

22nd World Allergy Congress

Update on Food Allergy
And Anaphylaxis

By:

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Update on Food Allergy and Anaphylaxis

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Faculty Disclosures

FINANCIAL INTERESTS

I have disclosed below information about all organizations and commercial interests, other than my employer, from which I or a member of my immediate family or household receive remuneration in any amount (including consulting fees, grants, honoraria, investments, etc.) or invest money which may create or be perceived as a conflict of interest.

Name of Organization	Nature of Relationship
Allertein Therapeutics, LLC	Consultant, Minority Stockholder
University of Nebraska	Advisory Board
Food Allergy Initiative	Consultant
Immusan T	Advisory Board

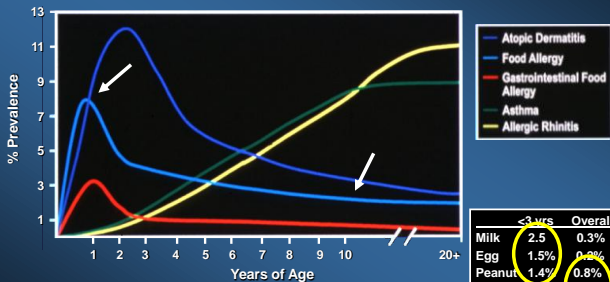
RESEARCH INTERESTS

I have disclosed below information about all organizations which support research projects for which I or a member of my immediate family or household serve as an investigator.

Name of Organization	Nature of Relationship
National Institutes of Health	Grantee
Food Allergy Initiative	Grantee

Patents – EMP-123 (recombinant protein vaccine) & FAHF-2 (herbal product)

Prevalence of Food Allergy by Age in the United States



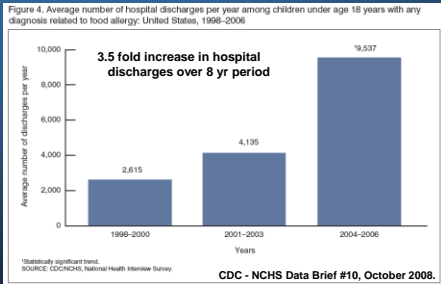
Affects 10 – 12 million Americans

Sampson HA. *J Allergy Clin Immunol*, 2004;113:805-819.

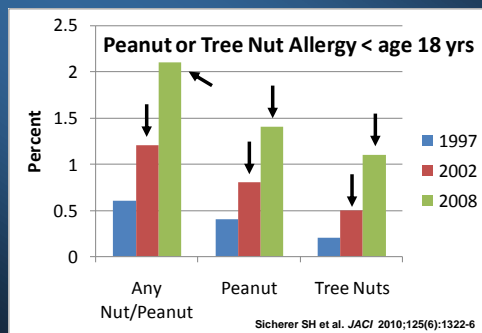
	<3 yrs	Overall
Milk	2.5%	0.3%
Egg	1.5%	0.2%
Peanut	1.4%	0.8%
Fish	0.1%	0.4%
Shellfish	0.1%	2.0%

CDC Brief on Food Allergy in US

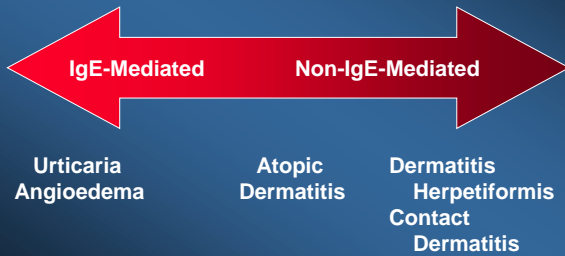
- 3 million or ~4% of children <18 yrs have food allergy
- 18% increase between 1997 and 2007



Increasing Prevalence of Peanut Allergy in the United States



Cutaneous Allergies



Role of Food Hypersensitivity in Atopic Dermatitis
Double-blind Placebo-controlled Food Challenge



Positive Food Challenge

Skin and upper respiratory tract



With permission

Atopic Dermatitis

Skin: pruritic, erythematous morbilliform rash



Prevalence of Food Allergy in Atopic Dermatitis

- 63 patients recruited from Pediatric Dermatology Clinic - M:F = 35:28
- Scored with SCORAD by Dermatologist
 - patients with moderate - severe AD enrolled (median: SCORAD = 41)
- Screened for specific IgE levels to 6 foods
 - specific IgE > 0.7 kU_A/ml = positive
- 41 pts [65%] with evidence of food-specific IgE

