The diagnosis and treatment of food allergy

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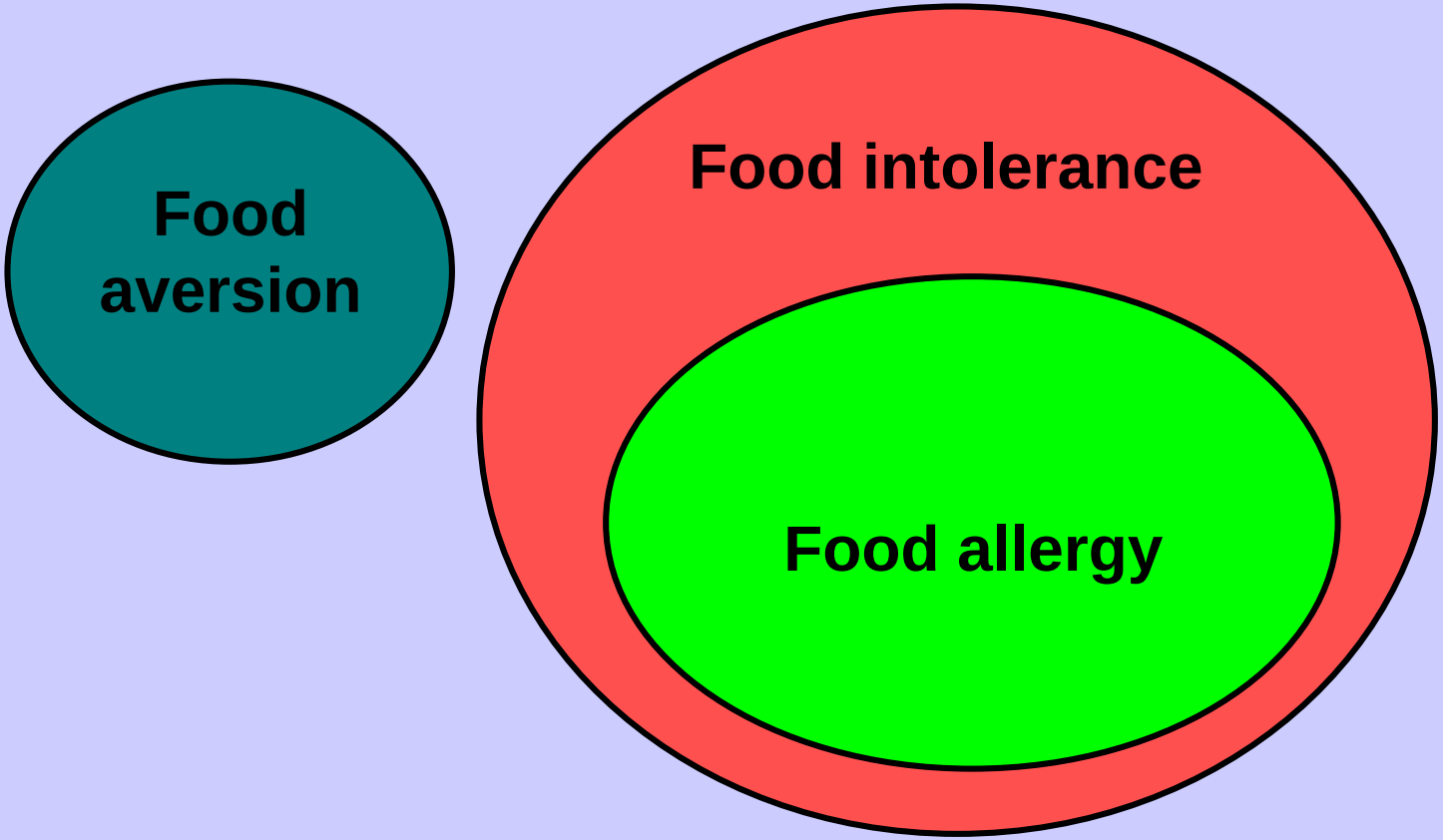
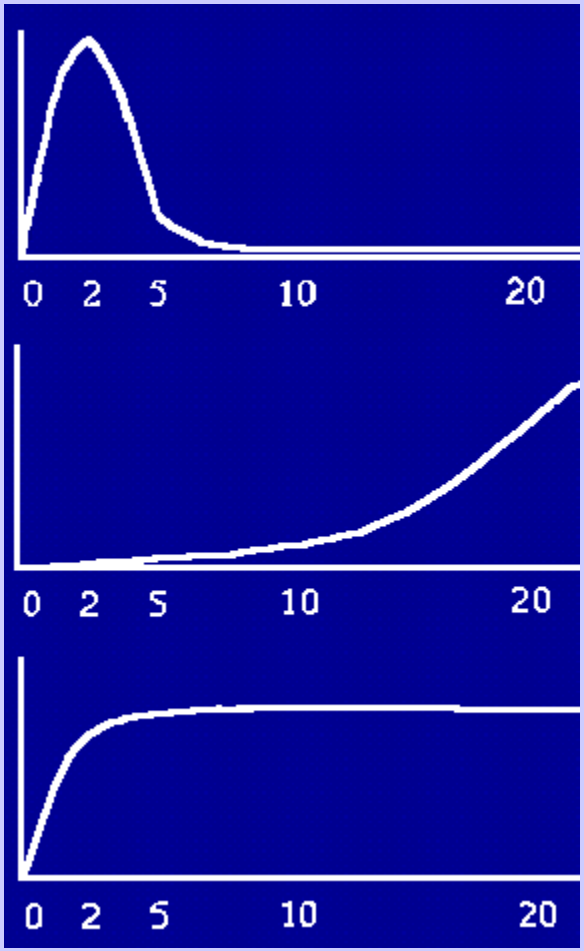
Food allergy - definitions



