

## Assessment of Food Allergy

### Adverse Food Reactions

Adverse food reactions fall into four major pathogenic categories: allergy, intolerance, toxicity, and aversion.

- **Food allergy** represents an immunological response to food proteins which may be IgE-mediated, but more often involves other mechanisms such as delayed hypersensitivity and direct mast cell degranulation. In many cases the mechanisms remain ill-defined. Allergy to foods is seen in about 5% of children (involving mainly eggs, milk, peanuts, soy and wheat) and 1.5% of adults (involving peanuts, nuts, fish, and shellfish). The clinical features of food allergy range from urticaria/angio-oedema to eczema, gastrointestinal and respiratory problems and, rarely, anaphylaxis.
- **Food intolerance** is more common than food allergy, and refers to a non-immunological adverse response to foods or additives through idiosyncratic, metabolic, or pharmacological mechanisms. A common example is the intolerance to lactose-containing agents seen in patients with lactase deficiency after a gastrointestinal infection. We fully expect some cases of food intolerance to be reclassified as food allergy in the future, when their underlying immune mechanisms are defined.
- An example of **food toxicity** is the anaphylactoid response to high histamine levels in spoiled scombroid fish such as tuna and mackerel.
- **Food aversion** is a growing problem, with any number of "alternative" practitioners loosely diagnosing food allergy, resulting in belief systems and inappropriate dietary restrictions which often become entrenched. The nutritional and psychosocial sequelae of narrowly restricted diets can be significant.

The prevalence of allergic disease in developed countries is increasing, and there is much debate about the reasons for this. The diagnosis of food allergy requires a combination of history and dietary elimination followed by double-blind placebo-controlled challenges. Tests, such as in-vivo and in-vitro methods for demonstrating allergen-specific IgE, play a complementary role in diagnosis, but in themselves are not sufficiently sensitive or specific to diagnose food allergy.

### Areas of great interest include:

- **The role of foods in some cases of asthma**

Foods may be a contributory factor in up to 9% of asthmatic children. Adults may also suffer from food-related asthmatic exacerbations in the form of sulphite sensitivity or a cross-reactivity between inhalant aeroallergens and various foods (e.g. cross-reactive rye grass and wheat allergy). Aspirin sensitivity may also be involved in late-onset asthma, and benzoates and tartrazine may cross-react.

- **Peanut allergy**

Peanut allergy is responsible for 50% of all food-related deaths. If present after the age of 6 years old, it is unlikely that the person will grow out of the allergy.

- **Allergies to transgenic foods**

Brazilnut allergic patients have displayed sensitivity to transgenic soybeans expressing a brazilnut major allergen.

- **The prevention of food allergy**

Unsupplemented breast-feeding, the early minimisation of potent allergens, and avoidance of smoking are major factors of proven value in preventing the development of allergy in at-risk populations.

- **The role of natural and added chemicals in clinical disease**

Salicylates, amines, glutamates, colours, preservatives and flavour-enhancers can all provoke food intolerance reactions, most commonly urticaria. Their role in asthma exacerbations is controversial, but all have been reported to be rarely associated with asthma and anaphylaxis.

- **Patch-testing**

Patch-testing may be of complementary value in association with history, skin-prick testing and elimination-challenge protocols in the assessment of delayed reactions to cow's milk.

- **The association between allergy, autoimmunity, immunodeficiency and genetic background**

Coeliac disease may be regarded as a form of food allergy, although it also has important genetic and autoimmune components. In this setting of immunopathy, the association between coeliac disease, IgA deficiency, and bowel lymphoma is of interest. The results of current studies investigating the possible link between cow's milk allergy and Type I diabetes are eagerly awaited.

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