Pediatric Food Allergies

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Case Presentation

• 15 month old female

• presented to urgent care with hives after eating her first peanut butter and jelly sandwich

• no previous history of allergies

• patient’s older brother has a peanut allergy
Physical Exam

- Vital Signs: HR 158; RR28; BP 105/58; Temp 98.2; Wt 10.3 kg
- Constitutional: alert, active, well developed, well nourished, in distress
- Mouth/Throat: mucous membranes moist, no pharyngeal swelling
- Neck: normal ROM, supple, no rigidity, no adenopathy
- CV: tachycardic, regular rhythm, pulses strong, no murmur heard
- Respiratory: effort normal, no stridor, no wheezes
- Skin: urticarial rash on face, neck, upper back, bilateral shoulders and upper arms with new hives starting to appear on abdomen
Clinical Manifestations of Food Allergies

• Cutaneous - urticaria, flushing, angioedema, chronic dermatitis

• Gastrointestinal - dysphagia, emesis, diarrhea, hematochezia, abdominal pain, malabsorption

• Respiratory - rhinorrhea, cough, wheeze

• Lethargy, hypotension, shock
Adverse Reactions to Foods: Differential Diagnoses

- Toxic reactions
  - Food poisoning
  - Scombroid

- Non-toxic reactions
  - Food intolerance
    - Lactase deficiency
  - Food allergy
    - IgE-mediated
      - Anaphylaxis
      - Immediate GI hypersensitivity
      - Oral allergy syndrome
    - Non-IgE-mediated
      - Eosinophilic esophagitis
      - Allergic proctitis
      - Eosinophilic gastroenteritis
      - Possibly diarrhea, reflux, constipation

Source: Bishop WP: Pediatric Practice Gastroenterology; www.accespediatrics.com
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Epidemiology of Food Allergies

- adverse immune response to food proteins causing a spectrum of disorders
- >1/3 of parents report their child having an adverse reaction to food
- Approximately 5% of children in the US are affected. Much more prevalent in developed countries
- peak prevalence at 1 year of age
- cow’s milk is the most common food allergen
- food allergies are associated with atopic dermatitis, allergic rhinitis, and asthma
Evaluation of Suspected Food Allergies

Clinical history compatible with food allergy

Dietary history

History suggests specific antigen(s)

Empiric elimination

Improvement

Continue restriction. Reintroduce foods under guidance of allergist

No improvement

History does not suggest specific antigen(s)

Urticaria
Anaphylaxis
Oral allergy syndrome

Infant reflux
Constipation colic

Child reflux refractory to treatment

Allergist to test for IgE allergies

Hypoallergenic formula and/or dairy restriction

Pediatric GI evaluation

Improvement

No improvement

Source: Bishop WP: Pediatric Practice Gastroenterology: www.accesspediatrics.com

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Diagnosis

- thorough clinical history
- double-blind placebo controlled food challenge
- food diary, skin prick test, IgE-RAST, atopy patch test
Oral Allergy Syndrome

• begins in childhood or may be adult onset

• combination of oral itching, burning, swelling, and erythema

• rarely results in systemic symptoms

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Ragweed</strong></td>
<td>Bananas, melons, zucchini, cucumber, dandelions, chamomile tea</td>
</tr>
<tr>
<td><strong>Birch</strong></td>
<td>Apples, pears, peaches, apricots, cherries, plums, nectarines, prunes, kiwi, celery, potatoes, peppers, fennel, parsley, coriander, parsnips, hazelnuts, almonds, walnuts</td>
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<tr>
<td><strong>Grass</strong></td>
<td>Peaches, celery, melons, tomatoes, oranges</td>
</tr>
<tr>
<td><strong>Mugwort</strong></td>
<td>Celery, apple, kiwi, peanut, fennel, carrots, parsley, coriander, sunflower, peppers</td>
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<tr>
<td><strong>Alder</strong></td>
<td>Celery, pears, apples, almonds, cherries, hazelnuts, peaches, parsley</td>
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<tr>
<td><strong>Latex</strong></td>
<td>Bananas, avocado, kiwi, chestnut, papaya</td>
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Management

- **Epinephrine** for anaphylaxis

- **IV fluid bolus** to treat distributive shock. Epinephrine or dopamine drip may also be used if shock persists

- **B-agonists** for bronchospams (little to no evidence to support)

- **H1 antihistamines** for rash and pruritus (caution that they may cause sedative effect that can complicate recognizing signs of anaphylaxis in infants and children)

- **H2 antihistamines** used for theoretical efficacy (have not been proven to be of benefit)

- **steroids** to prevent recurrence of symptoms or delayed reaction, not first line
# Management

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Route</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Epinephrine</td>
<td>0.01 mL/kg 1:1000</td>
<td>IM or SC IV</td>
<td>Every 15 min</td>
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<tr>
<td></td>
<td>0.01 mL/kg 1:10 000</td>
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<tr>
<td>Albuterol</td>
<td>0.03-0.05 mL/kg 0.5% solution</td>
<td>Nebulized</td>
<td>Every 15 min</td>
</tr>
<tr>
<td>Diphenhydramine</td>
<td>1-2 mg/kg</td>
<td>PO or IV or IM</td>
<td>Every 4-6 h</td>
</tr>
<tr>
<td>Cimetidine</td>
<td>5-10 mg/kg</td>
<td>PO or IV or IM</td>
<td>Every 6 h</td>
</tr>
<tr>
<td>Methylprednisolone</td>
<td>1-2 mg/kg</td>
<td>IV or IM</td>
<td>Every 6 h</td>
</tr>
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Disposition

- children with severe anaphylaxis should be admitted to the ICU
- if symptoms have resolved, they should be observed for a minimum of 4-6 hours
- first time anaphylaxis - refer to allergist
- if cardiovascular or respiratory reaction, urticaria, or food allergy - discharge with an autoinjectable epinephrine
- many food allergies are lost over time - can consider monitoring IgE levels and clinician supervised oral food challenges
Summary of NIAID Guidelines

• Guideline 1: Infants with severe eczema, egg allergy or both
  • Strongly consider evaluation with peanut-specific IgE and/or skin prick test and, if necessary, an oral food challenge. Based on test results, introduce peanut-containing foods at 4 to 6 months

• Guideline 2: Infants with mild to moderate eczema
  • Introduce peanut-containing foods around 6 months

• Guideline 3: Infants without eczema or any food allergy
  • Introduce peanut-containing foods. Age-appropriate and in accordance with family preferences and cultural practices
NAIAD Guidelines for children with severe eczema, egg allergy, or both

Severe eczema
or
egg allergy
or
both

Peanut sIgE*

<0.35
Risk of reaction low (more than 90% will have (-) SPT to peanut).
Options:
a) Introduce peanut at home
b) Supervised feeding in the office
(based on provider/parental preference)

≥0.35
Refer to specialist for consultation/SPT protocol

Peanut skin prick test (SPT)

0–2 mm
Risk of reaction low (95% will not have peanut allergy).
Options:
a) Introduce peanut at home
b) Supervised feeding in the office
(based on provider/parental preference)

3–7 mm
Risk of reaction varies from moderate to high.
Options:
a) Supervised feeding in the office
b) Graded oral food challenge in a specialized facility

≥8 mm
Infant probably allergic to peanut.
Continue evaluation and management by a specialist.
References


Thank You