Eczema introduction

- Long lasting inflammatory skin disorder
- Often begins in childhood
- Less commonly starts in adulthood - may have had it as a child.
- Pregnancy can trigger
- Associated with other atopic conditions
- Can have profound psychological effects

Eczema Case presentation 1

- Miss KT aged 8 months
- Born at term
- Breast fed
- Solids introduced at 4 months
- Cows milk formula at 6 months

Eczema case presentation 3

- F hx: Mother allergic rhinitis
- Immunizations up to date
- Normal growth and development
- No other medical problems
- Environment: Villa, cat, old carpet
Eczema case presentation 4

- Physical findings: rash over face, limbs
- Infected, excoriated areas
- No abnormalities of other systems
- Normal height and weight
Response of skin to scratching
Genetically determined
Associated with allergic march
~ 50% have an allergic trigger
Natural history is to improve
Affects up to 12% of children

Pathogenesis

- Genetics play a major role
- Skin barrier defect
- Filagrin mutations
- Proteases
- Ceramides
- Environmental factors
Eczema triggers by age

<table>
<thead>
<tr>
<th>Trigger</th>
<th>infant</th>
<th>child</th>
<th>adolescent</th>
<th>adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>+++</td>
<td>++</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>Inhalant</td>
<td>+</td>
<td>++</td>
<td>+++</td>
<td></td>
</tr>
<tr>
<td>Type 4</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Malassezia</td>
<td>+/-</td>
<td>+</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td>Staph</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td>Viral</td>
<td>&gt; +++</td>
<td>+++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Stress</td>
<td>??</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
</tbody>
</table>

Trigger factors and eczema

- Allergy
- Infections
- Irritants
- Heating
- Sweating
- Itching
- Xerosis
- Scratching
- Itching
**Trigger factors and eczema**

**Clinical features**

- **Age of person**
  - infantile
  - childhood
  - adult

- **Acute vs chronic**
  - erythema
  - chronic changes

- **Complications**
  - lichenification
  - bacterial infection
  - viral and fungal inf
  - pigmentary changes

**Differential diagnosis**

- Seborrheic dermatitis
- Contact dermatitis
- Irritant dermatitis
- Psoriasis
- Scabies in infants
- Immune deficiency
- Others
Clinical evaluation

- History: age of onset
  - progress
  - triggers foods, contact
  - complications
  - treatments topical oral
- Other allergies
- Family history of atopy

Clinical evaluation

- Environmental hx carpeting, drapes
  - lounge suite
  - soft toys on bed
  - pets, smokers, mould
- Feeding history breast feeding
  - formula
  - solids
- Growth and development

Diagnostic evaluation

- Skin testing foods
  - inhalants
- SpIgE testing infants
  - stopping antihistamines
  - poor skin
  - dermatographia
- Admission, food challenges
Specific IgE testing

<table>
<thead>
<tr>
<th>Food</th>
<th>cut-off</th>
<th>sensitivity</th>
<th>specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg</td>
<td>6.0 U/ml</td>
<td>61%</td>
<td>92%</td>
</tr>
<tr>
<td>Milk</td>
<td>15 U/ml</td>
<td>51%</td>
<td>98%</td>
</tr>
<tr>
<td>Peanut</td>
<td>15.0 U/ml</td>
<td>73%</td>
<td>92%</td>
</tr>
<tr>
<td>Fish</td>
<td>19.5 U/ml</td>
<td>40%</td>
<td>99%</td>
</tr>
<tr>
<td>Wheat</td>
<td>&gt; 100 U/ml</td>
<td>PPV</td>
<td>60%</td>
</tr>
<tr>
<td>Soy</td>
<td>&gt; 100 U/ml</td>
<td>PPV</td>
<td>&lt; 50%</td>
</tr>
</tbody>
</table>

Diagnostic elimination diets—often done by parents

- Suspected food to be eliminated for 2-3wks
- If no response, consider more stringent diet
- Should be supervised paediatric dietician
- Foods gradually re-introduced

Complications

- Pigmentation changes
- Lichenification
- Bacterial infections
- Fungal infections
- Viral infections infections
- Psychological impact
Mild eczema

- Use of emollients on a regular basis
- Use of topical steroids intermittently
- Antibiotics as required
- Antihistamines intermittently

