MANCHESTER 1824

Treating atopic dermatitis: what to do when the creams and ointments don't work

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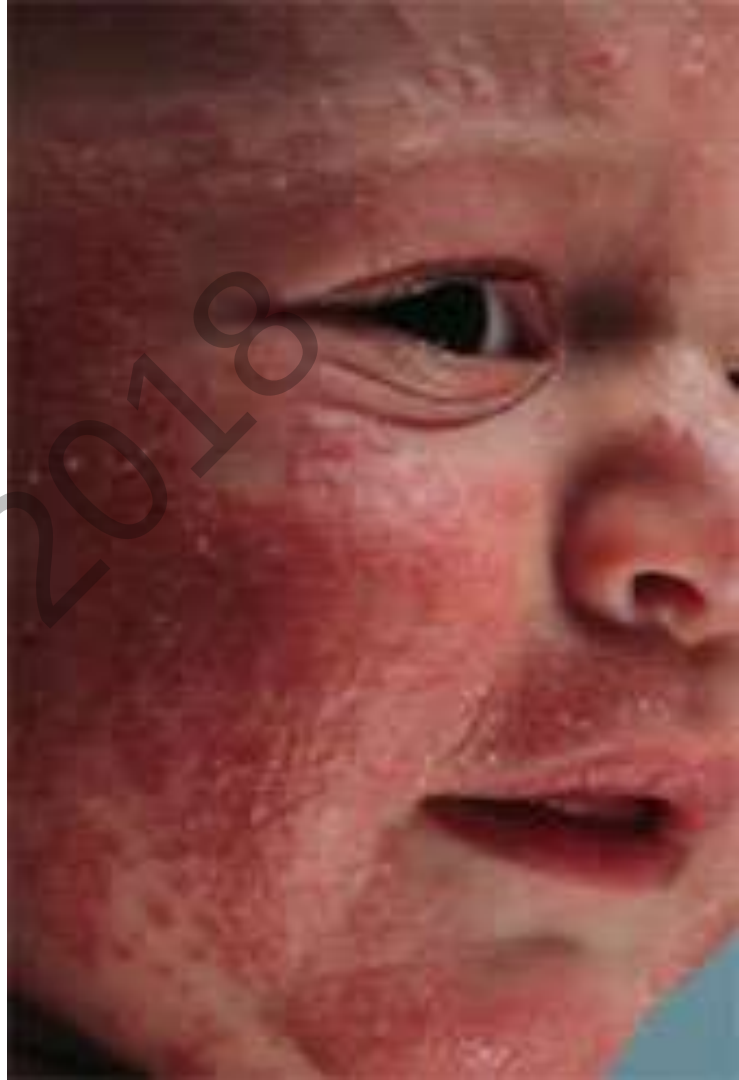


University of Manchester

Multidisciplinary team

Royal Manchester Children's Hospital

Itinerary

. . . to travel beyond the world of creams & ointments

… to explore the non-pharmacological management of atopic dermatitis

- To assess the skin barrier
- To seek out allergen-induced eczema
- To boldly delve into the patient's mind

dermatologists

allergists

“BEST OF BOTH WORLDS”