IgE food allergy– the allergens

- 4-5% of the population have IgE mediated food allergy (doubling in 10 years)
- 9 foods account for > 85% IgE mediated food allergy
  - » Cow milk (25%), egg (25%), fish (10%), peanut (10%), treenut (10%), shellfish (5%), soya (1%), wheat (1%)
- Other novel foods
  - » Sesame, kiwi, legumes (chic pea, lentil, bean)

Prevalence of food allergy



Egg, milk, wheat or soya allergy

Shellfish allergy

Peanut, tree nut and fish allergy

[Khakoo, Roberts, Lack 2000.]

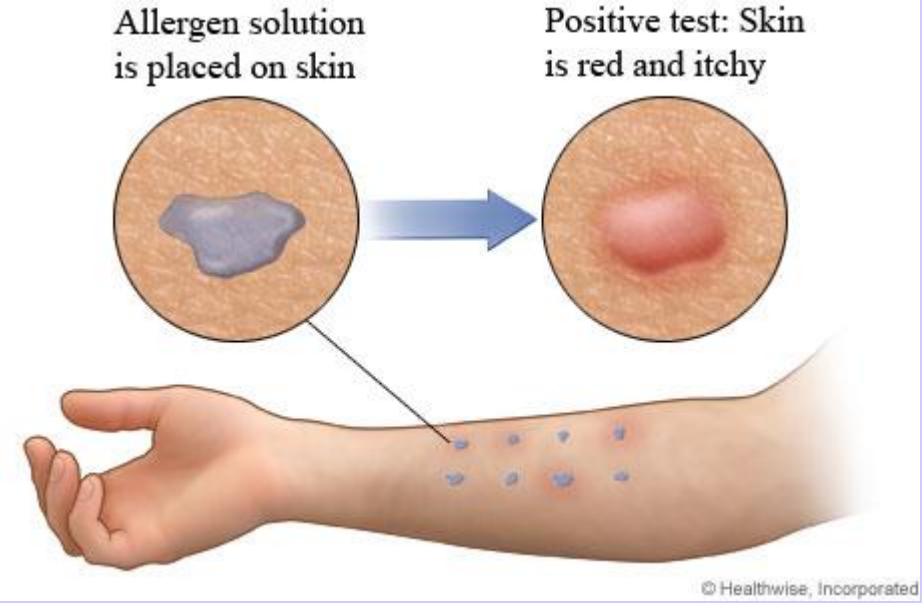
Food allergy - IgE mediated

- **Type I hypersensitivity reaction**
- **Early-phase** features, usually within 20 minutes, resulting from the release of histamine and other mediators by mast cells in an IgE-dependent process
- **Late-phase** feature, seen after 6 to 8 hours, due to recruitment of T cells, eosinophils and basophils to the area

IgE Food allergy-presentation

- **Cutaneous** - urticaria, angio-oedema, pruritis, eczema
- **Respiratory** - hoarseness, stridor, cough, wheeze, cyanosis, chronic asthma
- **Circulatory** - hypotension, collapse
- **Gastrointestinal** - nausea, vomiting, colic, diarrhoea
- **Other** – rhinoconjunctivitis

Skin prick testing



Cow milk reaction (1)

- 7 month old
  - » Mild eczema since 3 months
  - » Exclusively breast fed
- First cow milk formula feed at 6 months
  - » Within 15 minutes, acute “flare” of eczema with lip swelling, and audible wheezing
- No other allergic conditions noted
- Father has hay fever, nil else of note

Cow milk reaction (1)

- IgE mediated cow milk allergy
  - » Confirm by skin prick testing / spIgE testing
- Strict cow milk protein avoidance
- Advice on cow milk labelling and weaning
- Cetirizine or Chlorphenamine for acute reactions, also AAI eg Epipen
- Follow up to review diet / outgrowing allergy

Cow milk reaction (1)

- Milk alternatives:
  - » Continue breast feeding
  - » Extensive hydrolysates
  - » Amino acid based formula
  - » Soya
  - » Oat, coconut, pea, almond milk
  - » Not goat or sheep milk, partial hydrolysate

Anaphylaxis

- A “severe, life-threatening, generalized or systemic hypersensitivity reaction”[1].
- IgE mediated, type I hypersensitivity reaction
- Commonest allergens are: peanut, tree nuts, fish, shellfish, egg, cow milk, latex and insect stings (>80% are food-related)[2]
- 5-30 cases for 100,000 people annually[2]

1. Johansson SGO 2004; 2. Moneret-Vautrin DA 2005

Severe allergic reactions - summary

- Reactions usually occur away from home
- Hidden food allergens are a real risk
- Symptoms develop within 30 minutes
- Severe symptoms may only occur after 2½h
- Failure to rapidly give epinephrine appears to be related to a fatal outcome
- Severe reactions associated with co-existent asthma

Anaphylaxis

- Management of anaphylaxis in childhood: position paper of EAACI. Allergy 2007; 62: 857-71.

Anaphylaxis – risk factors for severe reactions?

- Previous respiratory or cardiovascular reactions
- Co-existent asthma
- (Nut allergy)
- (Multiple food allergies)
- (Reaction to trace amounts)
- (Lack of timely access to medical care)

Auto-injectable epinephrine

- Epinephrine dosage
  - » 8-25 kg 0.15 mg (Junior EpiPen)
  - » > 25 kg 0.3 mg (Adult EpiPen)
- Safety data
- Training
- Expiry date, shield from sunlight
- Website: Epipen.co.uk

Treatment plans

bsaci
British Society for Allergy and Clinical Immunology

Allergy Action Plan

The Hillingdon Hospitals NHS
NHS Foundation Trust

THIS CHILD HAS THE FOLLOWING ALLERGIES:

allergy

Name:

DOB:

Photo

Emergency contact details:

