

A pregnant woman with concerns about paediatric allergy

Commentary by:

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Parents who already have a child with food allergies often seek advice about primary prevention of allergy for subsequent children. What is the current approach to allergy risk reduction, including for early onset allergic conditions such as eczema?



Case scenario

Shelley, aged 33 years, is in the midtrimester of her second pregnancy. She is part of a highly atopic family and her first child, now aged 3 years, has severe peanut and egg allergies. During her second pregnancy, Shelley has been avoiding these foods in her own diet, which she hopes will help to prevent allergies for the baby. She is initially horrified when she is told that it might be a good idea to introduce highly allergenic foods early to her second child, but she is keen to learn more about this 'new' approach to allergy. She plans to breastfeed and asks for information about introducing potentially allergenic foods to the new baby.

- Will Shelley's dietary restriction affect the risk of food allergy in her second child?
- What is the current advice for introducing potentially allergenic foods to a new baby?
- Is there anything else that Shelley can do, either now or later, to help avoid the development of allergies in her children?

Discussion

Parents often request strategies for allergy prevention, especially if they already have a child with food allergies, and best advice for primary prevention of allergy has changed in recent years. In

2000, WHO recommended introducing solid foods to infants after six months in order to encourage breastfeeding.¹ This was before research, such as the Learning Early about Peanut Allergy (LEAP) study, started to suggest that a delay in the introduction of solids could be associated with an increase in allergies. The LEAP study, a randomised controlled trial of infants with severe eczema or egg allergy, showed infants who had early peanut exposure (from 4 months of age) had reduced risk of peanut allergy (1.9%) compared with infants who were not exposed (13.7%).²

Current guidelines from the Australasian Society of Clinical Immunology and Allergy (ASCIA), entitled *Infant Feeding and Allergy Prevention*, recommend introducing solid food – including potentially allergenic foods such as egg and peanuts – to infants at around 6 months of age (but not before 4 months), and advise continued breastfeeding while introducing a variety of solids.³ (These guidelines are available online at www.allergy.org.au/health-professionals/papers/ascia-guidelines-for-infant-feeding-and-allergy-prevention). If there are other family members who are allergic to certain foods, it is important to follow risk minimisation strategies to prevent cross-contamination of allergens.

Systematic reviews of dietary avoidance in pregnant women have not been shown to reduce risk of allergy in offspring and may in fact cause babies to have a lower birthweight.³ This suggests that there is no need for a woman to avoid allergenic food substances (including peanuts and eggs) during pregnancy.

A Cochrane review has shown significant benefit for the use of probiotics as a preventive strategy to reduce the risk of eczema, with a meta-analysis of five studies (1477 infants) finding a

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significant reduction (typical risk ratio 0.82 for probiotics vs placebo; 95% CI, 0.70 to 0.95).⁴ A Cochrane review of prebiotics has shown similar benefit, with a meta-analysis of four studies (1218 infants) finding a significant reduction in eczema for use of prebiotics compared with placebo (typical risk ratio, 0.68 for prebiotics vs placebo; 95% CI, 0.48 to 0.97).⁵ The World Allergy Organization guidelines (2015) suggest that mothers who have a family history of allergies use regular probiotics in pregnancy and while breastfeeding and suggest giving probiotics to the infant after birth.⁶ *Lactobacillus rhamnosis* has been one of the best studied species; doses of 1 to 5 billion CFU in babies have been used in studies that show beneficial effect.⁴ For a mother who is not breastfeeding, an infant formula containing prebiotics and/or probiotics may reduce the onset of food allergy.

Dietary supplements of omega 3 oils, administered either to pregnant women or directly to infants, have not been shown to reduce asthma or any other allergy.⁷ Vitamin D deficiency has been associated with increased risk of allergies; however, trials of vitamin D supplementation to prevent allergy have not shown significant benefit.⁸ In children with gastro-oesophageal reflux disease, the use of proton pump inhibitors or H₂-receptor antagonists has been shown to increase the risk of food allergy, with a hazard ratio of 1.68 (95% CI, 1.15 to 2.46) for patients treated with acid suppressive medications compared with no treatment.⁹ There is no role for antihistamines in the prevention of allergies.

Recent studies have suggested that one of the possible routes of early sensitisation to foods may occur via cutaneous contact, particularly if there is a broken cutaneous barrier, such as in eczema.¹⁰ The skin should be kept well moisturised and skin products that contain food oils and food-derived protein should be avoided. Longer duration of bathing has been associated with increased severity of eczema.¹¹

If a new baby shows signs of an allergic disease such as severe eczema or food allergy, it would be appropriate to seek prompt advice from an allergist or immunologist. Peanut and egg allergies are the most common causes of anaphylaxis in Australia, and the only effective management for a child with such allergies is to avoid ingestion of these foods and educate parents about how to respond to an accidental exposure. However, some children do tolerate these foods in certain forms, and food processing methods can reduce the antigenicity of foods. For example, baking causes conformational changes within the allergenic protein in egg, which renders it less allergenic than lightly cooked egg. Peanuts that have been boiled have different allergenicity compared to peanuts that have been roasted. For a child who has a known egg or peanut allergy, an oral food challenge could be performed if the child's wheal size has decreased and he or she has had no significant allergic reaction from accidental exposure. The food challenge should be performed before the child is allowed to ingest the food at home and should be done in medical rooms or a hospital setting under the supervision of an allergist.

Conclusion

Evidence from recent large trials suggests that common foods, including egg and peanut products, are best introduced to infants during the first four to six months of life in order to optimise the development of tolerance. There is a paucity of evidence to support maternal avoidance of common allergenic foods during pregnancy and breastfeeding as a primary prevention strategy for allergy, and mothers should be encouraged to follow a healthy balanced diet. Further information relevant to a pregnant woman who already has a child with severe food allergy can be found in the ASCIA guidelines, *Infant Feeding and Allergy Prevention*. Useful information for patients, consumers and carers is available on the ASCIA website (www.allergy.org.au/patients/information).

Despite preventative efforts, some infants will develop food allergies. If a parent raises concern about a child's immediate reaction to a food, this food should be stopped until a thorough history is taken and, if appropriate, the child is further investigated or referred.

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