

Pollen food syndrome in a teenage student

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A first year university student comes to see you with a history of itching and mild lip swelling after eating apples and pears. She has also noticed tingling in her mouth after eating nuts.

What issues you should cover

Detailed history is the cornerstone of diagnosis

Pollen food syndrome (also known as oral allergy syndrome) comprises a set of symptoms usually involving itching and mild swelling—typically limited to the oropharynx—after eating raw fruits, vegetables, peanuts, nuts, and sometimes spices (box 1). The range of symptoms can be wide and may include anaphylaxis, although this is uncommon. The symptoms are due to an immediate (IgE mediated type 1) hypersensitivity reaction typically caused by cross-reactivity between the protein found in these foods and those in pollens. Symptoms are therefore predictable, beginning within minutes of exposure. Affected people are able to tolerate these foods when cooked because the allergen responsible is heat labile.

*Box 1 Foods commonly implicated in pollen food syndrome*¹

Birch—fruits: apple, apricot, cherry, kiwi, nectarine, pear, peach, plum, prune, and quince; nuts: almond, hazelnut, and walnut; vegetables: carrot, celery, and potato

Grass—fruits: melon, orange, watermelon; peanuts; vegetables: potato, swiss chard, and tomato

Plane—fruits: peach, apple, melon, and kiwi; legumes: chickpea, green beans, peanut; vegetables: lettuce

Ragweed—fruits: banana, melon and watermelon; vegetables: courgette and cucumber

How does the problem affect her?

Ascertain whether she has any respiratory or systemic manifestations, which would indicate an anaphylaxis type picture; such reactions are rare. Ask her to describe her worst ever reaction.

Ask about related co-morbidities, particularly hay fever and asthma

Spring hay fever (triggered by pollen from trees and, to a lesser extent, grass) and asthma commonly co-exist with pollen food syndrome. Asthma is particularly important because, if poorly controlled, it greatly increases the risks of fatal reactions to foods.

What treatments, if any, has she tried and with what effect?

Also ask about treatments for hay fever and asthma, if relevant, and her compliance with these. Emerging evidence suggests that optimal management of allergic rhinitis improves the control of asthma.

What you should do**Examination**

Inspect the upper airways for signs of rhinitis and examine the chest for signs indicating asthma. Take her peak expiratory flow, but remember that a single normal peak expiratory flow does not exclude a diagnosis of asthma. Consider lung function testing if the diagnosis of asthma is in doubt.

Confirmatory testing

The history will usually be sufficient to secure the diagnosis, but a serum specific IgE to the foods in question may confirm it. Alternatively, a clinician trained in skin prick testing may undertake a prick-prick test using the raw unpeeled foods; commercially prepared allergen solutions sometimes lack the full complement of relevant allergens and are potentially misleading. There is, however, a very small risk of these prick tests triggering a systemic allergic reaction, so adrenaline and a member of staff trained in its administration and resuscitation should be available.

Food avoidance

All raw fruits and vegetables that cause symptoms should be avoided. Cooked and processed foods can be safely consumed if they do not result in symptoms.

Advice on botanical relations

Although some advocate precautionary avoidance of all fruits and vegetables in the same family (for example, plums, peaches, prunes, apricots, and nectarines in those with plum allergy)—even those that have not caused symptoms—this is seldom necessary in practice. If the patient is concerned, suggest that he or she tries the mucosal touch test in the doctor's presence: this involves rubbing the food first on the outside and then inside of the lip, and then, if it is tolerated, taking a bite and chewing well before spitting it out. This test is not recommended in those with a history of anaphylaxis.

Treatments

In most people symptoms will resolve spontaneously over a matter of minutes to a few hours, but rinsing the mouth with water can help speed up elimination of the allergen from the mouth and reduce symptoms; antihistamines can be taken if necessary. Avoid use of sedating antihistamines. Those with features of anaphylaxis (symptoms suggesting respiratory or cardiovascular involvement) should be given an adrenaline autoinjector and trained in its use. Take the opportunity to optimise treatment for hay fever or asthma. Desensitisation therapy varies in effectiveness and is not recommended.

Information and support

Reassure her that in most people symptoms are mild, but that there may be an exacerbation during the hay fever season. Patient support materials such as those listed in box 2 may be helpful.

Box 2 Useful further reading and resources for professionals and parents

Further reading

Holgate ST, Church M, Lichtenstein LM. *Allergy*. 3rd ed. Mosby Elsevier, 2006

Mari A, Ballmer-Weber BK, Vieths S. The oral allergy syndrome: improved diagnostic and treatment methods. *Curr Opin Allergy Clin Immunol* 2005;5:267-73

Pumphrey R. Anaphylaxis: can we tell who is at risk of a fatal reaction? *Curr Opin Allergy Clin Immunol* 2004;4:285-290

Sampson HA, Mendelson L, Rosen JP. Fatal and near-fatal anaphylactic reactions to food in children and adolescents. *N Engl J Med* 1992;327:380-4

Vieths S, Scheurer S, Ballmer-Weber B. Current understanding of cross-reactivity of food allergens and pollen. *Ann N Y Acad Sci* 2002;964:47-68

Resources for healthcare professionals and patients

Allergy UK. Oral allergy syndrome.

<http://www.hayfeverexpert.co.uk/OralAllergySyndrome.html>

British Society for Allergy & Clinical Immunology. Oral allergy syndrome.

[http://www.dr-hyer.co.uk/resources/BSACI_Oral_Allergy\\$5B1\\$5D.pdf](http://www.dr-hyer.co.uk/resources/BSACI_Oral_Allergy$5B1$5D.pdf)

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References

1. Vieths S, Scheurer S, Ballmer-Weber B. Current understanding of cross-reactivity of food allergens and pollen. *Ann N Y Acad Sci* 2002;964:47-68. [\[Web of Science\]](#) [\[Medline\]](#)

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