1) ☎

2) ☎

Child's Weight: Kg

How to give EpiPen®

1. Form fist around EpiPen® and PULL OFF BLUE SAFETY CAP
2. SWING AND PUSH ORANGE TIP against outer thigh (with or without clothing) until a click is heard
3. HOLD FIRMLY in place for 10 seconds
4. REMOVE EpiPen®. Massage injection site for 10 seconds

Keep your EpiPen device(s) at room temperature, do not refrigerate.
For more information and to register for a free reminder alert service, go to www.epipen.co.uk

Patient support groups:
http://www.allergyuk.org or www.anaphylaxis.org.uk

Mild-moderate allergic reaction:

- Swollen lips, face or eyes
- Itchy / tingling mouth
- Hives or itchy skin rash
- Abdominal pain or vomiting
- Sudden change in behaviour

ACTION:

- Stay with the child, call for help if necessary
- Give antihistamine:
- Contact parent/carer (if vomited, can repeat dose)

Watch for signs of ANAPHYLAXIS
(life-threatening allergic reaction):

AIRWAY:	Persistent cough, hoarse voice, difficulty swallowing, swollen tongue
BREATHING:	Difficult or noisy breathing, wheeze or persistent cough
CONSCIOUSNESS:	Persistent dizziness / pale or floppy suddenly sleepy, collapse, unconscious

If ANY ONE of these signs are present:

1. **Lie child flat.** If breathing is difficult, allow to sit
2. **Give EpiPen® or EpiPen® Junior**
3. **Dial 999 for an ambulance*** and say ANAPHYLAXIS ("ANA-FIL-AX-IS")

If in doubt, give EpiPen®

After giving Epipen:

1. Stay with child, contact parent/carer
2. Commence CPR if there are no signs of life
3. If no improvement **after 5 minutes, give a further EpiPen®** or alternative adrenaline autoinjector device, if available

*You can dial 999 from any phone, even if there is no credit left on a mobile.
Medical observation in hospital is recommended after anaphylaxis.

Additional instructions:

(put asthma medication here)

This is a medical document that can only be completed by the patient's treating health professional and cannot be altered without their permission.

This plan has been prepared by: Dr

Hospital/Clinic:

☎ Date:

Adrenaline auto-injector

IgE cow milk protein allergy (summary)

- Quick onset reaction often IgE mediated
- Self injectable adrenaline if severe
- Milk options are extensive hydrolysate / amino acid based / breast feeding
- Strict cow milk protein free diet
- Soya may be suitable > 6 months
- Often outgrown by 3-5 years (use skin prick testing to follow)

Symptoms of cow milk allergy

IgE-mediated	non-IgE-mediated
The skin	
• Pruritus	Pruritus
• Erythema	Erythema
• Acute urticaria	Atopic eczema
• Acute angioedema	
The gastrointestinal system	
• Angioedema of the lips, tongue and palate	Gastro-oesophageal reflux
• Oral pruritus	Loose or frequent stools
• Nausea	Blood and/or mucus in stools
• Colicky abdominal pain	Abdominal pain
• Vomiting	Infantile colic
• Diarrhoea	Food refusal or aversion
	Constipation

Symptoms of cow milk allergy

- **IgE-mediated**

non-IgE-mediated
Faltering growth in conjunction with at least one or more gastrointestinal symptoms above (with or without significant atopic eczema)

The respiratory system (usually in combination with one or more of the above symptoms and signs)

