fong, MSc, final-year medical student, School of Medicine, Dentistry and Biomedical Sciences, Queen's University Belfast, Belfast. **J Walsh**, MBChB, GP, Castle Partnership, Norwich. **AT Fox**, MD, FRCPCH, consultant in paediatric allergy; **T Marrs**, FRCPCH, consultant in paediatric allergy, Children's Allergies Department, Evelina London, Guy's and St Thomas' NHS Foundation Trust, St Thomas' Hospital, London; Paediatric Allergy, Department of Women and Children's Health, King's College London, London.

Address for correspondence

Adam T Fox, Guy's and St Thomas' Hospitals NHS Foundation Trust, Paediatric Allergy, Guy's and St Thomas' Hospitals, London SE1 7EH, UK.

E-mail: adam.fox@gstt.nhs.uk

Submitted: 1 November 2017; **Editor's response:** 24 November 2017; **final acceptance:** 1 December 2017.

https://doi.org/10.3399/bjgp18X694817

INTRODUCTION

Nut allergy presents a growing public health burden and is the most common cause of fatal anaphylaxis in the UK.[1] Adults and children commonly present to primary care with suspected reactions to nuts. The UK has a nut allergy prevalence of 0.7–2.5%.[2] The British Society for Allergy and Clinical Immunology (BSACI) released their *Guideline for the Diagnosis and Management of Peanut and Tree Nut Allergy*[2] in July 2017 and the National Institute for Health and Care Excellence (NICE) Quality Standard *Food Allergy* (QS118)[3] reinforces expectations in food allergy management.

PRESENTING SYMPTOMS

Life-threatening primary nut allergy most often arises in early childhood, and is caused by the production of specific IgE (sIgE) antibodies, which recognise heat-resistant nut proteins. Signs of a reaction usually develop within a few minutes of ingestion, and include vomiting, oral tingling, itching, urticaria, and lip and eyelid angioedema. Symptoms such as airway swelling, hoarse voice, breathing impairment, and drowsiness are often not correctly recognised as indicating anaphylaxis.

Not all patients who report oral symptoms, facial swelling, and urticaria shortly after eating nuts have life-threatening primary nut allergy. Patients with seasonal allergic rhinitis may develop cross-sensitisation between pollen allergens and structurally similar heat-labile proteins within nuts, which can present as pollen food syndrome (PFS). In these cases, the majority of IgE-mediated symptoms are oral-gastric because the labile nut proteins are broken down by gastric acid. Therefore, PFS rarely induces systemic symptoms and the prescription of adrenaline is usually not required. Hazelnuts and almonds are commonly implicated in PFS, and patients often report similar sensations from homologous proteins in raw vegetables (carrots or celery) and fruits (apples or stoned fruit).

DISCRIMINATING TYPES OF NUT ALLERGY

Primary nut allergy requires different management from that for PFS. Proven primary nut allergy requires stringent nut avoidance, and the prescription of adrenaline auto-injector devices (AAI) should be considered. Conversely, PFS is a very rare cause of severe reactions. Patients who develop PFS symptoms usually benefit from antihistamines and, if there has been no history of systemic symptoms, are free to consume nuts according to their preference and symptom severity. The BSACI guidelines recommend confirmatory testing to distinguish primary nut allergy from PFS. If the clinical history is less clear, or if accurate interpretation of investigation results are difficult to access, physicians may seek confirmation in the secondary care setting.

DIAGNOSTIC TESTS AND TOOLS

Who should be offered testing?

Patients who can eat a plain portion of a specific nut (for example, 20 whole nuts for an adult) without experiencing symptoms are clinically tolerant and do not benefit from additional testing. For children aged <5 years, two heaped teaspoons of nut butter make an appropriate portion.

Individuals describing symptoms when eating nuts should be offered testing. Diagnosing nut allergy is important to prevent future allergic reactions, unnecessary avoidance, and to minimise the socioeconomic impact.

Testing and interpretation

Allergy testing is guided by a targeted clinical history, which should include ascertaining the type of nut and quantity ingested, the speed of onset, duration and nature of symptoms, the patient's response to medication, their tolerance to other nuts,

Box 1. Suggestions for referral amended from NICE CG116[4]

- An acute systemic reaction.
- Clinical suspicion of multiple food allergies.
- Significant atopic eczema, where multiple food allergies are suspected by the parent or carer.
- Patients who have not responded to a single-allergen elimination diet.
- Patients with asthma who have confirmed IgE-mediated food allergy.
- Patients with a strong clinical suspicion of IgE-mediated food allergy but allergy test results are negative.
- Persisting parental suspicion of food allergy despite a lack of supporting history.
- Dramatic dietary avoidance not supported by the clinical history.
- History and testing neither confirms nor refutes clinical allergy.