skin barrier

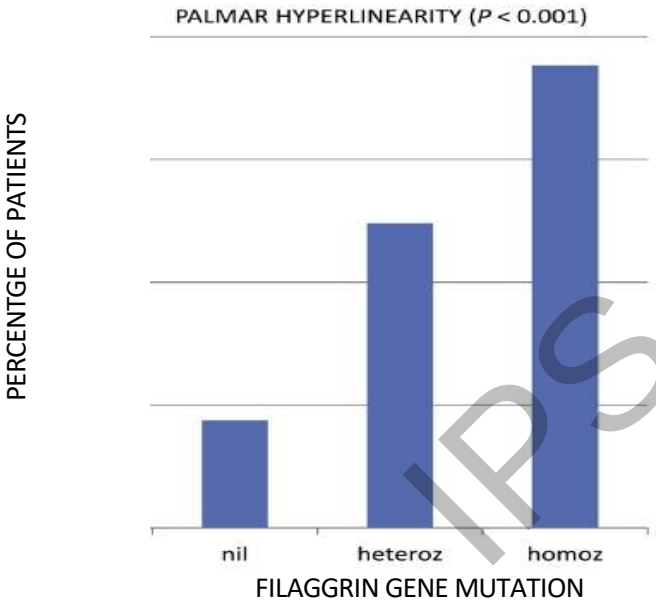
allergen

the battle lines

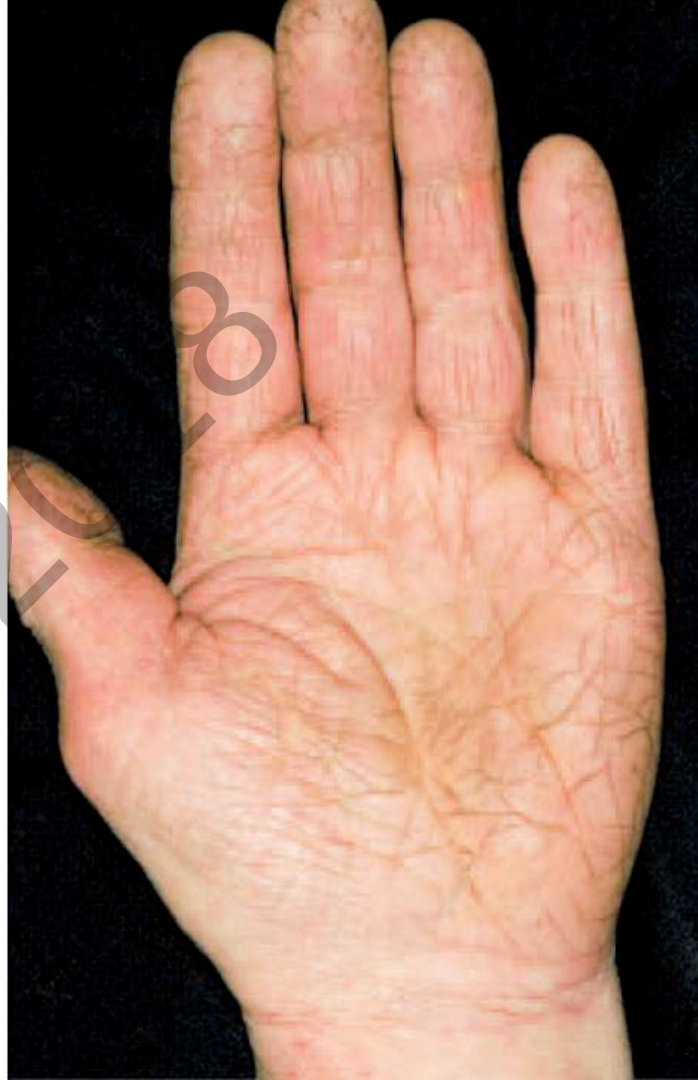

eczema salute
IPS 2018

Palmar hyperlinearity

the sign of skin barrier dysfunction



Arkwright PD *et al*, Atopic dermatitis in children. *JACI IP*, 2014



Filaggrin-associated allergic diseases

Atopic dermatitis*

0% (0/13) no mutation
44% (13/29) one mutation
76% (16/21) two mutation
(Palmer *et al*, *Nat Genet*, 2006)
(Winge *et al, Br J Dermatol*, 2011)

*overall *FLG* mutations found in 20-40% of patients with moderate to severe AD of Northern European & Asian descent, but rare in Africans

relative risk 10-1 in patients with eczema herpeticum

Allergic asthma

Severity (FEV_1 & medication use)

only if associated with AD

(Palmer *et al*, *JACI*, 2007)

Peanut allergy

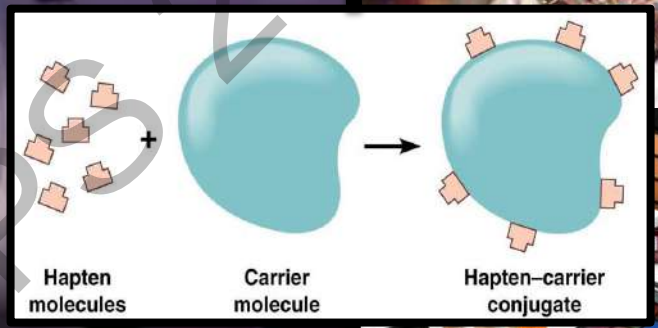
Relative risk 5.3 (2.8 – 10.2)
(Brown *et al, JACI*, 2011)

