Adolescent Acne Update

Gina Brown, MD
Pediatric Dermatology
Alaska Center for Dermatology
Overview

• Cases
• Pathophysiology
• Differential Diagnosis
• Treatment
• Re-visit Cases
Case 2
Case 3
Case 4
<table>
<thead>
<tr>
<th>Acne Type</th>
<th>Age of Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatal</td>
<td>Birth to $\leq 6$ wk</td>
</tr>
<tr>
<td>Infantile</td>
<td>$6$ wk to $\leq 1$ y</td>
</tr>
<tr>
<td>Mid-childhood</td>
<td>$1$ y to $&lt; 7$ y</td>
</tr>
<tr>
<td>Preadolescent</td>
<td>$\geq 7$ to $\leq 12$ y or menarche in girls</td>
</tr>
<tr>
<td>Adolescent</td>
<td>$\geq 12$ to $\leq 19$ y or after menarche in girls</td>
</tr>
</tbody>
</table>
Acne

- **70-85%** of teenagers affected
- Younger age at presentation with earlier onset of puberty
- Can have multiple psychosocial affects
- Can lead to permanent scarring

*No, Bobby, the Tooth Fairy won't be visiting you anymore. I'm the Pimple Fairy.*
Acne pathophysiology

- Abnormal keratinization resulting in plugging of follicles
- Excess sebum production
- \textit{P Acnes} presence and activity
- Inflammation
Morphology
Differential Diagnosis

- Keratosis pilaris
- Perioral dermatitis
- Angiofibromas
- Drug induced acne (steroids, anticonvulsants, lithium, isoniazid)
- Gram negative folliculitis
Keratosis pilaris
Angiofibromas
Periorificial dermatitis
Evidence-Based Recommendations for the Diagnosis and Treatment of Pediatric Acne

Lawrence F. Eichenfield, Andrew C. Krakowski, Caroline Piggott, James Del Rosso, Hilary Baldwin, Sheila Fallon Friedlander, Moise Levy, Anne Lucky, Anthony J. Mancini, Seth J. Orlow, Albert C. Yan, Keith K. Vaux, Guy Webster, Andrea L. Zanenglein and Diane M. Thiboutot

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Treatment

• Benzoyl peroxide/OTC
• Topical retinoids
• Topical antibiotics
• Combination products
• Other topicals (dapsone, etc)
• Oral antibiotics
• Hormonal Tx (OCP, spironolactone)
• Oral isotretinoin
OTC products
Cleansing brushes
OTC Treatments

• Benzoyl peroxide
  – Best! Anti-inflammatory, anti-microbial and even a little comedolytic
    • Come as washes or leave-on products (2.5-10%)
    • Cost less than $10
    • Can cause irritation and bleach clothes, towels, pillow case. Have *not* seen hair bleach.
    • No bacterial resistance. Can prevent resistance when used with topical/oral antibiotics

• Salicylic acid

• Sulfur-containing products (better for rosacea)
Topical Retinoids

• Formulations
  – Adapalene (differin)
  – Tretinoin (retin-A)
  – Tazarotene (Tazorac)

• Creams, gels in various concentrations

• Normalize follicular keratinization by increasing cell turnover and decreasing adherence of shed cells

• Anti-inflammatory effects

• Pregnancy category C except Tazorac is category X

• Monotherapy ok.
Topical retinoids

- Compliance often an issue
- Side effects: dryness, scaling, irritation, photosensitivity
  - Pea size amount at bedtime
  - Not for spot treatment
  - Make sure face is completely dry
  - Start use every 3$^{rd}$ day, slowly work up to nightly use as tolerated
  - Use non-comedogenic moisturizer
- Often takes 2-3 months to show improvement
- Benzoyl peroxide inactivates generic tretinoin so should not be used at the same time
Adapalene

- Less irritating
- Lotion, cream, gel
- More expensive
- Use in patients with h/o atopic dermatitis or sensitive skin
Tretinoin

- Most commonly used
- Least expensive
- Cream, gel, microgel
- Inactivated by sun and benzoyl peroxide
Tazarotene

• Strongest
• Most irritating
• Usually not first line
• Category X
• Perhaps for severe comedonal acne
Topical antibiotics

- Clindamycin (solution, gel, lotion)
- Erythromycin (higher P. acnes resistance)
- Not for monotherapy—increased risk of bacterial resistance and not as effective
- *Always use with benzoyl peroxide*
Other topicals