REFERENCES

1. Turner PJ, Gowland MH, Sharma V, *et al.* Increase in anaphylaxis-related hospitalizations but no increase in fatalities: an analysis of United Kingdom national anaphylaxis data, 1992–2012. *J Allergy Clin Immunol* 2015; **135(4):** 956–963.
2. Stiefel G, Anagnostou K, Boyle RJ, *et al.* BSACI guideline for the diagnosis and management of peanut and tree nut allergy. *Clin Exp Allergy* 2017; **47(6):** 719–739.
3. National Institute for Health and Care Excellence. *Food allergy. QS118.* 2016. https://www.nice.org.uk/guidance/qs118 (accessed 19 Dec 2017).
4. National Institute for Health and Care Excellence. *Food allergy in under 19s: assessment and diagnosis. CG116.* 2011. http://guidance.nice.org.uk/CG116 (accessed 19 Dec 2017).
5. British Society for Allergy and Clinical Immunology. Allergy action plans for children. http://www.bsaci.org/about/download-paediatric-allergy-action-plans (accessed 19 Dec 2017).
6. Medicines and Healthcare products Regulatory Agency. *Adrenaline auto-injectors: updated advice after European review.* https://www.gov.uk/drug-safety-update/adrenaline-auto-injectors-updated-advice-after-european-review (accessed 12 Jan 2018).
7. National Institute for Health and Care Excellence. *Anaphylaxis: assessment and referral after emergency treatment. CG134.* 2011. http://guidance.nice.org.uk/CG134 (accessed 19 Dec 2017).
8. Scientific Advisory Committee on Nutrition, Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment. *Assessing the health benefits and risks of the introduction of peanut and hen's egg into the infant diet before six months of age in the UK.* 2018. https://cot.food.gov.uk/sites/default/files/jointsacncotallergystatementfinal2.pdf (accessed 11 Jan 2018).

cultural and dietary factors relevant to eating nuts, the patient's understanding of their condition and its management, the presence of comorbidity, such as asthma and eczema, and a family history of food or nut allergy.

Allergen-specific IgE (sIgE) to individual nuts. Allergen sIgE should be requested for the individual nut(s) in question to confirm the diagnosis. It is appropriate to concentrate on the nuts most commonly available in the patient's household. A value of <0.35 kU/L has a negative predictive value of 95% and therefore can be used to help exclude each specific nut allergy. Conversely, patients with a nut sIgE ≥15.0 kU/L are most likely to have a nut allergy because this represents a positive predictive value of 95% for peanut and most tree nuts. Where patients have a clear history of reacting to a specific nut, lower levels of sensitisation may be considered diagnostic because the patient's pre-test probability is higher.

Skin prick testing (SPT). SPT can be safely performed in primary care with whole nut extracts or the nut itself, and offers immediate results to expedite food allergy diagnosis.[4] Nonetheless, it is not commonly available in the community.

Early testing. Peanut allergy is more common among infants who develop eczema early in infancy. Shared sibling peanut allergy is infrequent, although it should be considered a possibility, especially where the sibling has developed risk factors such as eczema and/or egg allergy. If the sibling has not already established the nut in their diet, blood testing or referral to secondary care may be considered.

MANAGEMENT

The management of primary nut allergy includes dietary avoidance for the relevant nut, supportive prescription of AAIs, and the provision of a signed emergency action plan.[5] The Medicines and Healthcare products Regulatory Agency (MHRA) and the European Medicines Agency (EMA) recommend that two AAIs are carried with the patient due to the risk of misfire or the need for a second injection.[6] Comorbid asthma should be optimally managed because it may present an additional risk for severe allergic reactions. Referral to a dietitian is particularly recommended for patients at higher risk of exposure and for those managing additional food allergies. Dietary nut avoidance should be tailored to the individual and may include the continued ingestion of some safe nuts. However, avoidance of all nuts is the safest approach.

Referral to secondary care is indicated for children, as outlined by NICE guidance. There is no specific guidance for adults, although similar principles should be used. Referral should be considered in patients reporting acute systemic reactions, negative tests despite strong clinical history, and comorbid multiple food allergies or other allergic disorders (Box 1).[4,7] Where patients and families are keen to maintain selected nuts in their diet, a referral may be warranted to delineate which nuts may pose a risk.

FUTURE STRATEGIES AND EMERGING PREVENTION

There is no need to avoid nut consumption during pregnancy and breastfeeding, or in atopic children aged <3 years, but whole nuts should still be avoided until the age of 5 years due to the risk of choking. Regular consumption of peanuts during infancy can prevent the development of peanut allergy in high-risk children. Recent Food Standards Agency advice is for the introduction of peanuts from 6 months, because delay could increase the risk of peanut allergy.[8]

RESOURCES

The British Dietetic Association (https://www.bda.uk.com/foodfacts/home) produces many helpful leaflets on avoidance strategies and precautionary allergen labelling. Other useful sources of advice are the British Society for Allergy and Clinical Immunology (www.bsaci.org/), Allergy UK (https://www.allergyuk.org/), Anaphylaxis Campaign (https://www.anaphylaxis.org.uk/), and the Royal College of Paediatrics and Child Health allergy care pathways (https://www.rcpch.ac.uk/allergy).

Provenance

Freely submitted; externally peer reviewed.

Competing interests

The authors have declared no competing interests.

Discuss this article

Contribute and read comments about this article: **bjgp.org/letters**