Food Allergies in Children

CHRISTINE MCCUSKER

CHRISTINE.MCCUSKER@MCGILL.CA

Disclosures:none relevant to this talk.

	Company/Organization	Details
I am a member of an **Advisory Board or equivalent** with a commercial organization.	Emerade Sanofi-Genzyme Liffey Biotech Immunology CSO	Adboard member Adboard member Advisor for development of therapeutic molecule for allergic hypersensitivities
I am a member of a **Speaker's Bureau**	n/a	
I have **received payment from a commercial organization** (including gifts or other consideration or 'in kind' compensation).	n/a	

Objectives

Identify children at risk for food allergies

Understand up to date early intervention strategies

Provide guidance for families living with food allergies

What are food allergies

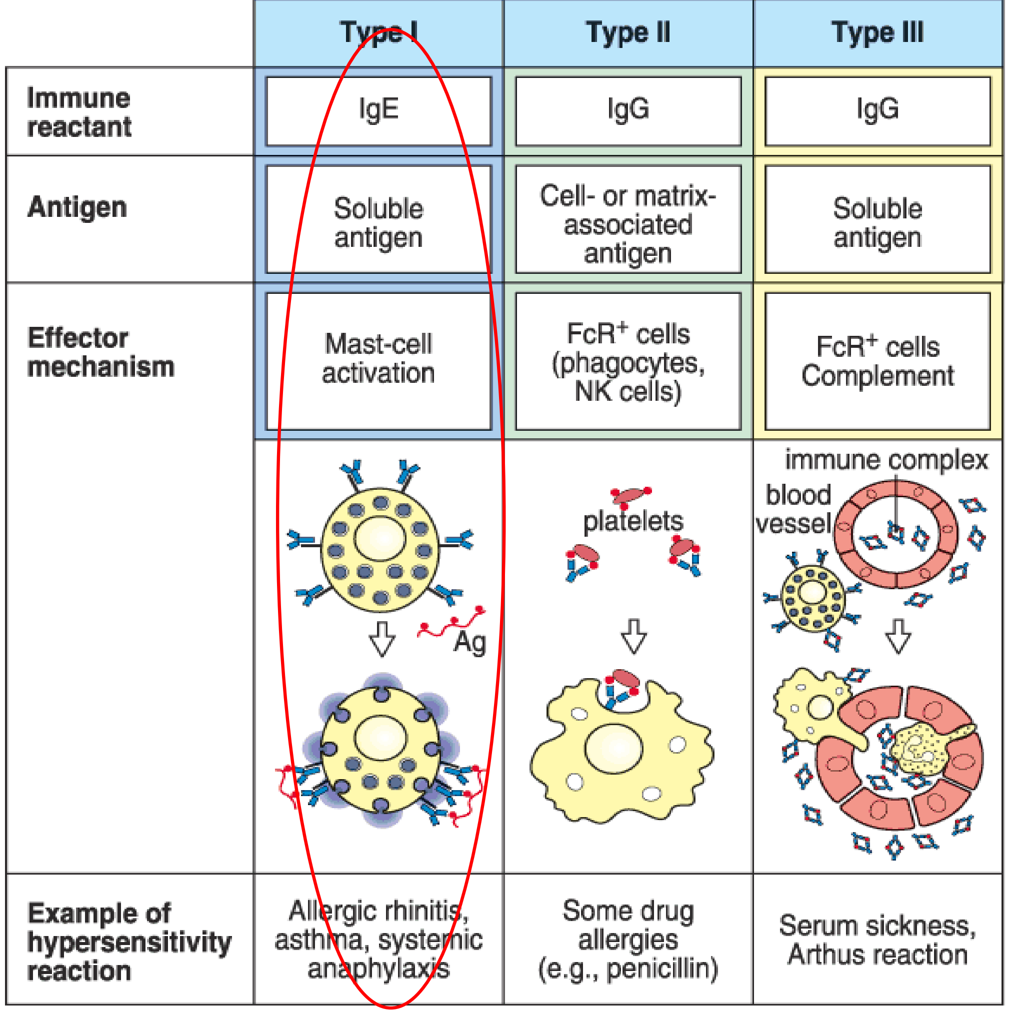


Fig 12.2 part 1 of 2 © 2001 Garland Science

What is not a food allergy?