- egg: 28	- milk: 26	- peanut: 27
- wheat: 20	- soy: 24	- fish: 4

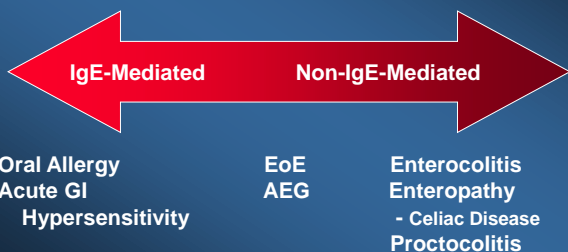
Eigenmann et al *Pediatr* 1998; 101:e8

Prevalence of Food Allergy in Atopic Dermatitis

- Patients with positive food-specific IgE evaluated by history, physical exam, & prick skin tests
- Patients with suggestive results undergo DBPCFC to suspected foods unless history of anaphylaxis
- 31/41 pts with positive evidence of serum IgE to food completed study;
 - 23/31 had evidence of food allergy
- 37% (23/63) of AD patients referred to a University Dermatology Clinic have food allergy

Eigenmann et al *Pediatr* 1998 101:e8

Gastrointestinal Allergies



Oral Allergy Syndrome

- Associated with pollen-induced allergic rhinitis
- Itchiness in the mouth, mild edema of lips & tongue, and throat “tightness”
- USUALLY no symptoms beyond mouth & throat
- Due to “conserved homologous proteins”
 - cooking destroys protein

POLLEN

<u>Birch</u>	<u>Ragweed</u>
Hazelnut	Apple
Almond	Plum
Peanut	Cherry
Soybean	Pear
	Carrot
	Kiwi
	Watermelon
	Melons
	Banana

Apple protein
Mal d1



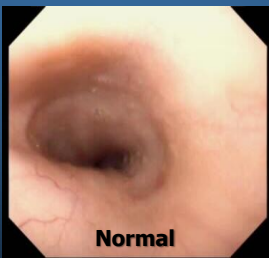
Birch pollen
Bet v1

Allergic Eosinophilic Esophagitis

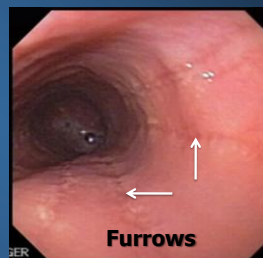
- Onset - infancy to adulthood
- Symptoms - reflux esophagitis, vomiting, food refusal, abdominal pain, irritability sleep disturbance & FTT
 - Adolescents: chest pain, dysphagia, globus & impaction
- Foods implicated - milk, wheat, soy, egg, beef, corn
- Diagnosis - failure to respond to PPIs
 - endoscopy and biopsy of esophagus
 - response to protein elimination &/or steroids
- Often involves reactivity to multiple foods
- Increasing prevalence - ? iatrogenic

Allergic Eosinophilic Esophagitis

Endoscopic findings

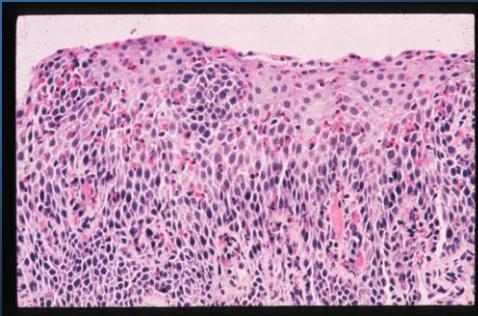


30 – 40% of EoE patients appear normal



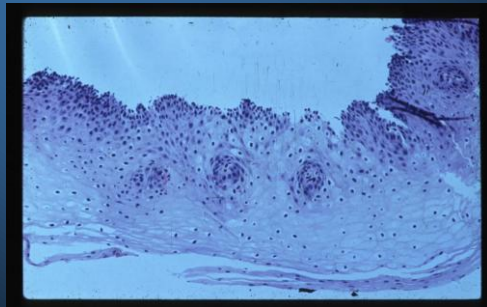
~ 40% of EoE patients

Pre-Diet Esophageal Biopsy



Kelly et al. *Gastroenterology* 1995; 109:1503

Post-Diet Esophageal Biopsy

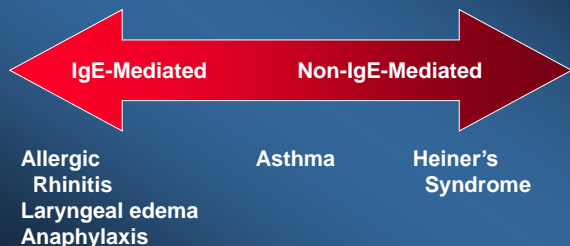


Kelly et al. *Gastroenterology* 1995; 109:1503

Food Protein-Induced Enterocolitis Syndrome

- Onset - generally in first 3 months to 1 year of life
- Symptoms - recurrent projectile vomiting, diarrhea, abdominal distention, & FTT
 - Infants may present with dehydration &/or "septic-like" picture
- Implicated proteins - cow milk & soy; rice, cereal grains, meat & poultry
- Diagnosis - food challenge [0.3 - 0.6 g protein]
 - vomiting - 2 - 4 hrs; ~15% hypotension
 - diarrhea - 5 - 10 hrs