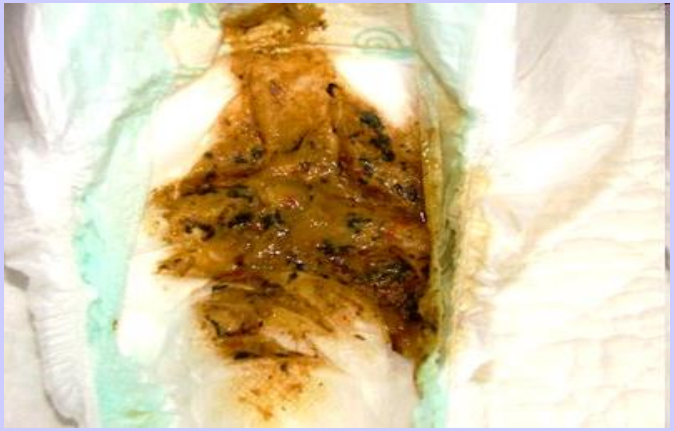
- Lower respiratory tract symptoms (cough, chest tightness, wheezing or shortness of breath)

Other

- Signs or symptoms of anaphylaxis or other systemic allergic reactions

Cow milk protein allergy (2)

- 4 month old baby girl, first baby
- Moderate eczema since 2 months
- Mixed formula and breast fed
- Colicky baby, but gaining weight
- Loose stools with mucus/blood past 6 weeks



Cow milk protein allergy (2)

- Differential diagnosis?
- Tests?
- Milk options?
- Dietitian for milk options and weaning – cow milk ladder
- Follow up

Cow milk protein allergy (2)

- Milk options
  - » Extensive hydrolysate
    - – (lactose okay unless malabsorption)
  - » Less often amino acid based formula
  - » Soya not advised
  - » Not partial hydrolysate / goat milk
  - » Not changing cow milk based formula
  - » (Will often tolerate traces of cow milk formula)

Non-IgE cow milk protein allergy (summary)

- Delayed reactions often non-IgE mediated
- Milk options are extensive hydrolysate / amino acid based / breast feeding
- May have malabsorption requiring lactose and cow milk protein free
- Some cow milk may be tolerated
- Often outgrown by 2 years

