

Signs and Symptoms of Food Allergy and Food-Induced Anaphylaxis

Hemant P. Sharma, MD, MHS*, Shweta Bansil, BS,
Burcin Uygungil, MD, MPH

KEYWORDS

• Food allergy • Anaphylaxis • Symptoms • Presentation • History

KEY POINTS

- Unlike nonimmunologic adverse food reactions (such as lactose intolerance and food poisoning), food allergies (FAs) by definition are immune-mediated responses that occur reproducibly on food ingestion.
- There are varying clinical presentations of FA, owing to different underlying immunologic mechanisms (IgE-mediated, mixed IgE- and cell-mediated, and cell-mediated disorders).
- IgE-mediated FA may result in food-induced anaphylaxis, a potentially life-threatening severe systemic reaction, requiring prompt recognition and treatment.

INTRODUCTION

The prevalence of FAs is widespread and rising rapidly, affecting up to 8% of children in the United States.^{1,2} FAs may result in significant morbidity. Among patients treated for anaphylaxis in the emergency department (ED), FA is the most common cause, accounting for one-third to half of cases.^{3,4} Given this increasing prevalence and potential severity, pediatric clinicians must be able to quickly recognize the signs and symptoms of FA. The range of clinical manifestations of FAs is wide and varies based on the underlying immunopathology. Symptoms may affect the cutaneous, respiratory, gastrointestinal (GI), or cardiovascular systems. The most severe presentation of FAs is anaphylaxis, an acute systemic allergic reaction that can ultimately lead to death if untreated. This review starts by defining FAs and then discusses the range of clinical presentations of various types of FAs based on underlying immune

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Division of Allergy and Immunology, Children's National Health System, George Washington University School of Medicine and Health Sciences, Washington, DC, USA

* Corresponding author. Division of Allergy and Immunology, Children's National Medical Center, 111 Michigan Avenue Northwest, Washington, DC 20010.

E-mail address: hsharma@childrensnational.org

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mechanisms. Important questions in the history of a patient with a suspected FA are also discussed.

DEFINING FOOD ALLERGIES

The term adverse food reaction is used to describe any untoward health effect that occurs after food ingestion. It can be divided into FAs, which are due to a specific immune response and occur reproducibly on food ingestion,⁵ and all other reactions, which, in contrast to true FAs, are nonimmunologic in nature.⁶ It is important that the pediatric clinician distinguish these nonimmunologic adverse food reactions (summarized in **Table 1**) from FA to guide appropriate treatment.

Nonimmunologic adverse food reactions can result from metabolic disorders such as lactose intolerance, galactosemia, and alcohol intolerance. Lactose intolerance manifests as a result of an inability to digest the carbohydrate lactose in milk and dairy products, owing to deficiency of the lactase enzyme. Symptoms might include abdominal pain, bloating, gas, diarrhea, and nausea. Pharmacologically active components in foods, such as caffeine and food-borne toxins, may also cause nonimmune adverse food reactions. For example, scombroid fish poisoning is a toxic adverse food

Table 1 Differential diagnosis of nonimmunologic adverse food reactions (conditions that are not food allergies)	
Host-specific metabolic disorders	Carbohydrate malabsorption <ul style="list-style-type: none"> • Lactase deficiency (lactose intolerance) • Sucrose-isomaltase deficiency (sucrose intolerance) Galactosemia Alcohol intolerance
Response to pharmacologically active food component	Scombroid poisoning (fish: tuna, mackerel, mahi mahi, sardines, anchovies) Histamine-like compounds (wine, sauerkraut) Caffeine Tyramine (aged cheeses, pickled fish) Theobromine (tea, chocolate) Tryptamine (tomato, plum) Serotonin (banana, tomato)
Toxic reactions (food poisoning)	Fish: ciguatera poisoning (grouper, snapper) Shellfish: saxitoxin Fungal toxins: aflatoxins, trichothecanes, ergot Other food poisoning (<i>Clostridium botulinum</i> , <i>Staphylococcus aureus</i>)
Gastrointestinal disorders	Structural abnormalities (hiatal hernia, pyloric stenosis, tracheoesophageal fistula, Hirschsprung disease) Gastroesophageal reflux Peptic ulcer disease
Psychological reactions	Food aversions Food phobias
Neurologic reactions	Auriculotemporal syndrome (facial redness or sweating after eating tart foods) Gustatory rhinitis (rhinorrhea after eating hot or spicy foods)

Adapted from Mansoor DK, Sharma HP. Clinical presentations of food allergy. *Pediatr Clin North Am* 2011;58(2):316; with permission.

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