

Food Allergy: Common Causes, Diagnosis, and Treatment

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Abstract

Food allergy is a growing concern, and recognition of symptoms, knowledge of common food allergens, and management of reactions are important for patients and practitioners. Symptoms of a classic IgE-mediated food allergy vary in severity and can include any combination of laryngeal edema, wheezing, nausea, vomiting, diarrhea, urticaria, angioedema, and hypotension. Many foods can induce an allergic reaction, but the most commonly implicated foods include cow's milk, egg, peanut, tree nut, soy, wheat, fish, and shellfish. Milk and egg allergy generally develop and are outgrown in childhood. Peanut and tree nut allergy can occur during childhood or adulthood, are less likely to be outgrown, and tend to cause more fatal reactions. Given the possibility of life-threatening reactions, it is important to recognize the potential for cross-reactivity among food groups. Diagnosis of food allergy includes skin prick testing, specific serum IgE testing, and oral food challenges. Management is centered on avoidance of allergenic and cross-reacting foods and early recognition and immediate treatment of reactions. Treatment protocols to desensitize patients to food are currently under investigation.

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GENERAL OVERVIEW

Epidemiology

Food allergy is a public health concern that can impair quality of life and has the potential to induce life-threatening reactions. The prevalence of food allergy is increasing,¹

although an accurate prediction of prevalence is difficult given the imprecise diagnoses of food allergy.² A systematic review reported that food allergy affects between 2% and 10% of the population.³ According to the National Health and Nutrition Examination Survey (NHANES)



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self-reported food allergy data from 2007-2010, the prevalence of food allergy was 8.96%, with a prevalence of 6.53% in children and 9.72% in adults.⁴

Risk Factors

Atopic dermatitis, a family history of atopy, and asthma are the primary risk factors for development of a food allergy.⁵ These risk factors have been corroborated by studies suggesting that breakdown of the skin barrier in atopic dermatitis can result in epicutaneous sensitization to foods resulting in food allergy. Numerous other factors including vitamin D deficiency and obesity have been associated with food allergy, although these factors need further exploration.

Early Exposure Can Be Preventive—Lessons From a Peanut Allergy Population

In the past, it had been generally recommended that children avoid allergenic foods to reduce the likelihood of development of allergies. However, in a recent study, high-risk infants (those with atopic dermatitis, egg allergy, or both) were randomized to ingest or avoid peanut products from 4 to 11 months of age (depending on age at enrollment) until 5 years of age. The investigators found that high-risk children who regularly consumed peanut protein (in the form of peanut butter or peanut-flavored snacks) were far less likely (70%-86% reduction) to have development of a peanut allergy.⁶ This marked reduction in development of allergy may impact new food allergy guidelines in the near future.

Common Food Allergens and Natural History

Although 170 foods have been identified as allergenic, only a small number of these foods are responsible for a majority of reactions.¹ Cow's milk, egg, peanut, tree nut, soy, wheat, fish, and shellfish are the most commonly allergenic foods. Allergy to egg, milk, soy, and wheat tends to occur most commonly during childhood (before 1-2 years of age),⁷ while fish, peanut, and tree nut allergies can occur during any phase of life. In general, children are more likely to outgrow a wheat, soy, milk, and egg allergy and are less likely to outgrow peanut, tree nut, fish, or shellfish allergy.⁸ Certain foods are more likely to produce a more severe reaction than others. In studies of food allergy fatalities, over 90% of

fatal reactions were attributed to either peanuts or tree nuts.^{9,10}

Classic Symptoms of Food Allergy and Intolerance

A food allergy is an IgE-mediated reaction. Symptoms may involve the respiratory tract, gastrointestinal tract, skin, and/or cardiovascular system. Respiratory symptoms include sneezing, congestion, rhinorrhea, wheezing, and laryngeal edema. Gastrointestinal symptoms include nausea, vomiting, abdominal pain, and diarrhea. Cutaneous findings include urticaria, angioedema, flushing, or pruritus. Cardiovascular findings include tachycardia, hypotension, or syncope. Symptoms are usually seen within minutes of ingesting a food but may not appear for up to 2 hours and can vary in severity from pruritus alone to anaphylactic shock.¹

Food allergy and food intolerances are different diagnoses and are commonly confused by patients. In childhood, intolerance syndromes, such as food protein–induced enterocolitis syndrome, can be severe and cause hypotension due to third spacing. Food protein–induced enterocolitis syndrome is triggered by milk, soy, oat, rice, and rarely meat and manifests with emesis, diarrhea, and lethargy.¹ Food protein–induced enteropathy presents as a milder reaction with diarrhea and less commonly with vomiting.¹¹ Food protein–induced allergic proctocolitis is a benign condition manifesting as bloody stools in well-appearing infants and is usually caused by milk or soy passed through breast milk or contained in formula.¹¹

In adults, food intolerance usually presents with gastrointestinal symptoms including bloating, flatulence, diarrhea, abdominal pain, or nausea and generally does not cause life-threatening reactions. Symptoms of a food allergy occur reliably and reproducibly with exposure to a specific food, which is not always the case with food intolerances in adults. Food intolerances can include lactose intolerance, fructose intolerance, or irritable bowel syndrome that may or may not be associated with certain foods.

Other nonimmunologic conditions include histamine intolerance, which can be seen with high histamine containing and releasing foods (including alcoholic beverages, ripe cheese, tomato, and smoked or processed meats),

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