Food allergens
infants, young children

Neo allergens – chemicals
teenagers, adults

medicines

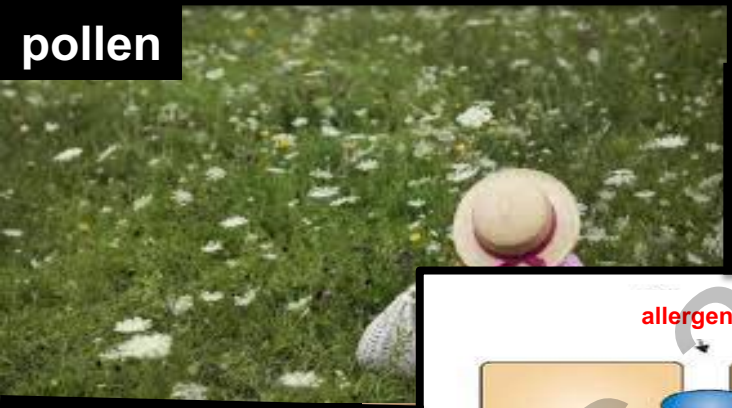
metals



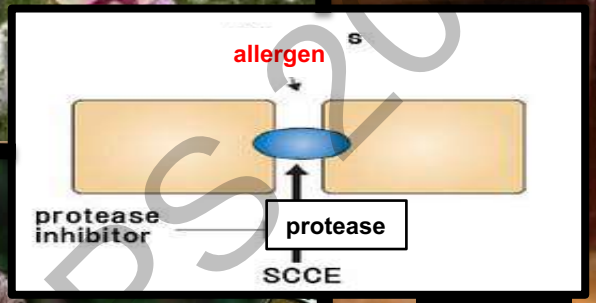
make-up

Skin barrier destabilizers
most ages

pollen



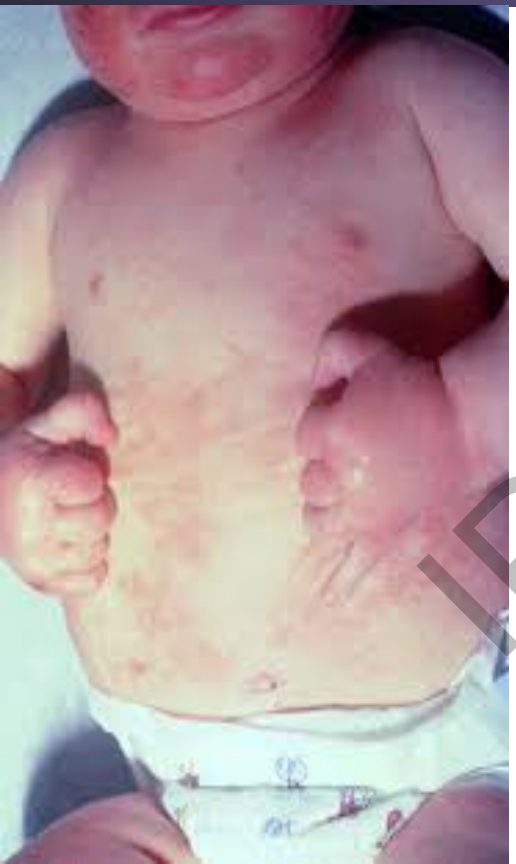
house dust mite



animal dander

soaps

Clinical case 1



- formula fed 6 month old boy
- severe generalised eczema from 2 months old, scratches incessantly
- moisturisers, topical steroids (parents finding it difficult to apply ointments), regular oral antihistamine
- urticaria after eating lentils
- total IgE 5,000 (normal <100)
- milk <0.4, egg 65, wheat 16, peas 86 (non-sensitised <0.4)

WHAT WOULD YOU DO?

