Atopic dermatitis – optimizing outcomes

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Allergic sensitisation is a consequence, not cause, of atopic dermatitis

Topical steroid underuse is the main reason for poor outcomes in atopic eczema

Consider: what are the barriers to appropriate use of topical steroids?

I enjoy treating children with severe and recalcitrant atopic dermatitis

- Yes
- No

My heart sinks when a child with severe and difficult atopic dermatitis sees me

WHAT CAUSES ATOPIC DERMATITIS

- Mutations of filaggrin gene

Atopic eczema / dermatitis

- WHAT CAUSES ECZEMA?
- Mutations of filaggrin gene: effects

WHAT HAS HAPPENED TO THE SKIN?

When cells are normal and healthy, they replicate at regular intervals. The skin is made of living cells. The epidermis is the outer layer of skin, which contains keratinocytes, sebaceous glands, and sweat glands. The dermis is the inner layer of skin, which contains blood vessels, nerves, and collagen fibers. The skin is separated from underlying tissues by the dermal-epidermal junction, which is a complex structure that contains various proteins and enzymes. This skin is a material that helps to maintain the body's temperature, protects the body from damage, and helps to prevent infection. When the skin is damaged, it can lead to a variety of conditions, such as eczema, psoriasis, and acne. The skin is an important organ that helps to maintain the body's health and well-being.
**Can AD be prevented?**

**ATOPIC DERMATITIS INITIATION**
1. Disrupted barrier (FSR rotation or dysbiosis from cleansing/renewal)
2. Allergens and irritant influx
3. Inflammatory T cell responses initiated by keratinocytes e.g. TGF and dendritic cells

**ATOPIC DERMATITIS PREVENTION**
- Emollient therapy improves skin barrier and blocks infiltrative cascade

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**Early Emollient Use and AD**

- 124 infants in the UK and US
- High-risk for AD: 1st family relative with AD
- Randomized to receive either no emollient or emollient use (oil, cream/gel, or ointment)
- Emollients: started within 3 weeks up to 6 months


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**Cumulative incidence of AD**
- Emollient group had a 50% reduction (RR, 0.50; 95% CI, 0.28-0.9; p=0.017)
- Safe, simple, low-cost intervention for AD-at-risk infants
- Validation in larger studies; longer-term follow-up; optimal timing and types of emollients need to be evaluated


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**Early Emollient Intervention Studies**


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**Blood testing for food allergy is a useful investigation in AD**
- Yes
- No
- What about total IgE?
  - Yes
  - No

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**IMPACT OF UNDERTREATMENT**
- WE ALL SEE IT REGULARLY!
- Studies +++
  - Scratching
  - Infecions
  - Sleep disruption
  - Learning, growth
  - Health practitioner consultations
  - $$$$$
- Parental discordance
I have constructed or regularly use a patient hand-out for atopic dermatitis

- Yes
- No

One approach to Atopic Dermatitis

- What causes atopic dermatitis ...........
- “Our treatment plan”:  
  - Look for triggers
  - Reduce irritants
  - Maximise moisturizing
  - Topical steroids, elidel, tacrolimus
  - Treating infections

- Do we need help with education?
- Review – when?

Is it useful to differentiate between soaps and cleansers .......?

- SOAPS  
  - Plant or animal fat derived, Na or K salts  
  - pH usually 9-10  
  - Irritant, drying, disrupt barrier

- “CLEANSERS”  
  - “syndets”  
  - Developed during WW1 due to fat shortage  
  - Popularity ↑ with J&J “no-more tears” shampoo

What else is in cleansers?

- Skin Cleanser Components  
  - Surfactants
  - Antimicrobials
  - Viscosity agents
  - Moisturizers
  - Preservatives
  - Fragrances

- What is Cocamidopropyl betaine?  
  - Patch testing considerations

How do you pick a moisturiser?