Attention to trigger factors

- Xerosis: soaps, excessive washing
- Infection: bacterial, fungal, viral
- Irritants: wool, chlorine, sand
- Sweating: heating, exercise
- Stress: heating
- Allergy: foods (eggs, milk, peanuts, wheat, soy)
  - contact/inhalants

Eczema treatment- Xerosis: skin hydration

- Emollients: avoid alcohol
  - apply 4-5x daily
  - lanolin sensitivity
  - Lipobase
- Paraffin and occlusive dressings
- Creams vs ointments vs lotions
- Tar preparations
- Wet dressings if severe
Eczema treatment - skin hydration

- Baths: soap substitute eg oilatum
  long baths
  Tepid
  pat skin dry
  apply emollient within 3 minutes
  shampoo Ketaconazole

Eczema treatment - irritants

- Avoid wool contact with skin
- Double rinse after washing clothes
- Swimming pools: wash off Chlorine
- Non chlorinated pools
- Vaseline as a barrier
- Sea baths are helpful but the sand may irritate

Eczema treatment - night time advice

- Avoid sweating - humidity control at night
- Loose fitting clothes
- Damp cloth at night for itching
- Gloves
- Keep nails short
- Managing stress
**Eczema treatment - infections**

- Infections:
  - Bacterial: mupirocin
  - Anti-Staph: mupirocin
  - Viral: acyclovir
  - Fungal: mupirocin
- Varicella immunization when well
- Bleach in the bath
- Antibiotics may be required for months

---

**Eczema treatment - infections**

**Treatment of Staphylococcus aureus Colonization in Atopic Dermatitis Decreases Disease Severity**

Jennifer T. Huang, Melissa Abrams, Brooke Tonigan, Alfred Bademke and Amy S. Pulley

*Pediatrics* 2009;123:e808-e814

DOI: 10.1542/peds.2008-2217

---

**Eczema treatment - infections**

---
Presence of IgE antibodies to staphylococcal exotoxins on the skin of patients with atopic dermatitis. Evidence for a new group of allergens
Leung DY, Harbeck R, Bina P, Reiser RF, Yang E, Norris DA, Hanifin JM, Sampson HA.
J Clin Invest 1993 Sep;92(3):1374-80

- Method: 24/42 AD patients, identified multiple exotoxins from Staph cultured from AD patients
  SEA, SEB, TSST-1, ET
- 32/56 AD sera had IgE antibodies to these toxins
- These sera could trigger basophil histamine release
- Psoriasis pts had toxin secreting S aureus but no IgE antibodies

Staphylococcal colonization in atopic dermatitis and the effect of topical mupirocin therapy.
Lever R, Hadley K, Downey D, Mackie R

- Method: DBPCRCT
- Patients: 49 Patients with AD.
- All patients had heavy colonization with S aureus.
- Method: Treated with topical mupirocin
- Results: Significant improvement in AD over the following 4 weeks

Eczema treatment- drug therapy

- Topical steroids; lower potency for face, genital areas & intertriginous areas
- Calcineurin inhibitors; Pimecrolimus cream
  *NB Cancer risk*
- Antihistamines; older drugs, combinations
- Avoid oral steroids
- Antibiotics
Eczema treatment - topical steroids

- **Group I (mild)**: 0.5-1.0% hydrocortisone
- **Group II (moderate)**: 0.02-0.05% triamcinolone, 0.05% clobetasol, 0.05% alometasone
  - Artistocort, Eumovate, Logaderm
- **Group III (potent)**: 0.1% betamethasone, 0.05% betamethasone, 0.1% mometasone, 0.1% hydrocortisone
  - Betnovate, Cutivate, Elocon, Locoid
- **Group IV (very potent)**: 0.05% clobetasol
  - Dermovate

---

**Eczema treatment - topical steroids**

**Table 3 Approximate number of adult FTUs needed for children**

<table>
<thead>
<tr>
<th>Age (months)</th>
<th>4 months old</th>
<th>1 year old</th>
<th>2 years old</th>
<th>3 years old</th>
<th>4 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arms and legs</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Legs and feet</td>
<td>1.5</td>
<td>2</td>
<td>3</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>Trunk</td>
<td>1.5</td>
<td>2</td>
<td>3</td>
<td>3.5</td>
<td></td>
</tr>
</tbody>
</table>

