Acne and atopic dermatitis – pearls for general practice

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Acne

- 40-50 million individuals/yr in US
  -$2.5 billion annual cost
- 85% are young 12-24
Comedonal acne

- Open comedone
- Closed comedone
Moderate inflammatory and comedonal acne
Nodulocystic acne most commonly leads to scarring.
Keloid formation after acne
Who is at higher risk for acne development?

- Family history of severe acne
- Medications
  - Corticosteroids
  - Lithium
  - Testosterone
- Patients with endocrine disorders
  - PCOS (Polycystic ovarian syndrome)
  - Hyperandrogenism
  - Hypercortisolism
  - Precocious puberty
**Associated endocrinopathy?**

- **Endocrine screening recommendations:**
  - Patients w/acne and signs of androgen excess
    - Peds: other sx of early puberty
      - Age 7 and under
    - Teens and adults: severe, quick-onset acne, menstrual irregularity, hirsutism, androgenic alopecia, infertility, acanthosis nigricans, obesity – especially truncal obesity, deepening voice
  - Tests
    - Metabolic syndrome work-up
      - Total testosterone, free testosterone, DHEA-S, LH, FSH (at onset of menses/within 2wks prior to onset of menses)
      - For kids: x-ray of hand and wrist bones, as screen for precocious puberty
### JAAD 2003 49: S1-37

#### MILD

<table>
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<tr>
<th>Comedonal</th>
<th>Comedonal and inflammatory</th>
<th>Comedonal and inflammatory</th>
<th>Nodular</th>
<th>Nodular and scarring</th>
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<td>1st choice</td>
<td>Topical retinoid</td>
<td>Topical retinoid + Topical antimicrobial</td>
<td>Oral antibiotic + Topical Retinoid +/- BPO (Benzoyl peroxide)</td>
<td>Oral Antibiotic + Topical Retinoid + BPO</td>
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### MODERATE

### SEVERE

- Maintenance with topical retinoid +/- benzoyl peroxide
A nice review of treatment...

Case 1

- 12 year old boy
- Has tried OTC salicylic acid containing washes, sporadic use
• For very mild early disease, especially in the very young:
  ◦ OTC benzoyl peroxide wash (best 4-6%)
  ◦ More effective than salicyclic acid and other OTCs
  ◦ Washes are less irritating than leave-ons and don’t bleach
  ◦ Use once daily, may use a mild soap-less cleanser (Cetaphil, Dove) for second washing of the day
  ◦ Examples of BPO: some Clean and Clear products, Perrigo wash, PanOxyl

• Next step: add a topical retinoid
  ◦ Tretinoin 0.025% cream (other options, combination product, adapalene, micronized formulations)

Mild comedonal acne

Over what age is acne expected: 7 years!
• This is the best class of medications for preventing comedones, effective and safe, vitamin A derivative, improves cell maturation and turn over, anti-inflammatory vs PMNs
• Apply to entire affected area, NOT as spot treatments
• Start application 2 nights per week
• SLOWLY increase to nightly, as tolerated – may never get to every single night
• Symptoms of irritation are common: redness, peeling
• Other warnings: can make acne worse before better, 2-3 months to see results, increases susceptibility to sunburn, waxing trauma, cost

Topical retinoids – keys to success
Moisturizer with SPF Use

- Use along with retinoid or alternate with retinoid if needed
- Combats over-drying induced by acne medications
- Counteracts increased photosensitivity
Case 2

- 16 year old girl
- Using a loofah scrub and benzoyl peroxide leave-on product
- Irregular menses
- Terminal hair growth on neck
- Acanthosis nigricans
• Consider metabolic syndrome w/u
• Stop the loofah, no picking
• Switch from leave-on BPO to BPO wash
• Add a retinoid
• It will take at least 2-3 months to see results
• Next step: add clindamycin 1% lotion QAM
  ◦ Other options: combo products (clinda-BPO, clinda-tretinoin), clindamycin solution or gel, azelaic acid

Mild inflammatory and comedonal acne

Always use BPO with abx
• 14 year old girl
• Has tried various topicals in the past
• This is a “good day” for her
• BPO wash
• Topical retinoid
• Discussion of topical versus oral antibiotic
  – May prefer to start with orals to get better faster (1-2 months vs 3), then taper to topicals
  – Or may prefer to start at lowest risk with topicals, then increase to orals if needed after 3 months
  – Role of OCPs

Mild-Moderate inflammatory acne
• Doxycycline and minocycline:
  • better bioavailability than tetracycline (CAN take with food)
    • Not for use in kids <8 yrs or pregnancy
    • Pseudotumor cerebri
• Doxycycline 50-100 mg daily-BID
  ◦ Pill esophagitis – MUST take with food and water, stay upright
  ◦ Photosensitivity
  ◦ Cost fluctuations
• Minocycline 100 mg daily-BID
  • Only oral antibiotic FDA approved for the treatment of acne
    ◦ DRESS
    ◦ Autoimmune phenomena
      • Lupus-like syndrome
      • Autoimmune hepatitis
• All will take 2-3 months to see full results, plan to treat for at least this long, then taper as tolerated. Our goal is usually to have kids of abx within 6 months, transitioning to topicals alone, +OCPs for girls if needed, or isotretinoin for severe cases