Management

- Cow's milk protein free diet for 4 weeks (hydrolysed milk formula substitute)

  → Eczema cleared, child sleeping 5-6 hours/night

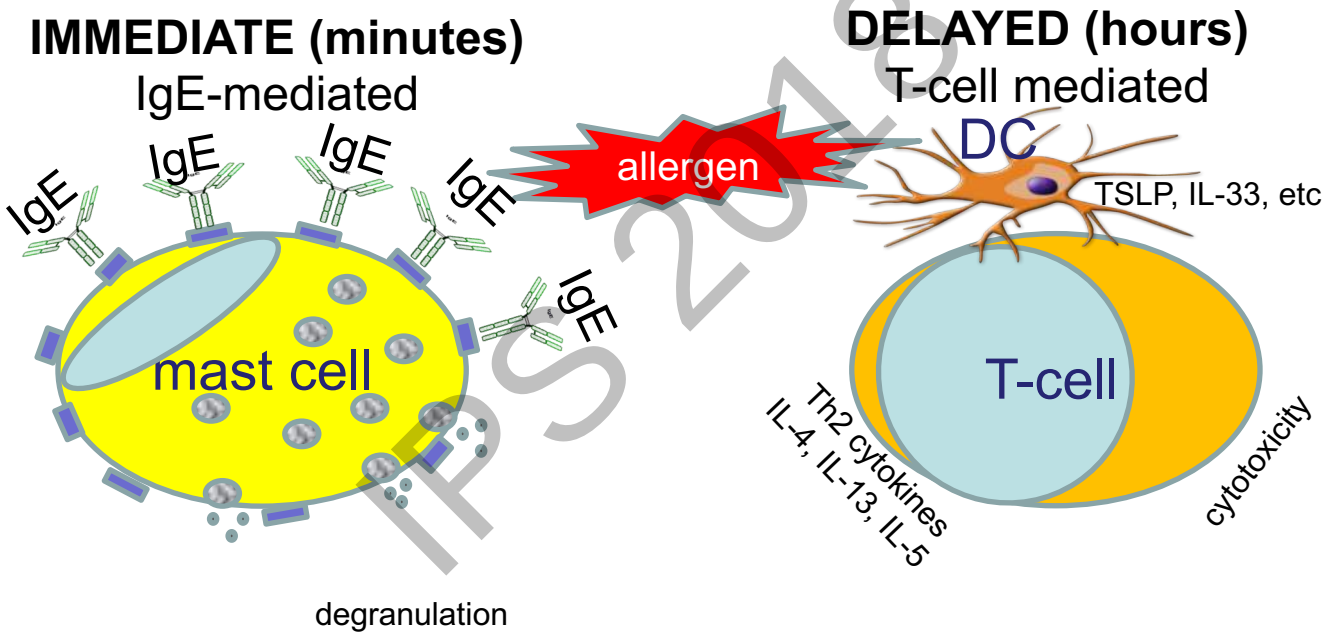
Over diagnosing food allergy in AD

125 children, 96% with active AD median 4 yrs old	n	% negative oral food challenges
Total cohort	**364**	**89**
Foods avoided due to history of reactions	**122**	**84**
Foods avoided due to positive allergy tests	**111**	**93**
Foods avoided for other reasons	**131**	**92**

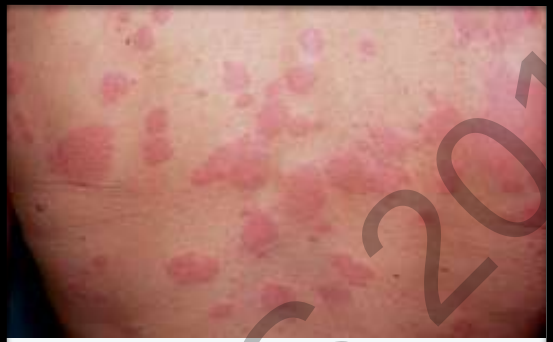
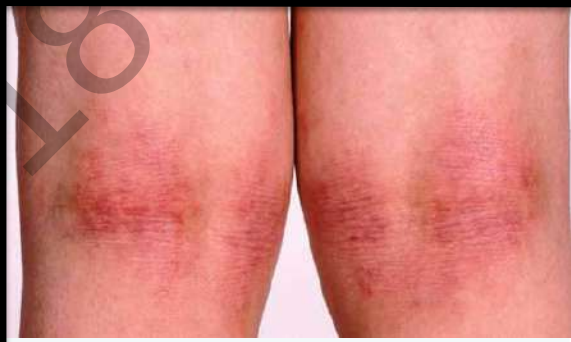
Especially in children with AD, using IgE testing alone to diagnose food allergy can result in overly restrictive diet

Fleischer *et al*. *J Pediatr,* 2011

IgE testing in relation to allergic response



Immediate vs. delayed allergy

	IMMEDIATE IgE-mediated	DELAYED T-cell mediated
Clinical features		
	onset - minutes urticaria / angioedema	onset - hours dermatitis
Investigations	HISTORY total IgE/allergen spec. IgE skin prick tests allergen avoidance/ challenge	HISTORY avoid IgE tests allergen avoidance/ challenge

Allergen trigger?