Infant with increased “fussiness” associated with increased regurgitation and gas.

Lactose or gluten intolerance.

Allergy to sugar

Enterocolitis/esophagitis are considered hypersensitivity reactions but do not have the same cause, management or prognosis

The Case

- **Scenario**
  - A mother with a 6 month old comes for advice
  - The child has eczema
  - Mother wants to know what to do about the eczema and what foods could be causing it.

- **Responses True/False**
  - Eczema and food allergy are connected?
  - Food avoidance reduces eczema?
  - Infants with eczema should have specific antibody testing for foods to help manage their eczema

Food allergies and infants
ECZEMA

What does this have to do with food allergies?

Studies suggest that in infants with severe eczema milk sensitivity may be a component worsening their disease.

In the vast majority of children food ingestion has no relation to their skin symptoms

However, sensitization to foods through skin exposure is now believed to be an important “cause” of food allergy in infants.

Pitfalls and Pearls

Pitfall

- Food allergy causes eczema
- Food avoidance reduces eczema

Pearl

- Eczema increases the risk for skin-mediated sensitization to foods. Early introduction of foods orally can reduce sensitization.
- In children with SEVERE eczema (ie not responding to aggressive emollient therapy or medical management and compliant) specific foods such as milk are implicated and skin may improve with removal from the diet. Allergy consult first please!

Diagnostic tools

- SPT assesses the ability of the patient's skin mast cells to degranulate in an IgE-dependent manner.
- It assesses **only** sensitization and **not** clinical allergy
- The positive predictive value of SPT in the absence of a history is 30-50%.
- There is excellent negative predictive value

