Emerging Therapies in Atopic Dermatitis

Hugo Van Bever
NUS - Singapore
Atopic Dermatitis (@ ECZEMA)

- A syndrome

- Various underlying mechanisms

- General advice:

  - *unravel the underlying mechanisms of each child with eczema* -
- Looks
- Sleep
- Study activities
Eczema in children

1. Atopic dermatitis
2. Constitutional eczema
3. Contact dermatitis
4. Seborrhoeic eczema
Atopic Dermatitis in Early Life: Evidence for at Least Three Phenotypes? Results from the GUSTO Study

Evelyn Xiu Ling Loo a  Lynette Pei-chi Shek a,d  Anne Goh f  Oon Hoe Teoh g  Yiong Huak Chan e  Shu E. Soh a,c  Seang Mei Saw c  Kenneth Kwek h  Peter D. Gluckman i,j  Keith M. Godfrey k,l  Yap Seng Chong b  Bee Wah Lee a  Hugo P. Van Bever a,d

n = 792

- Doctor-diagnosed eczema: 23.6%
  - Early (< 6 months) 53.5%
  - Intermediate (6 – 12 months) 23.0%
  - Late (> 12 months) 25.1%
Onset of AD...

ONSET = (soon after birth)

bad skin $\rightarrow$ **bad skin microbiome**

$\rightarrow$ skin inflammation

*(allergy not involved)*
Whole metagenome profiling reveals skin microbiome-dependent susceptibility to atopic dermatitis flare

Chng KR, et al. (Singapore)

These findings provide insights into how the skin microbial community, skin surface microenvironment and immune system cross-modulate each other, escalating the destructive feedback cycle between them that leads to AD flare.

Singapore studies on FLG

FLG null-mutations are associated with:

1. early onset disease
2. increased disease severity
3. increased bacterial flares

REFERENCES:

Epidemiologic risks for food allergy


FIG 1. Dual-allergen-exposure hypothesis for pathogenesis of food allergy. Tolerance occurs as a result of oral exposure to food, and allergic sensitization results from cutaneous exposure. GI, Gastrointestinal.
Sensitization to food

- Prenatally
- Through breast milk
- Eating – drinking
- Transcutaneous (eczema)
- Inhaling - smelling
Skin prick testing to food allergens in breast-fed young infants with moderate to severe atopic dermatitis.


- 59 infants
- moderate to severe AD
- exclusively breast fed
- mean age: 6.5 months

54/59 (91.5%) positive SPT !!!
Food allergy in eczema

- Young children (< 3 years-old)
- In moderate to severe eczema
- Limited number of foods involved
- Different routes of sensitization
- Transcutaneous route = typical for AD

**Foods:**
- egg > cow’s milk > soy > wheat > peanut
Maintaining factors of childhood eczema (Singapore)

AD is DYNAMIC!

- **food**
- **HDM**
- **Staph**
Contamination of Environmental Surfaces With *Staphylococcus aureus* in Households With Children Infected With Methicillin-Resistant *S aureus*

Stephanie A. Fritz, MD, MSCI; Patrick G. Hogan, MPH; Lauren N. Singh, MPH; Ryley M. Thompson; Meghan A. Wallace, BS; Krista Whitney, MD; Duha Al-Zubeidi, MD; Carey-Ann D. Burnham, PhD; Victoria J. Fraser, MD

**RESULTS** Methicillin-resistant *S aureus* was recovered from samples of environmental surfaces in 23 of the 50 households (46%), most frequently from the participant’s bed linens (18%), television remote control (16%), and bathroom hand towel (15%). It colonized 12% of dogs and 7% of cats. At least 1 surface was contaminated with a strain type matching the participant’s isolate in 20 households (40%). Participants colonized with *S aureus* had a higher mean (SD) proportion of MRSA-contaminated surfaces (0.15 [0.17]) than noncolonized participants (0.03 [0.06]; mean difference, 0.12 [95% CI, 0.05-0.20]). A greater number of individuals per 1000 ft² (93 m²) were also associated with a higher proportion of MRSA-contaminated surfaces (β = 0.34, *P* = .03). The frequency of cleaning household surfaces was not associated with *S aureus* environmental contamination.
Main triggers of eczema

- FOOD
- HDM
- STAPH. AUREUS

... all triggers are airborne - indoor

OUTDOOR LIFE STYLE is recommended

(cave: the sun)
Management of atopic dermatitis

= A PACKAGE
(involving life style)
Treating eczema...

1. “I cannot cure eczema.”

2. “But, I can...
   - control better
   - avoid complications
   - improve QOL.”
Management of AD
- 4 principles –

1. Holistic
2. Package
3. Life style
4. Safe
Treating eczema... 
... *is more than prescribing drugs*

- Education
- Life style
Cornerstones of treatment of AD

1. Moisturizers
2. Topical corticosteroids (?)
3. Antiseptics
Scarring in AD
Moisturizers...

- A lot of moisturizers on the market
- Some were not the subject of clinical studies
- Some compared to placebo (or baseline)
- No comparative studies
- Doctors → confused!

... go for scientific evidence!
Moisturizers
= cornerstone of treatment

→ Better knowledge of skin barrier defects

→ Better moisturizers
“Doctor, what is the best moisturizer for my child?”

“Ask your child!”

Affordable
Pleasant
Not irritable
To avoid...

- antibiotics
- oral medicines
  \(\text{(antihistamines, immunosuppressant)}\)
- extensive diets
- complex treatments
Primary prevention of eczema *(briefly)*

1. Bacterial products (to the mother)
2. Early moisturizing (from birth)
3. Breast feeding (4 – 6 months)
4. Early introduction of allergenic food *(?)*

= area of intense research!
Immediate Future of AD treatment

- **Corticosteroid-free treatment**

- Causal treatment (preventive treatment)

  - **Role of:**
    1. Early Immunotherapy
    2. Skin barrier restoration treatments
    3. Others *(bacterial products, antiseptics, calcineurin inhibitors, etc...)*
General conclusion

1. AD is complex, and its treatment should be holistic, involving patient and family.

2. Future: corticosteroid-free treatment (priority!)

3. Treatment: changes in life style
Focus on life style!

... back to nature!
Atopic Dermatitis (@ ECZEMA)

- Advises:

  - unravel the underlying mechanisms of each child with eczema -