• Azelaic acid (finacea)
  – Antimicrobial, anticomedonal
  – Helps with postinflammatory hyperpigmentation
  – Low potential for irritation

• Topical dapsone
  – Mechanism of action unknown
  – Low potential for irritation
Combination products

- Benzoyl peroxide and topical antibiotic
- Retinoid and benzoyl peroxide
- Retinoid and topical antibiotic
- Can save time, increase compliance but more expensive
Oral Antibiotics

• Reduce *p* acnes
• Direct anti-inflammatory effects
• For moderate to severe inflammatory acne
• Use in combination with benzoyl peroxide to prevent resistance
• Can take 4-8 weeks to see effect
• Use 3-6 months, then taper medication over 3-6 months and maintain with topical retinoids and topical abx/bpo.
Oral Antibiotics

All are contraindicated in pregnancy and children < 9

- **Tetracycline** 500 mg BID
  - Inconvenient: diet restrictions
  - More resistance

- **Doxycycline** 100 mg BID
  - **Most photosensitizing, more GI disturbance**
  - Pseudotumor cerebri, erosive esophagitis, GI upset, increased risk IBD?

- **Minocycline** 100 mg BID
  - Reversible vestibular disturbance, pseudotumor cerebri, DRESS, drug induced lupus, pigmentation with long term use, increased risk IBD?
  - More expensive
Hormonal therapy

• FDA-approved for acne: Yaz, Ortho-tricyclin, Estrostep
  – All combination pills have ability to improve acne
  – Drospirenone *may* have increased risk of DVT, if so, effect likely small
  – Progesterone only options (depot-provera, Mirena, Nexplanon) can worsen acne
  – May add spironolactone – 50-200 mg PO daily, divide BID.
OCP

• Contraindicated if PMH/FH of stroke/clots or h/o migraines.
• Potential SE: breast tenderness, spotting, mood changes, weight gain
• Check BP and UPT before starting
Spironolactone

- Blocks androgen receptor/inhibits 5 alpha reductase
- SE: breast tenderness, increased urination, dizziness, menstrual irregularity
- Dose 50-200 mg
- Monitor potassium levels
- Category D in pregnancy
Isotretinoin (Accutane)

- Most effective but most potential side effects
- Category X
- Ipledge
- Usually a 5-6 month course
- Many get long term remission
Side Effects of Accutane

- Severe dryness of skin/mucous membranes
- Elevated lipids/transaminases
- Myalgias/Arthralgias/Headaches
- Bone pain
- Corneal opacities and decreased night vision - RARE
- Reversible alopecia

- Hyperostoses of the spine/feet – not in acne
- Premature epiphyseal closure – not in acne
- Photosensitivity
- Abnormal wound healing
- *CNS Effects: mood changes and pseudotumor cerebri
- *Teratogenicity: affects >60% of fetuses exposed, peak effects in 3rd week of gestation
- ? Increased risk IBD? (also ? inc with tetracyclines)
Accutane

• “The vast majority of patients are thankful that isotretinoin is available as a means of treatment. That is the most consistent side effect of isotretinoin”
  – Dr. Elliot Mostow
Other therapies

• Chemical peels
  – Glycolic acid
  – Salicylic acid

• Lasers
  – PDT
  – Isolaz

• Complementary and alternative Meds
  – Aloe vera, fruit-derived acids, kampo, ayurvedic herbs, and botanical products – no evidence of benefit
Acne and diet

• Controversial!
• Several reviews have found no relationship.
• Observation that indigenous peoples have lower rates of acne until moving to areas with Westernized lifestyle.
• Some evidence for relationship between glycemic load and acne
• Weak evidence for relationship between dairy intake and acne

Glycemic load and acne

• Interventional study:
  – 43 males, ages 15-25 years.
  – Randomized to low glycemic diet (25% calories from protein, 45% calories from low-glycemic index carbohydrates) vs control.

• Diet group had greater reduction in acne lesions (p=0.03), significantly improved insulin sensitivity and increase in sex hormone-binding globulin as compared with controls.