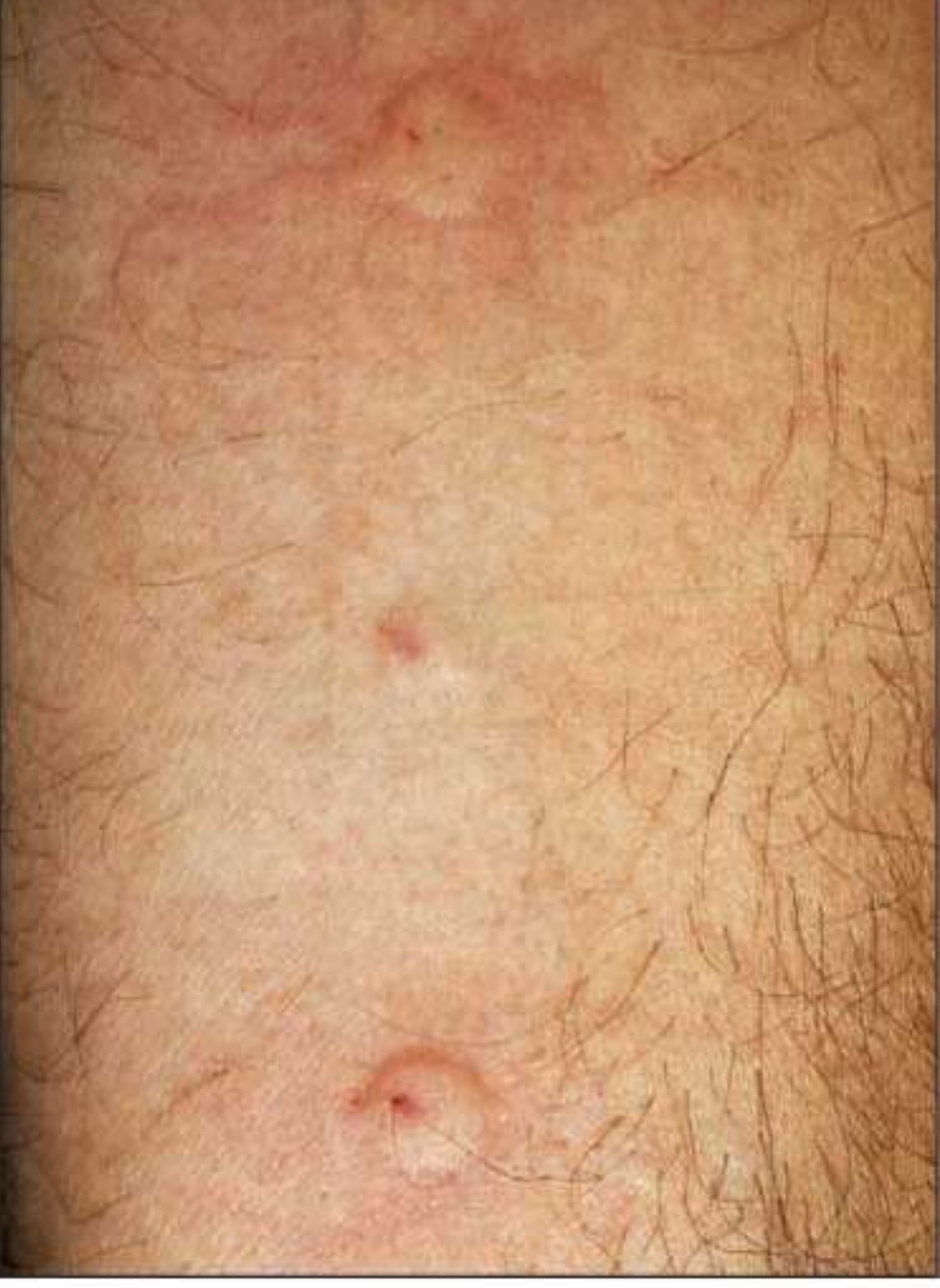


Fig 19.7 © 2001 Garland Science

Should infants with eczema be evaluated for food allergies?

A Recent Case in My Clinic: What are her allergies?

- 17 month old with eczema (severe) since age 4 months.
- Dr ordered blood tests at age 6 months
- Tests were repeated at 12 months
- She has never been introduced to
- eggs, milk, peanuts, sesame, tree nuts.
- She has taken other legumes, fish.
- She developed red plaques with shrimp.
- Mother feels maybe some improvement of eczema with removal of foods from the maternal diet.
- Eczema is treated with topical corticosteroids and hydration creams.
- She is on soy, rice and breast milk

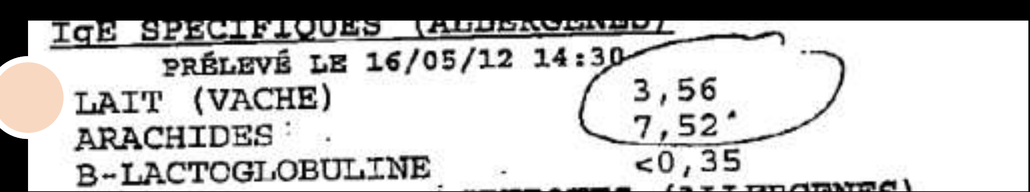
DEPARTEMENT CLI

IgE SPECIFIQUES (ALLERGENES)

PRÉLEVÉ LE 16/07/28 10:50

ANALYSE(S)	RÉSULTAT(S)
BLANC D'OEUF	7,70
GRAINES de SESAME	1,26
ARACHIDES	8,82
NOIX DE GRENOBLE	7,44
NOISETTES	1,02
NOIX DU BRESIL	0,48
AMANDES	2,53
PACANES	0,99
NOIX D'ACAJOU	2,25
PISTACHES	3,12
JAUNE D'OEUF	1,17
CHAT SQUAMES	0,50

***** NOTE *****



IgE SPECIFIQUES (ALLERGENES)

PRÉLEVÉ LE 16/05/12 14:30

LAIT (VACHE)	3,56
ARACHIDES	7,52
B-LACTOGLOBULINE	<0,35

Case 2

You are asked to see a 13 month old child who developed rash and vomiting at her first birthday following ingestion of her birthday cake.
She was treated with Benadryl.