Eczema and the link with food allergy

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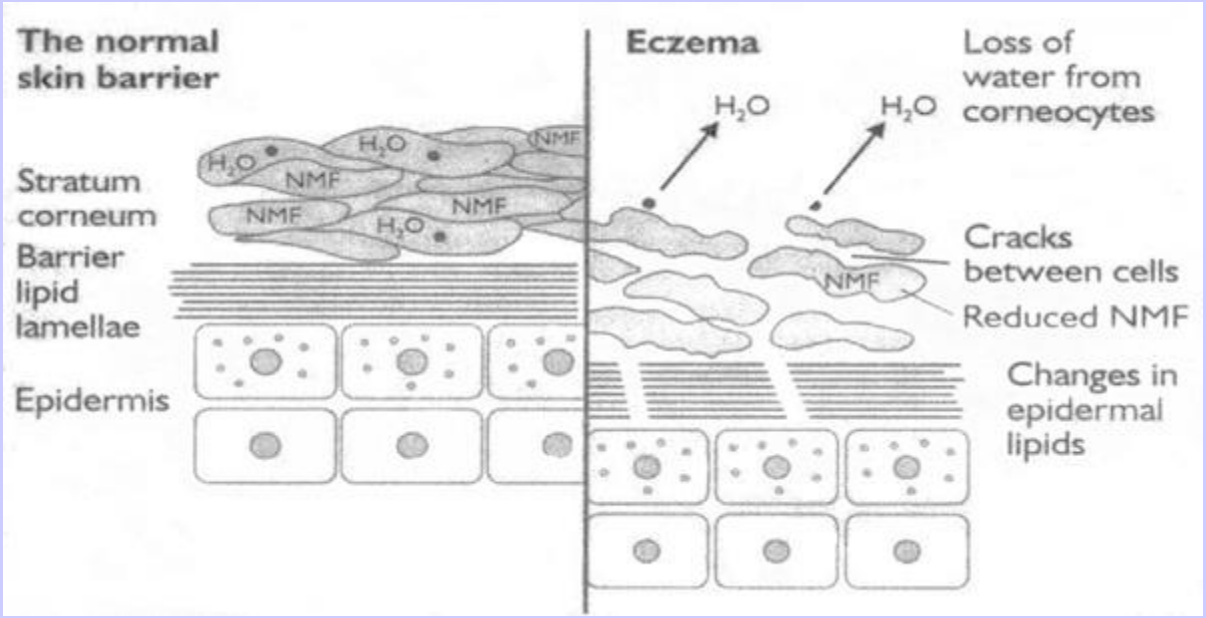