- Does emollient = moisturiser?
- Which moisturiser, Doc?
- “lipid” includes fats, waxes and oils
- ??? Coconut oil
- Aqueous cream – not designed as “leave-on”
**What’s in aqueous cream?**

- Purified water
- Preservative
- Emulsifying ointment
  - Anionic emulsifying wax
    - Cetostearyl alcohol
    - Anionic surfactant SLS
- Aq cream associated with immediate reactions - burning, stinging, itching redness (cf other emollients)

**Table 1**

<table>
<thead>
<tr>
<th>Common excipients found in topical products. (British Medical Association and Royal Pharmaceutical Society of Great Britain, 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beeswax</td>
</tr>
<tr>
<td>Benzyl alcohol</td>
</tr>
<tr>
<td>Butylated hydroxyanisole</td>
</tr>
<tr>
<td>Butylated hydroxytoluene</td>
</tr>
<tr>
<td>Cetostearyl alcohol (including cetyl and stearyl alcohol)</td>
</tr>
<tr>
<td>Chlorocresol</td>
</tr>
<tr>
<td>Edetic acid (EDTA)</td>
</tr>
<tr>
<td>Ethylene diamine</td>
</tr>
<tr>
<td>Fragrances</td>
</tr>
<tr>
<td>Hydroxybenzoates (parabens)</td>
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</tbody>
</table>

**Topical steroid / moisturiser**

- At the same time?
- Steroid over moisturiser? Or vice versa?
- What about under wet wraps?
- How much moisturiser per week?
  - “child 250g per week”
  - “adult 500-600g per week”

**I often recommend bleach baths**

- **Yes**
- **No**
- I have a handout on bleach baths
- My recommended formula for bleach baths is ……

**Systemic immune suppression??**

- Oral prednisolone
- Prolonged antibiotics
- Methotrexate
- Azathioprine
- Cyclosporine
- Mycophenolate
- ONLY IN RARE RECALSITRANT CASES

**Topical steroids in atopic dermatitis**

- Scratching, barrier disruption, immune stimulus ............
- “nip it in the bud”
- If it is itchy or inflamed - use the steroid cream
- **NOT** “sparingly”
- “weekend therapy”
TOPOCAL STEROIDS: ADVERSE EFFECTS

- “CORTICOSTEROIDPHOBIA”
- “skin thinning” –
  - usually a mis-interpretation of active dermatitis or postinflammatory changes
- Striae
- HPA axis suppression
- Facial rashes

I recommend topical steroids are applied .......

- Qid
- Tds
- Bd
- Daily
- Weekends

TOPOCAL STEROIDS
Cream, ointment, gel, lotion ....?

- Creams often more acceptable to parents
- Moist areas ➔ cream
- Skin folds ➔ cream
- “creams sting” ➔ use ointment
- Dry skin ➔ use ointment

Topical steroids: CONSENSUS STATEMENT

Topical steroids – How much?

- How much to use - .................
  - ?? Finger-tip unit concept
- How much to prescribe ..............
- Rx “Apply lavishly”
- Using authority scripts to emphasise quantities desired
- “bring your creams in each time”

Can steroids be used on broken skin?

- Yes – but be aware of eczema herpeticum
Poor outcomes in AD

- Poor patient education
- Misunderstanding of disease
- Lack of information
- Inadequate self-management
- Non-adherence

- Time, trust, consider and invoke patient preferences
- Followup "Abandonment"

EARLY LIFE EMOLLIENT ENCOURAGEMENT

- ? IN HIGH RISK SITUATIONS
  - But this will miss at least 40%
- ? FOR ALL THE POPULATION
  - "PERSONALISED MEDICINE"
  - E.g gene assessment

THE FUTURE: Biologics in severe atopic dermatitis

- BARRIER
- ITCH
- INFLAMMATION
  - CD-20 directed +
  - IL-1 (anakinra)
  - IL-4, IL-17 (dupilumab)
  - others

ATOPIC DERMATITIS – KEY POINTS

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- **What causes atopic dermatitis**
  - Look for triggers
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  - Maximise moisturizing
  - Topical steroids – optimal use
  - Treating infections