- What happens now?

- Referral to allergy clinic-
  - time delay variable?
- Tell the mother to avoid peanuts, nuts, seafood, fish and kiwi?
  - What is the cause of her symptoms?
- Give an Epi-pen?
- Increase the dose of Benadryl?

Key Questions

- When did the rash start?
- What does it look like?
- Did it completely resolve with the benadryl?
- How long did the rash last?
- What exactly was in the cake?
- Can the family provide a sample of the cake?

What to test for…

If a child has eaten a given food and tolerated it…do not test

If a child has never eaten a given food…do not test

In this case what happened?

Egg Allergy

Common allergy in children <2 years of age

Children may have previously ingested eggs without problems.

Allergenic components vary with preparation

Often outgrown over time

CANADIAN EGG LADDER
for hen's egg allergy

INSTRUCTIONS
- Start at Step 1 and work your way up to Step 4
- Give the food daily
- Start with a grain or pea sized amount, and over several days or weeks gradually increase to an age appropriate amount
- Once at an age appropriate amount, spend a minimum of 1-3 months in each category, before advancing on to the next category
- If after advancing to the next category there are allergic symptoms, then go back to the lower category for a month before re-trying the higher category

Step 4. (OPTIONAL)
Sunny Side Up, Soft Boiled, or Lightly Scrambled Egg
Raw Egg (e.g. ice cream, meringue, buttercrea cookie dough, mayonnaise)

Step 3.
Hard Boiled or Steamed Egg
Well-Cooked Scrambled Egg
French Toast

Step 2.
Pancake or Crêpe

Egg as a Binder (e.g. hamburger patty, dumplings)
Waffle
Fresh Egg Noodles/ Past

Step 1.
Baked Goods with Egg Ingredients

muffin or cupcake

well-baked cookie

Dried Egg Noodles/Pasta

KEY POINTS TO REMEMBER

Do not stop any foods currently tolerated

Remind families that egg allergy is often outgrown

While there may be a statistical increased risk for other food allergies, avoidance of other foods is not recommended

Give an epinephrine autoinjector. Explain it is very rarely needed

Prescribe a non-sedating antihistamine-NO BENADRYL

FPIES may also be on the differential in this case

Scenario

- A mother brings her 4 month old infant for routine check up. The child is well with mild-moderate eczema and mother asks about introduction of solids.
- The family history is positive for an older sibling with peanut allergy.
- Mother wants to know about food introduction in this child.

True/False

- Delayed introduction of allergenic food will decrease risk of food allergy in this child.
- Food preparation affects allergenicity of foods.
- Do not introduce peanuts until seen by allergist

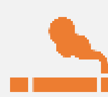
Food introduction to infants:

When did feeding and infant become a medical act?

The Problem

- Food allergies affect 6-10% of the population
  - Many foods may be implicated although milk, egg, peanut, tree nut, sesame and seafood/fish are more common
- Diagnosis requires either a clear history of reaction plus a positive diagnostic test and/or a positive oral food challenge with objective symptoms.
  - In absence of history SPT has a 30% PPV and IgE blood tests 20%
- Previous recommendations for food introduction in infants shown to increase the frequency of food allergies (peanut) in high risk infants.
  - Only peanut was studied in the landmark trial.

Prevention strategies with actual supporting evidence.