Pediatric Treatment Recommendations for Mild Acne

**Mild Acne** = Comedonal or Inflammatory/Mixed Lesions

- **Mild Comedonal Acne** (central face common in preteens and early teens)
- **More Extensive Comedonal Acne** (forehead involvement common in preteens and early teens; often with no or a few scattered superficial inflammatory lesions)
- **Mild Inflammatory Acne** (scattered superficial inflammatory papules/pustules + some comedones)

**Pediatric Treatment Recommendations for Mild Acne**

**Initial Treatment**
- Benzoyl Peroxide (BP)
- or
- Topical Retinoid
- or
- Topical Combination Therapy
  - BP + Antibiotic
  - or
  - Retinoid + BP
  - or
  - Retinoid + Antibiotic + BP

- Topical dapsone may be considered as single therapy or in place of topical antibiotic

**Inadequate Response**
- Add BP or Retinoid, If Not Already Prescribed or Change Topical Retinoid Concentration, Type and/or Formulation or Change Topical Combination Therapy

**Additional Treatment Considerations**
- Previous treatment/history
- Costs
- Vehicle selection
- Ease of use
- Managing expectations/side effects
- Psychosocial impact
- Active scarring
- Regimen complexity


Case 1

Photo courtesy of Sabra Leitenberger
Case 2

Photo courtesy of Sabra Leitenberger
### Pediatric Treatment Recommendations for Moderate Acne

#### Moderate Acne = Comedonal or Inflammatory/Mixed Lesions

- Note marked number of inflammatory lesions

#### Some Comedones Present

- Some comedones present

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#### Pediatric Treatment Recommendations for Moderate Acne

**Initial Treatment**

- Topical Combination Therapy:
  - Retinoid + Benzoyl Peroxide (BP)
  - Retinoid + (BP + Antibiotic)
  - (Retinoid + Antibiotic) + BP

**Inadequate Response**

- Change Topical Retinoid Concentration, Type and/or Formulation and/or Change Topical Combination Therapy

- Oral Antibiotic + Topical Retinoid + BP
  - Topical Retinoid + Antibiotic + BP

**FEMALES: Consider Hormonal Therapy**

**Additional Treatment Considerations**

- Previous treatment/history
- Costs
- Vehicle selection
- Ease of use
- Managing expectations/side effects
- Psychosocial impact
- Active scarring
- Regimen complexity

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Pediatric Treatment Recommendations for Severe Acne

Severe Acne = Inflammatory/Mixed and/or Nodular Lesions

Initial Treatment†
- Combination Therapy*
  - Oral Antibiotic
  - Topical Retinoid
  - Benzoyl Peroxide (BP)
  +/− Topical Antibiotic

Inadequate Response**†
- Consider Changing Oral Antibiotic
  AND
- Consider Oral Isotretinoin
  FEMALES: Consider Hormonal Therapy†

Note Diffuse Scarring

Topical dapsone may be considered in place of topical antibiotic
* Topical fixed-combination prescriptions available
** Assess adherence, consider change of topical retinoid
† Consider dermatology referral

Additional Treatment Considerations

- Previous treatment/history
- Costs
- Vehicle selection
- Ease of use
- Managing expectations/side effects
- Psychosocial impact
- Active scarring
- Regimen complexity
Case 4
Other considerations

• Irregular menses, hirsutism: Consider PCOS.
• Harsh soap, scrubbing and picking all to be avoided.
Dyspigmentation: treat by prevention – ie appropriate acne therapy. Eventually existing pigmentation will fade over time if new lesions are avoided.
Take home points

• Treat based on type of acne and severity
• Take step-wise approach
• All therapies have risk: discuss potential SE with patient and family
• Benzoyl peroxide should be used with topical and oral antibiotics to decrease risk of bacterial resistance
Thank you!
Acanthosis nigricans

• Related to insulin resistance/obesity
• Axillae/neck/antecubital fossae
• Screen for diabetes
• Weight loss is best treatment
Terra Firme Forme

• Retention hyperkeratosis
• Outer skin cells do not turn over properly – oils, dead skin, and dirt accumulate
• Can remove with alcohol swab
• Can remove gradually with application of isopropyl alcohol or dilute lemon juice
Nickel dermatitis with ID reaction
Case 4
Tinea/pityriasis versicolor

- Malassezia furfur
- Characteristically involves the seborrheic areas
- Most commonly noted in warm weather months
- Usually hypopigmented to pink-light tan
Tinea Versicolor

• Topical treatment
  – Selenium sulfide 2.5% lotion or Nizoral 2% shampoo x 10 minutes. Daily for one week, then weekly.
  – Clotrimazole or other -azole cream bid for 14 days.

• Oral treatment (adult dosing)
  – Fluconazole 100-200 mg/wk x 2-4 wks
  – Ketoconazole 400mg po, repeat in 1 week
  – Itraconazole 200mg x 7 days

• Pigmentation takes several months to normalize