- Severe disease (erythematous)
  Not responsive to ointments and creams
- Food allergy: infant/young child, particularly with history of immediate reactions
- Other triggers: unusual distribution, may flare with contact, improves on holidays

Investigation and management of delayed foods allergy

- Avoid specific food for 2 – 4 wks, then reintroduce
- Support from dietitian, esp. milk, wheat, complex
- Cow's milk allergy: hydrolyzed formula or soya formula in older children
  with added calcium
- Patients with cow's milk allergy will also be allergic to sheep & goat milk

Dermatitis-induced allergy

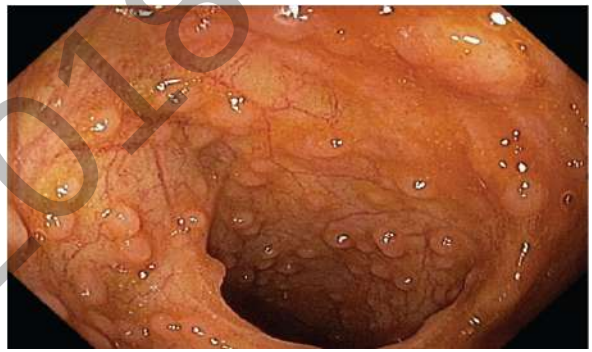
	OR (95%CI)
Nuts during pregnancy	0.8 (0.5 – 2.0)
Atopic dermatitis first 6 months	
none-mild	1
moderate	4 (0.4 – 37)
severe	44 (6 – 388)
Use of peanut oil preps	7 (1.4 – 33)

Lack G *et al*. NEJM 2003
14,000 preschool children, 23 confirmed peanut allergy

Eating-induced tolerance

Tolerance to peanut

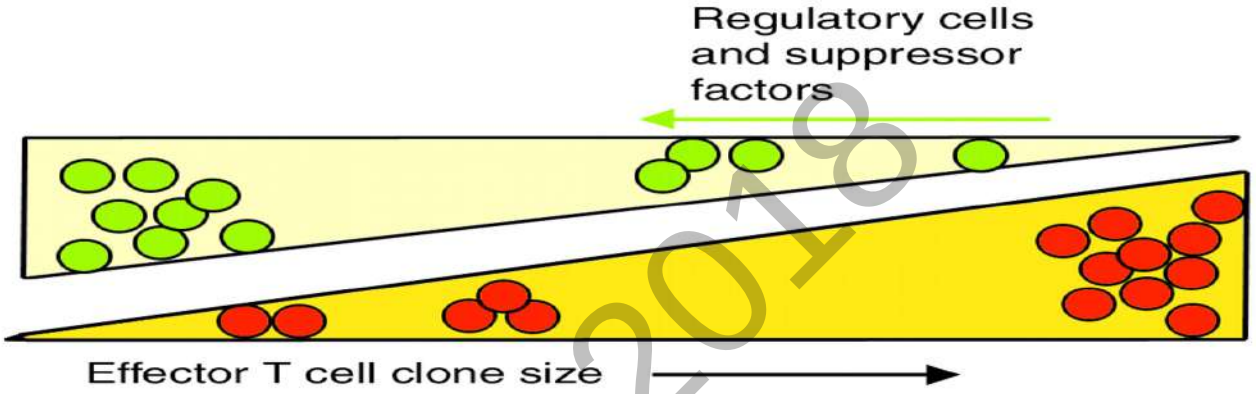
Infants	UK (n=5,171)	Israel (n=5,615)
Peanut consumption* 8 – 14m	0g / m	7.1g / m 8X / m
Peanut allergy† 4 – 12y	2.05%	0.12%

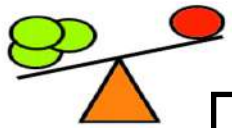


Foods induce tolerance

*Roasted peanut butter introduced at weaning
†OR 9.8 (95% CI, 3.1-30.5) in primary school children