Smoking avoidance

Breastfeeding if possible for 4-6 months—low grade evidence studies equivocal

No special diet for pregnant or lactating mother

Eczema control

Introduce foods **without specific restriction** as early as possible. Best “chance” for allergy prevention occurs early <11months and even earlier

Peanuts and nuts

- Introduce early (4-6 months)
- Can use peanuts crushed and mixed into apple sauce-start with ½ peanut and increase as tolerated.
- Same strategy may be used for tree nuts and sesame
- Avoid peanut and nut butters initially as allergen bioavailability is increased in these forms
- DO NOT RUB ON SKIN FIRST

The Case

Scenario
9 month old given peanut butter for the first time
Within 15 minutes develops perioral hives
Symptoms resolve without intervention

True/false

- This child has demonstrated an allergy to peanut
- An epipen should be prescribed
- 1/5 children outgrow allergy over time so parents can try to give peanuts again in 2 years
- No other treatments available

Management

Standard treatment: avoidance-carry epinephrine autoinjector

Consider the option of oral immunotherapy

Oral Immunotherapy for foods

Pearl

- Oral immunotherapy or desensitization is currently available for children with food allergies in some centers.
- Risks include anaphylaxis and significant symptoms occur in most older children
- Many very young children tolerate slow introduction of allergenic foods into the diet even with a history of perioral hives and positive tests.
- Parental compliance is required

Pitfall

- Older children (>age 2 years) at increased risk for anaphylaxis
- Possibility of complete success (ie cure) is about 20-40% in children studied (older than age 6 years)
- In most children (>80%) increased of tolerant thresholds are achieved after 12 months
- Any attempt to desensitize should be done under supervision of an allergist and resuscitation equipment should be available

Case outcome

Pearl

- Oral desensitization is offered and child begins at ¼ peanut crushed in apple sauce.
- 6 months later tolerating peanut butter on toast.
- Skin test remains positive

Pitfall

- Threshold is increased
- Not known if “a cure” has been achieved
- Positive test suggests still sensitized.
- Long term prognosis-not known

Case 3

- 3 year old female, previous well wakes up from sleep with a generalized urticarial rash
- Given Benadryl and resolves. Parents recall ingestion of peanut butter at a party that afternoon.
- Seen the next day at your office, rash visible on skin.

What is not consistent with food allergy?

- Delayed onset >4-8 hours after ingestion
- Rash lasting >24 hours
- Dermatographic child

Prognosis

- Acute urticaria is benign self-limiting
- Chronic urticaria-usually benign and often self-limiting
- Physical urticaria, some precautions suggested
- First part of management is reassurance

Case 4

- 14 year old girl comes to you with history of mouth pruritis and itchy ears after ingestion of carrots and pears for the past 2 years.
- Antecedent past medical history is largely unremarkable except for seasonal allergic rhinoconjunctivitis, controls with occasional antihistamines.

What's going on?

Food-pollen syndrome

Most common form of food allergy in adolescents and adults.

Symptoms are primarily oral pruritis and swelling associated with throat tightness following ingestion of certain raw foods (fruits and vegetables)

Sometimes referred to as food contact syndrome

FPS epidemiology

Approximately 1/3 to 1/5 people in North America have symptoms of allergic rhinitis

Of these, the estimates of patients with associated OAS ranges from 47-70% depending on the study.

If we estimate a lower frequency of 30%, that suggests in the general population an incidence rate of 8-10% in adults. One study however suggested actual prevalence likely 2% in general population.

Anaphylaxis may occur in 1-2% of patients

Diagnosis of FPS

- History is best source for diagnostic information
  - What foods
  - Does it happen with every ingestion? With cooked or peeled foods?
  - What are the symptoms
- Skin prick tests positive to pollens, often negative to foods *except when lipid transfer proteins are involved
- Food challenges possible

Implicated foods:

