Cutaneous Manifestation of Food Allergy

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KEYWORDS

• Food allergy • Atopic dermatitis • Urticaria • Contact dermatitis • Contact urticaria

KEY POINTS

- Urticaria is the most common symptom in patients experiencing food-induced anaphylaxis, but the prevalence across all IgE-mediated food reactions is unknown.
- Contact urticaria can be immunologic or nonimmunologic. Immunologic contact urticaria may be associated with development of a protein contact dermatitis.
- Atopic dermatitis commonly occurs with food sensitization and is a significant risk factor for the development of IgE-mediated food allergy.
- The prevalence of food-induced exacerbations of atopic dermatitis is unclear; food is likely more important in young children with atopic dermatitis.
- Food elimination should be done with caution in correctly selected patients.

Food allergy is defined by the National Institute of Allergy and Infectious Diseases expert panel "as an adverse health effect arising from a specific immune response that occurs reproducibly on exposure to a given food".[1] As defined, food allergy encompasses a wide array of clinical and immunologic adverse reactions to food. Manifestations of food allergy are diverse and reflect the complex interactions of the food protein, gastrointestinal system, immune system, and target organs. Although food initially contacts the gastrointestinal mucosa, allergic manifestations commonly occur outside the gastrointestinal tract, affecting distant target sites. The skin is not only the largest organ of the human body but also one of the most frequently targeted organs for food hypersensitivity reactions. As such, clinical manifestations for food reactions range from IgE-mediated reactions (urticaria, angioedema, flushing, pruritus, and erythematous morbilliform rash), cell-mediated reactions (contact dermatitis and dermatitis herpetiformis), and mixed IgE-mediated and cell-mediated (atopic dermatitis [AD]) reactions (**Table 1**).

Given the apparent increase of IgE-mediated food allergy in developed countries[2,3] and the emergence as a potential health threat in countries with rapid industrialization,[4]

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Table 1
Cutaneous food reactions

Reaction Type	Timing	Diagnostic Evaluation
Urticaria	Immediate	Skin prick testing, food-specific IgE testing, oral food challenge
Contact urticaria		
IgE-mediated	Immediate	Skin prick testing
Non–immune mediated	Immediate	Skin prick testing, repeat open application testing
Oral allergy syndrome	Immediate	Fresh fruit/vegetable prick-by-prick testing + aeroallergen testing (skin prick or specific IgE), oral food challenge
Contact dermatitis		
ACD	Delayed	Patch testing
ICD	Immediate	Empiric avoidance
PCD	Immediate, chronic/recurrent	Patch testing
Phototoxic contact dermatitis	Delayed	Photo-patch testing
Photoallergic contact dermatitis	Delayed	Photo-patch testing
Systemic contact dermatitis	Immediate or delayed	Patch testing
AD	Immediate or delayed	Skin prick testing, food-specific IgE testing may be used to guide food challenge ± specific elimination diets

it is important to recognize adverse food reactions and their possible cutaneous manifestations. For most of these skin manifestations provoked by food, pruritus is a hallmark of the disease. Itch may help differentiate mimickers of food allergy such as auriculotemporal syndrome (Frey syndrome).[5,6] These cutaneous manifestations provide an opportunity to better understand the diversity of adverse immunologic responses to food and the interconnected pathways that produce them.

URTICARIA

Urticaria is characterized by the appearance of pruritic, erythematous papules or plaques, with superficial swelling of the dermis. Urticaria affects approximately 20% of the population at some point.[7] Urticaria is categorized by its chronicity; urticaria lasting less than 6 weeks is considered acute, whereas urticaria recurring frequently for longer than 6 weeks is considered chronic.[8,9] The distinction is somewhat arbitrary, except that acute urticaria is more often associated with an identifiable cause than in chronic urticaria.[10] Acute urticaria tends to be more common in younger patients,[11] occurs more often in atopic patients, and is much more likely to be caused by food allergy than is chronic urticaria. In contrast, chronic urticaria is rarely caused by IgE-mediated reactions to foods, but food is frequently perceived by patients as a potential cause; yet, virtually no reported food reactions in chronic urticaria patients are confirmed by double-blind, placebo-controlled food challenge (DBPCFC). At most, studies suggest that foods provoke chronic urticaria in 1% to 2% of all patients.[10,12,13]