Non-Pharmacologic Therapies for Atopic Dermatitis

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Cryotherapy?

• Very cold air may increase the body’s antioxidative capacity
• Also has been shown to reduce the conduction velocity of peripheral nerves
• Cold may have local and systemic anti-inflammatory effect relieve itch

Cryotherapy?

• Whole-body cryotherapy has been used RA, pain, and inflammation since the 1970s
• The first 2 chambers are meant for pre-cooling (−30°C and −60°C), and the patient remains in these for a very short time. The third chamber temperature reaches −110°C, and the patient remains inside for 1 to 3 minutes wearing a bathing suit or trunks

Cryotherapy?

• 18 adults (10 men and 8 women) with mild to moderate AD were enrolled
• Whole-body cryotherapy was given 3 times a week for 4 weeks
• Three patients had treatment-related adverse events, all mild acral frostbite…!
Cryotherapy?

Treatment

Filaggrin

- Mutations cause ichthyosis vulgaris (IV)
- 8% of eczema pts have features of IV
- Between 14 and 56% of eczema pts carry one or more filaggrin null mutations
- So: ~13% of eczema may be due to filaggrin mutations on a population scale

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IL-4 and IL-13

- Keratinocytes differentiated in the presence of IL-4 and IL-13 exhibited significantly reduced filaggrin gene expression
Topical Steroids and Barrier

Figure 1: The effect of tacrolimus compared with betamethasone on the skin barrier in volunteers with quiescent atopic dermatitis. Br J Dermatol. 2014 Apr;170(4):914-21.

Either Way…

The Barrier Problem is here to stay

More Moisturizer = Less Eczema!


Could moisturizers prevent eczema?

- Only 3/20 (15%) developed eczema
- Historic controls predict 6-10 should have (30-50%)

The Golden Ratio

- "Cholesterol, ceramides, and essential/nonessential free fatty acids (FFAs) in an equimolar ratio allows normal barrier recovery, whereas any 3:1:1:1 ratio of these four ingredients accelerates barrier recovery."

Moisturizer or More?

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CONCLUSION

- Moisturize well... but save your (and your patients’) money!

What about bathing?

- Water loss is fundamental, so bathing should be important
- Balneotherapy is ancient, but modern practices began in Europe in the 1800s

Wait! What about bathtubs?

- As for actual baths, such as frequency, duration, and how soon to apply moisturizers afterwards... there really is no good data!
- Joint Task Force Practice Parameter Update 2012: we struggled with this...
Bathtubs

“Although clinical trials on bathing frequency have shown mixed results, we believe that the weight of the evidence suggests that frequent soak and smear bathing is preferred to infrequent bathing in the management of AD. This simple, low-cost intervention could contribute to better AD control.”


What about spa therapy?

- Data can be a bit messy since mineral water baths also involve:
  - Warm weather (climatotherapy)
  - Sunshine (heliotherapy)
  - A vacation setting (relaxation)

Balneotherapy

- There is solid data that children and adults with moderate-to-severe AD generally improve with balneotherapy/spa therapy
- But it’s:
  - Expensive
  - Time-consuming
  - Temporary

Ahhhh...

Treatment

- Anti-inflammatory
- Antipruritics
- Antibiotics
- Moisturisation
Dilute Bleach baths

- Randomized placebo-controlled trial of 31 children with moderate-to-severe eczema
- All received oral antibiotics
- Half got intranasal mupirocin + dilute bleach bath; other half got vaseline nasally and placebo bleach bath
- Significant decrease in severity of eczema at 1 mo and 3 mo

Bleach: How does it work?

1. It is probably anti-inflammatory

2. It probably has limited effect on the bacteria in the way that it is actually used:
   - After TCS + bleach bath or TCS alone, bacterial compositions on lesional skin normalized (P < .0001), resembling nonlesional skin, with microbial diversity restored to control skin levels.

3. It may be via TEWL and itch reduction:

- This study suggests that the benefit observed with bleach baths is likely mediated by improvement in skin barrier function (TEWL and SC cohesion) and reduction in itch intensity but not in normalization of the skin microbiome or systemic Th2 inflammation.


**Anti-bacterial Clothing?**

- Specialized silk garments with anti-microbial properties have been studied in eczema

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**Anti-bacterial Clothing?**

- 2007: 22 children with AD were divided into specialized silk clothing vs. cotton control
- At weeks 4, 8, and 12 significant decrease in SCORAD was found in the silk group
- Possibly works by aiding wound healing, enhancing collagen synthesis, and reducing inflammation and bacteria


**Silky smooth?**

- 15 pts with AD had split garments: cotton/silk
- On the cotton side they were allowed to use topical corticosteroids, but not on the silk side
- At day 7, no difference between the sides (suggesting that silk is as good as a topical steroid!)