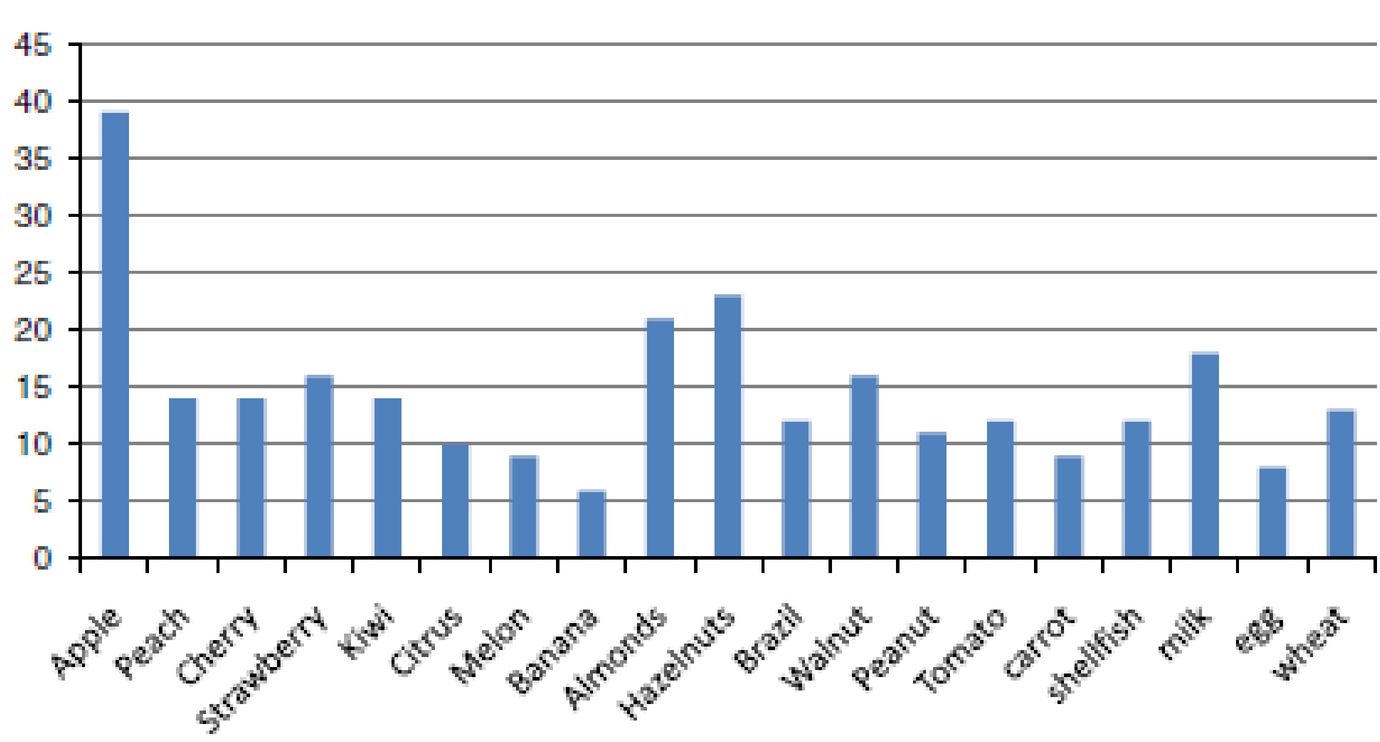


Fig. 4. Trigger foods reported by subjects diagnosed with pollen–food syndrome by the reference test method (excluding those reporting anaphylaxis).

FPS Management

Avoidance of triggering foods mainstay of therapy

Immunotherapy a possibility but results are mixed

Take Home Messages

The best allergy test for the primary physician is a good history.

For the available tests the gold standard is oral food challenge followed by SPT and then serum IgE levels

Serum IgE is rarely helpful for diagnosis

Not every hive requires testing

The diagnosis of allergy imparts a great burden to family and should not be given unless properly assessed, tested and confirmed.

Summary

- Complex foods should be introduced early.
- Begin with what is in the child's environment
- Format of food for introduction may be important
- Early sensitized children may be desensitized more easily
- Rapid diagnosis is essential