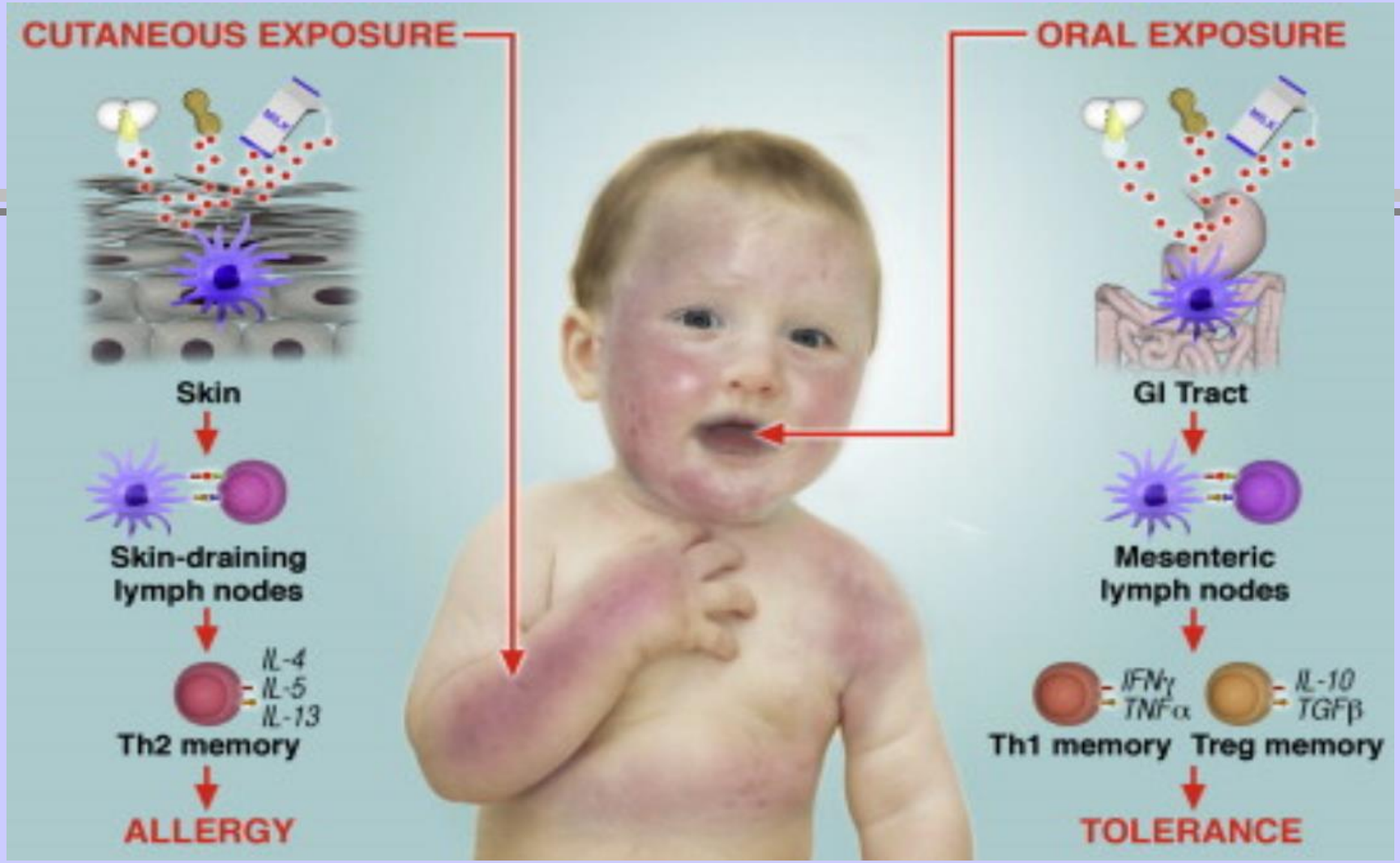
Allergen sensitisation via disrupted skin barrier