**Table 4 Approximate weight required of topical corticosteroids**

<table>
<thead>
<tr>
<th>Weight (g)</th>
<th>4 months old</th>
<th>1 year old</th>
<th>2 years old</th>
<th>3 years old</th>
<th>4 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Weekly</td>
<td>35</td>
<td>40</td>
<td>70</td>
<td>70</td>
<td>100</td>
</tr>
</tbody>
</table>

---

**Efficacy and safety of Tacrolimus ointment compared with that of hydrocortisone butyrate ointment in adult patients with AD**

- **Aim**: To compare 0.03% Tac, 0.1% Tac and 0.1% HC butyrate in AD
- **Method**: DBPCRCT. 3 weeks multicentre
- **Patients**: 570 patients enrolled
- **Results**: 0.1% Tac similar to 0.1% HC butyrate

Efficacy and safety of Tacrolimus ointment compared with that of hydrocortisone butyrate ointment in adult patients with AD
Reitamo et al JACI 2002;109:547-55

Antihistamines

- May need twice daily treatment
- Larger doses may be needed
- Combinations of AH can be useful
- Some newer antihistamines can sedate
- Expense is a significant barrier for therapy
- Cetirizine and Loratadine now subsidised

Second line therapy

- Prednisone
- Methotrexate, Azathioprine
- Cyclosporin
- Phototherapy
- Immunotherapy
Eczema treatment - food allergy

- Food allergy: trigger for eczema in 1/3 most are allergic to 1-2 foods
- Eczema may be associated with other symptoms eg asthma, hay fever
- Skin tests and sIgE tests are complicated by false positives
- In contrast, false negatives are rare
- Formal food challenges may be required
- Elimination diets cause nutritional problems

Food challenges

- Open challenge in physicians rooms
- Double blind challenge (DBPCFC)
- May require admission
- Clearing of skin required. Stop medications
- Dietician is aware of food/placebo given
- 3-4 challenges over several days
- Open challenge before discharge

Long-term elimination diets

- Accurate diagnosis is critical
- Paediatric dietician assessment
- Reading food labels
- Therapeutic database
- Allergy NZ
- Repeat Sp IgE tests
- Consider re-challenge as upto 1/3 remit
**The role of dust mites in eczema**

- 24 adults and 24 children with eczema
- Randomised for dust mite prevention
  - bed covers
  - benzyltannate spray
  - HEPA vacuum cleaning
- Significant reduction in dust mites
- Improvement in eczema with reduced mites


**Effectiveness of occlusive bedding in the treatment of atopic dermatitis-a placebo-controlled trial of 12 months' duration.**

Holm L, Bengtsson A, van Hage-Hamsten M, Ohman S, Scheynius A.

* Method: 40 Adults RCT (22 avoidance, 18 placebo)
  - Polyurethane covers for bedding
  - Dust samples from beds at 3, 6 & 9 mo
* Exclusion: Pregnancy, Phototherapy, long term antibiotics, immunotherapy
* Outcomes: Clinical response SCORAD Labs- sCD30, IgE, RAST HDM, Cat

* Results: Reduction in HDM exposure (p<0.005)
  - SCORAD 45% active group
  - 39% placebo group (p< 0.001)
Reduction of eczema over 12 months both in HDM sensitised patients as well as those without HDM sensitivity in the active group
**Eczema case presentation 5**

- Gradual improvement in eczema over time.
- Pattern changed to involve the flexural areas
- As a teenager, Ms KT has dry skin
- Occasional flares of eczema with stress e.g. exams
- Easily controlled with topical steroids.

**Teaching points: Eczema**

- Scratching triggers eczema
- The distribution of eczema changes
- Food allergy can trigger eczema
- Trigger factors for itching must be eliminated
- Topical steroids are needed intermittently
- Antihistamines and antibiotics are needed
### When to refer - Ped Soc guidelines

- Significant impact on lifestyle eg missing school
- Frequent infections
- Psychosocial impact eg bullying
- Persistent facial eczema
- Family requesting referral
- Presence of other allergies eg FA