Food Allergy II

William Reisacher, MD FACS FAAOA
Department of Otorhinolaryngology
Weill Cornell Medical College
Diagnosis of food allergy

• Thorough history and physical:
  – Family history of allergy
  – “picky eaters” – inquire about cravings
  – Intolerance to formula
  – Multiple ear infections during the first year
  – Unexplained GI symptoms – “burned butt”
  – Eczema and constant “snotty nose”
Food Diary

• The average American eats from only 10 food families
• Obtain a 2 week diary
• Only consider testing foods that are consumed more than twice per week
Laboratory Changes in non-IgE Food Allergy

- Whealing from high dose food injection challenge
- Increase plasma histamine levels after consuming food
- Drop in complement C3 and C4 levels
- Increase in circulating IgA specific to food
- Increase in CIC containing IgA, IgE and IgG
- Increase in blood neutrophil levels
Diagnostic testing – In vitro

- Antigen specific serum IgE levels
- High sensitivity, high specificity
- Good method for testing young children, when history of severe reaction is present or when asthma is active
- Can test wide variety of foods
- More expensive than skin testing
- Will only detect Type I hypersensitivity
- IgG$_4$ testing also available
Interpreting In Vitro Testing for Foods

- **Children (less than 5 years old)**
  - Overall, IgE levels are lower
  - All classes may indicate severe sensitization and avoidance should be recommended

- **Adults**
  - Class 3 or higher indicates that significant symptoms may develop if this food is ingested and avoidance should be recommended
  - Class 2 and lower likely reflects mixed food reaction and strict avoidance not necessary
Diagnostic testing – In vivo

• Oral Food Challenge Test (OFCT)
  – Eat the suspected food often for 2 weeks
  – Elimination of suspect food for 4 days
  – Challenge with pure food on the 5th day
  – Considered the “gold standard” for testing
  – Detects all 4 types of Gel and Coombs reactions, but do not use to confirm immediate reaction.
  – Technically difficult to perform the test
  – Only one food can be tested at a time.
The Food Challenge

- Challenge on an empty stomach, after arising, or ...
- Eat a safe breakfast and challenge 5 hours later, drinking only water
- Avoid non-essential medications and smoking prior to challenge
- Record baseline symptoms before challenge
- Feed an average portion of pure food within 5 minute period
- No symptoms within one hour, repeat challenge
- If symptoms or pulse changes develop within two hours of initial challenge, this is considered a positive test.
DBPC-OFCT

- Dehydrated food capsules
- Liquified food given by NG tube
- Test food mixed with non-allergenic food to mask flavor, texture and aroma
- Dehydrated foods may react differently than fresh food
- Quantities may not be sufficient
Diagnostic testing – In vivo

- **Epicutaneous** (prick testing)
  - Easy to perform
  - Highly specific, but low sensitivity for foods

- **Intradermal food testing** (IDFT)
  - More difficult to perform on children
  - High specificity as well as sensitivity
  - Results are comparable to oral food challenge
Intradermal Progressive Dilution Food Test (IPDFT)

- Developed by Dr. Herbert Rinkel and Carleton Lee in the 1930’s and 1940’s
- Originally called Provocation-Neutralization
- Large amounts of intradermal food antigen could reproduce symptoms produced by OFCT
- Positive skin whealing was also observed
- Placement of progressively weaker dilutions could produce resolution of symptoms and no further whealing (neutralizing dose)
- More convenient and quicker than OFCT
  - Triple blind crossover study
  - Therapy was effective in 75% of patients
Patch Testing

- Type I reactions (applied for 30 minutes)
- Type I late phase reactions
- Type IV reactions
- DIMSOFT
  - Water and fat-soluble antigens are transported through skin
  - Skin reactions read over a 4 day period
  - All 4 Gel and Coombs type reactions detected
- Non-painful testing
- Systemic reactions rare
- Sensitivity and specificity range from 60-80%
Management of food allergy

- Suggest “substitution”, not “elimination” diets (unless immediate, severe reaction)
- Maintain strict diet for at least 6 months
- Teach parents and patients to read labels
- Nutrition consultation often helpful
- Web sites helpful, www.foodallergy.org
- Re-introduce foods back into diet on a rotational basis for non-IgE mediated.
Milk Free Diet

• Lost nutrients
  – Calcium, phosphorus, riboflavin, vitamin A,D,B$_{12}$, pantothenic acid

• Hidden ingredients
  – Casein, lactalbumin, nougat, whey, curds, sour cream, yogurt, cheese, butter

• Alternatives
  – Soy milk (20% of milk allergic people may be allergic to soy), rice milk, nut milk, “Parve”
Wheat Free Diet

• Lost nutrients
  – Folate, iron, niacin, riboflavin, thiamine

• Hidden ingredients
  – Bran, couscous, farina, flour, gluten, matzoh, pasta, semolina

• Alternatives
  – Corn flour, corn starch, corn meal, potato flour, rice flour, soybean flour, tapioca, arrowroot starch, guar gum
Egg Elimination

• Baking powder
• Bouillon
• Consommes
• Marshmallow
• Pretzels
• Ovaltine
• Ova, ovo, vitellin, albumin, lecithin

• Sausages
• Sherbert
• Wines (egg whites are used as a clarifying agent)
• Ices
• Used as binding agents
Other Treatment Modalities

- Pharmacotherapy
  - Corticosteroids and leukotriene inhibitors for eosinophilic esophagitis
  - Anti-IgE therapy, Phase II multicenter clinical trial in peanut allergic patients was discontinued after safety concerns raised

- Immunotherapy
  - Neutralization remains controversial
  - Oral immunotherapy trials for IgE-mediated allergies with success rates approaching 90%