- *Du Toit et al JACI*

IgE vs Non IgE

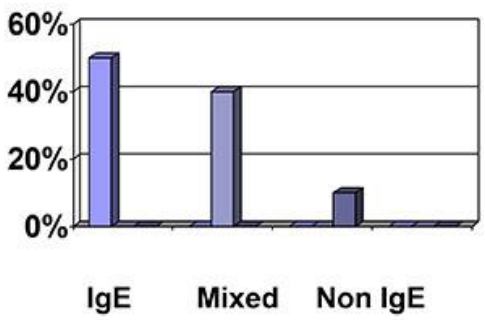
- IgE allergy- easy to recognise and diagnose (symptoms within 1-2 hours)
- Egg, cows milk, soya, wheat, peanut, treenut, fish, sesame, shellfish
- Non IgE allergy (cell mediated) delayed 6-72 hours
- NO reliable tests and not well understood
- Diagnosis by exclusion and reintroduction
- >90% of foods that make eczema worse:

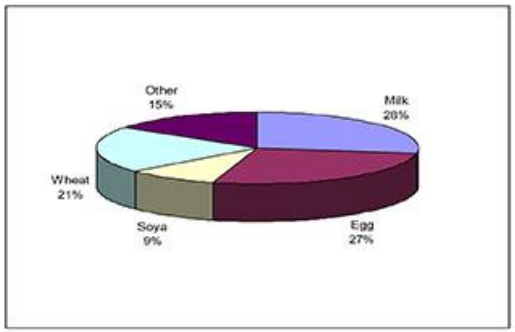
  egg, cows milk, soya and wheat

Mixed IgE and non IgE reactions

Imperial College London

Mixed reactions in eczema





40% of immediate reactions are associated with delayed eczematous reactions 6-72 hours later

Breuer K, Clin Exp Allergy. , 2004 **May;34**((5)): p. 817-24.

Niggemann, B. Allergy, 2000. **55**(3): p. 281-5.

NICE Food Allergy Guideline CG116

Consider possibility of Food Allergy in children whose symptoms do not respond adequately to treatment for Atopic Eczema

NICE Eczema guidelines CG57

Consider FA in infants with moderate/ severe eczema not controlled by optimum management, particularly if associated with gut motility symptoms

REFERRING TO NON-IGE ALLERGY

NICE guidance cont.

- If Non IgE food allergy suspected, elimination of suspected allergen for 2-6 weeks should be considered, reintroduce after trial, (seek dietician input if possible)
- Offer 6-8 week trail of extensively hydrolysed or AA formula in place of cows milk for bottle fed babies < 6 months with moderately severe eczema
- (Breast feeding – no evidence for maternal cow milk exclusion)
- NO SKIN TESTS/BLOOD TESTS

SUMMARY

- Eczema does NOT = Allergy
- Early onset and moderately severe eczema is associated with allergy- both non-IgE and IgE
- 85% of foods associated with non IgE allergy making eczema worse are egg, cows milk, soya and wheat
- Early, ‘aggressive’ treatment of eczema associated with reduction of FA development
- Eczema onset in children > 1 year, in localised areas without GI symptoms v unlikely to be food allergy
- Optimise eczema management – don’t be afraid of topical steroids

Some personal tips

- My childs eczema suddenly flares – it must be due to something
- My child has had eczema for so long – please can we exclude allergy
- Sometimes helpful to use asthma as an example