**Silver**

- Several silver-coated textiles have also been studied
- Do have true antibacterial effect on staph
- Several studies have found significant improvement in eczema and pruritus
Phototherapy

1903 Nobel Prize in Medicine: Niels Ryberg Finsen, Danish pioneer of phototherapy
- *Om Lysets Indvirkninger paa Huden* (On the effects of light on the skin)
- Probably multiple mechanisms including increasing vitamin D which in turn enhances cathelicidin

PHOTOTHERAPY

Phototherapy

- Works in about 60% of refractory cases
- NB-UVB (311 nm) seems fairly safe

- Problems:
  - Time
  - Money (co-pays, parking, etc)
  - Home units?
**Vitamin D**

- 11 children (mean age, 7 years) w/ AD that worsened in winter
- Randomly given 1000 IU of D2 or placebo qd x 1 mo
- Otherwise normal regimen


**Final Word?**

"This meta-analysis showed that serum vitamin D level was lower in the AD patients and vitamin D supplementation could be a new therapeutic option for AD."


**FOOD ALLERGY AND AD:**

- Is it a cause?
- Is it a trigger?
- Is it unrelated?

**Yes!**

-R. Sidbury, MD

**Treatment**

- Anti-inflammatory
- Antipruritics
- Antibiotics
- Moisturization
Antipruritics

- Very poor data for antihistamines (though we often use them, esp for sedation)
- Topicals are unsatisfying (camphor, menthol, pramoxine)
- Gabapentin, TCAs, SSRIs, even antipsychotics have been tried (olanzapine)

ANTIPRURITICS

- 40 pts with refractory uremic pruritus randomized to:
  - Unilateral Quchi (LI11) acupuncture 3x/wk x 1 mo
  - Control was acupuncture to sham point 3x/wk x 1 mo
  - Pruritus scores at baseline, 1 mo and 3 mo
  - Significantly lower in acupuncture group at 1 and 3 months (P<0.001)

Acupressure

- 15 adults, with moderate-severe eczema
- Half applied acupressure with small bead in LI11 point for 3 min 3x per week for 4 weeks

Acupressure

Hypnosis and Biofeedback

- Stress can worsen AD and directly slows healing skin barrier (Muizzuddin, 2003)
- Psychosocial stress and sleep deprivation disrupt skin barrier function in healthy patients (Altemus, 2001)
- Some forms of alt med may help AD by decreasing stress, something that we have limited options for in allopathic medicine
Hypnosis

- Study: 18 adults and 20 children with severe, resistant atopic dermatitis treated with hypnotherapy
- Significant benefit found both subjectively and objectively, maintained up to 2 years in some patients
- 10/12 children at 18 months after the study reported continued improvement in itching and scratching, less sleep disturbance, and improvement in mood

What is Eczema Boot Camp?

- An intensive daily regimen for patients with severe eczema to get their eczema back under control

The regimen consists of the following treatments at least once daily:

- 10-minute bleach bath
- Topical therapy (application of a topical anti-inflammatory agent, generally a mid-potency topical corticosteroid)
- Emollient application (applied on top of the anti-inflammatory agent)**
- Wet wraps

**Topical therapy followed by emollient application should be done twice daily.

Wet Wraps

Follow these 4 steps:

1. Take one pair of cotton, tights, gloves, and/or socks out each week. It’s ready to wear.
2. Wear out the cotton, tights, gloves, or socks until they are very slightly damp.
3. Put the damp cotton, tights, gloves, or socks on. Then put the dry cotton, tights, gloves, or socks on top of the damp layer.
4. Make sure the cotton is warm enough before you go to sleep.

http://www.dermasilk.ca
Study

- 37 adult patients or caregivers
- 19 in control group = Verbal Instruction (VI) only
- 18 in intervention group = written Eczema Action Plan (EAP) given
- Pre- and Post-education questionnaires given

Results

- The written EAP was better than the verbal instruction in terms of:
  - Reducing anxiety about the plan (p<.01)
  - Increasing understanding of:
    - The treatment regimen (p=.02)
    - The risks/benefits of the treatments (p=.02)
    - Adjusting the medications based on disease severity and anatomic site (p<.01, p=.03)


Find out more:

WWW.CHICAGOECZEMA.COM
Thank you!