Oral antibiotics for acne
OCPs for acne

- FDA-approved for acne: Ortho-tricyclen (> 15 yrs), Estrostep (15), Yaz (14)
Case 4

- 17 year old boy
- Has tried topicals and 3 weeks of doxycycline in the past
• BPO wash
• Topical retinoid
• Oral antibiotic
• RTC 3 months, if not better -> refer to derm for consideration of isotretinoin. If this is not possible, try switching oral abx

Moderate-severe inflammatory acne
Severe, nodulocystic inflammatory acne

- Start an oral antibiotic and BPO wash and refer to derm
Dypigmentation: treat by prevention – ie appropriate acne therapy. Eventually existing pigmentation will fade over time if new lesions are avoided. Retinoids may help with fading, hydroquinone unlikely to help much. Sun protection!

A word about dypigmentation
Atopic Dermatitis
AD epidemiology

- Affects approx 17% of children at some point, usually before 5 years of age. (Laughter)
- Atopic triad: atopic dermatitis, asthma, allergic rhinitis. In kids with AD – 50% will have asthma, 50-80% develop allergic rhinitis. (Wuthrich, Leung)
- Food allergies: More common in children with atopic dermatitis, approx 15% of atopics will have food allergy (Hanifin), but food allergy is not the cause of the eczema. (Eichenfield)
- Genetic link – 75% concordance in identical twins, dizygotic – 20-30%.
Palmer C et al  Common loss of function variants of the epidermal protein filaggrin are a major predisposing factor in Atopic Dermatitis. Nature Genetics 2006;38:441-446
The Skin Barrier

Lipid Envelope, including ceramides and filaggrin monomers

Cornified Envelope

Corneocytes

LG

KHG - filaggrin

Desmosome

Spinous Cells

Basal Cells
Figure 1 Skin barrier function and allergic risk. An intact epithelial barrier (a) prevents allergens from reaching antigen presenting cells (APCs) in subepithelial tissues. Damage to this barrier (b) allows allergens to penetrate into the subepidermal layer and interact with APCs, leading to allergic sensitization and, secondarily, to allergic manifestations in the host.

Hudson TJ. Skin Barrier function and allergic risk Nature Genetics 2006;38:399-400
The Atopic March

- Eczema
- Food Allergy
- Rhinitis
- Asthma

Typical Age of Onset:
- Birth
- 3 months
- 1 year
- 2 years
- 3 years
- 7 years
- 15 years
Case 1
For this kiddo

• Discussed with mom that AD is **caused** by genetic factors leading to poor skin barrier and inflammation. *Emphasize chronicity.*

• Treatment rationale: rescue from inflammation, avoid exacerbating factors, and maintain with barrier enhancement.
• Bathe once – twice a day during this flare, no soap at all

• Immediately thereafter: apply triamcinolone 0.1% oint to all rashy areas, plain white petrolatum oint to any clear areas – don’t overlap
After 4 days of this treatment...
But, eczema returned...

• Flare prevention:
  – Continued careful use of emollient and avoidance of irritants
  – Prompt treatment of new inflammation
  – Proactive approach, if needed
    • continued topical c/s 1-2 times per week or topical calcineurin inhibitor 2-3 times per week to previously (chronically) involved skin
    • Schmitt et al BJD 2011;164:415-428
    • Review on latest safety data for TCIs
“When will my baby outgrow this?”

-> Of 2,416 patients followed for at least 5 years, not until age 20 did 50% have at least one 6 month symptom-free period

   – Margolis et al. JAMA Dermatol Apr, 2014 – of note this was based off of protopic registry info
   – ?more severe subset of kids more likely to persist?

-> A Swedish AD cohort of 894 children aged 1-3 years was followed up at 5 yrs, about 50% had remission.

   – Associations included: mild disease, later age of onset
Case 3

Cx pos MSSA
1 week later, several days of triamcinolone 0.1% oint and frequent plain white petrolatum – no abx
Do we need to use antibiotics for every AD flare?

• No
  – Often there is clearance with treatment of inflammation – promoting proper barrier function to return

• Staph aureus can be cultured in approx 90% of adults with AD

• Consider BIW - weekly dilute bleach baths to reduce microbial load, ¼ cup per 6-8 in deep standard size bathtub, or chlorinated swimming pool
Sleep disruption and AD

• See in 83% of patients and families during flares
  – Eichenfield et al JAAD 2014
  – ? Association with ADHD. Moderate to severe AD patients lose 1.9 hrs of sleep per night.
Guidelines of care for the management of atopic dermatitis


*** Most important take-home point ***

• **Education** leads to the best outcomes
  – Carefully review bathing, moisturizing techniques
  – Discuss known pathophys of AD
  – Regular follow-up for this chronic condition
  – Address safe use of topical medications: corticosteroids and calcineurin inhibitors
    • Not doing so can lead to steroid phobia and non-adherence