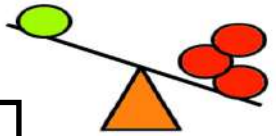
Du Toit *et al*, *JACI,* 2008
Du Toit *et al, NEJM*, 2015





Tolerance

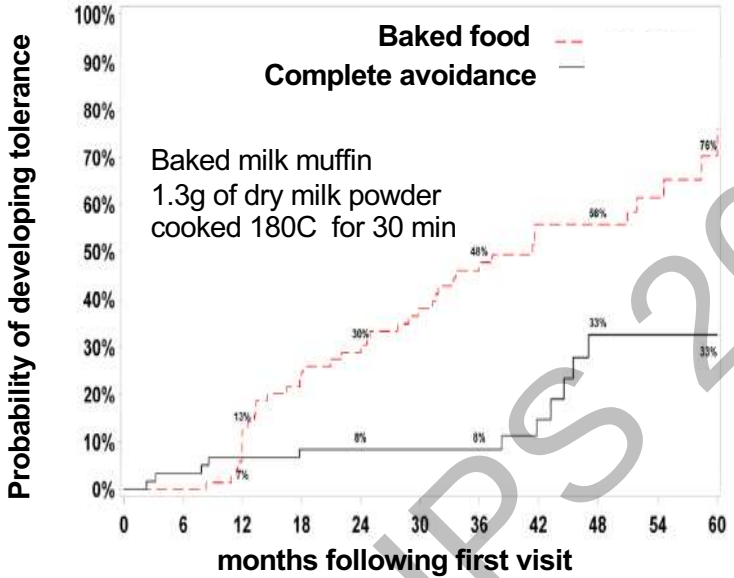
Exposure via GUT Less allergy	Exposure via SKIN More allergy



Rejection

Allergy

MILK TOLERANCE INDUCTION



Kim JS *et al, JACI*, 2011, n = 88

Children eating baked milk were **16X more likely** to develop tolerance to fresh milk

MILK LADDER

Step 1	**High heat – biscuits, cakes**
Step 2	**Lower heat – cooked cheese** pizza, lasagne
Step 3	**Processed, uncooked cheese and desserts** butter, yoghurt, ice cream
Step 4	**Pasteurised milk**

Management of allergen-induced AD

	AVOIDANCE	ORAL TOLERANCE INDUCTION cooked→ processed foods	NON-ORAL TOLERANCE INDUCTION SLIT/SCIT +/- omalizumab
FOODS	YES	YES – milk, soya, egg, wheat, lentils	NO
CHEMICALS e.g. medicines	YES	NO	NO
SKIN BARRIER DESTABLISERS e.g. HDM, dander	IF POSSIBLE	NO	NO

Clinical case 2

- 15 year old girl, AD since early infancy
- More severe over last 2 years, very dry, scaly, despite moisturizers, topical steroids and calcineurin inhibitors
- No obvious allergen triggers, not secondarily infected

WHAT WOULD YOU DO?

Analysis

- Mum has new partner and newborn baby son and is unable to devote as much time to her daughter

- Consultation reveals deliberate poor compliance with medication as attention seeking behaviour

Psychological triggers

"Eczema is an itch which rashes"

- **INNATE**
  - Personality disorders
  - Obsessive-compulsive disorder
  - Anxiety disorders
  - Depression

Particularly if excoriated

- **ENVIRONMENTAL**
  - Stress/anxiety (home, school, work)
  - Physical abuse, bullying
  - Racial or sexual abuse
  - Life events (birth, divorce, death, serious illness, accident)
  - Concern over side-effects of medication

Arkwright PD *et al*, Atopic dermatitis in children. JACI IP, 2014

Atopic dermatitis
five steps to clearer skin and less itch

SIGN	IMPLICATION	ACTION
	1	
	2	
	3	
	4	
	5	

Take home messages

- palmar hyperlinearity: focus on barrier protection and avoidance of allergens
- no urticaria but eczema flares: avoid IgE testing and consider allergen challenge/avoidance
- extensive ulceration/excoriation: consider psychological factors (personality and stress)
- treat the patient not just the skin: consider asthma, hay fever and acute allergies