Respiratory Allergies



Food Allergy and Anaphylaxis

- Anaphylaxis
 - Olmstead County, MN, experience
 - 30 → 50 cases/100,000 from early '90's to early 2000
 - ~1/3 of cases due to food allergy
 - Yocum et al. JACI 1999; 104:452-456; Decker et al. JACI 2008; 122:1161-1165
 - Extrapolated U.S. experience [Population - 305 Million]:
 - ~32,000 cases / year → 53,700 cases / year
- FDA NEISS [34 EDs; 2 mo period]: ED visits / year in US
 - food allergy: ~125,000 (or ~1 ED visit every 3 minutes)
 - anaphylaxis: ~14,000 hospitalizations: ~3,100

Ross et al. JACI 2008; 121:166-171

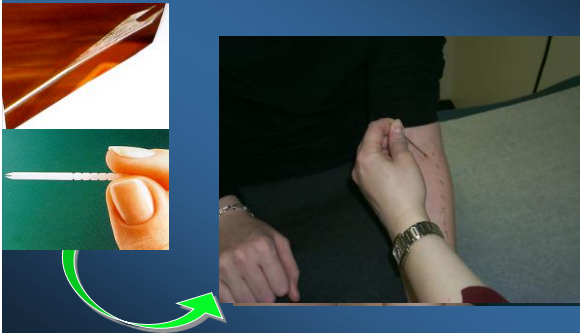
Diagnosing Food Allergy

Food Allergy Guidelines: *JACI* 2010; 126:S1-58.

DBPCFC is the "GOLD STANDARD"

- History: ~30% - 40% of histories confirmed
- Skin Tests: ~30% - 40% confirmed
- Elimination Diets: 0% - 40% of patients responding to elimination diet confirmed
- Open Challenge: 20% - 80% confirmed

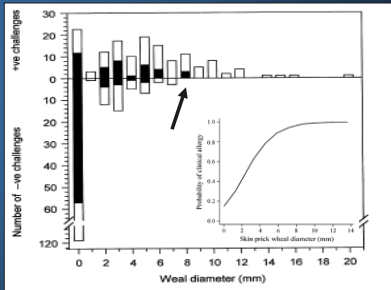
Prick Skin Testing



Predictive Value of PSTs

Comparison of PST results & the outcome of 120 oral milk challenges - 37% positive

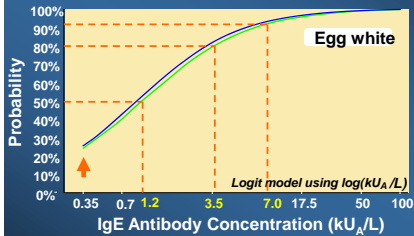
- Wheat > 95% PPV
- Milk ≥ 8 mm
- Egg ≥ 7 mm
- Peanut ≥ 8 mm
- Peanut ≥ 8 mm



Roberts G et al *JACI* 2005; 115:1291-1296

Sporik R et al. *Clin Exp Allergy*, 2000; 30:1541-46

Predictive Value of Food-specific IgE



Allergen	Decision Pt (kU _A /L)
Egg	7
(≤ 2 yrs of age)+	2
Milk	15
(≤ 1 yr of age)++	5
Peanut	14
Soy	30
Wheat	26
Tree nuts+++	15

Sampson *JACI* 2001; 107:891-896

- + Boyano MT, et al. *Clin Exp Allergy* 2001; 31:1464-9.
- ++ Garcia-Ara C, et al. *JACI* 2001; 107:185-90.
- +++ Clark AT, Ewan P. *Clin Exp Allergy* 2003; 33:1041-45.
- Maloney J et al. *JACI* 2008; 122:145-5.

Current Methods for Managing Food-induced Anaphylaxis

- Appropriate diagnosis of specific food allergy
- Education
 - strict avoidance of food allergen
 - learn to read food labels & recognize high risk situations
 - early signs of an allergic / anaphylactic reaction
- Provide emergency treatment plans in writing
 - FAAN website: www.foodallergy.org
- Provide self-Injectable epinephrine & liquid antihistamine
- Instructions to go to medical facility



Immunotherapeutic Approaches in Human Trials

- Allergen-specific Immunotherapy
 - Heat-denatured protein
 - Oral immunotherapy (OIT)
 - Sublingual immunotherapy (SLIT)
 - Epicutaneous immunotherapy (EIT)
- Allergen non-specific immunotherapy
 - Chinese Herbal medications
 - Anti-IgE immunotherapy
