Acne

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Learning Objectives

- to recognize different patterns of acne
- to discuss new treatment modalities
- to gain appreciation for side effects and proper use of common acne medications
Why should you care?
Stages of Acne Vulgaris

- Stage I: comedonal
- Stage II: papular
- Stage III: pustular
- Stage IV: cysts and nodules

Cutaneous scarring

- “punched out”, “ice pick”
- atrophic
- hypertrophic
More Acne Variants

- Gram-negative acne
- Steroid-induced acne
- Occupational acne
- Acne excoriée
- Acne cosmetica
- Acne mechanica
- Neonatal acne
Acne treatments

Figure 7-6
Mode of action of therapeutic agents.

- **Proliferation of *P. acnes***
  - Antibacterial effect
    1. Benzoyl peroxide
    2. Topical antibiotics
    3. Oral antibiotics
    4. Isotretinoin (works indirectly)
  - Inhibit sebaceous gland function
    1. Estrogens (oral contraceptives)
    2. Oral corticosteroids, very low dose (5-7.5 mg prednisone or 0.25 to 0.5 mg dexamethasone)
    3. Isotretinoin (Accutane)
    4. Anti-androgens (Spironolactone)

- **Increased sebum production**
- **Rupture of follicular wall**
- **Hair follicle (pilosebaceous unit)**

- **Pilosebaceous duct obstruction by cohesive hyperkeratosis**
- **Normalize the pattern of follicular Keratinization**
  1. Tretinoin
  2. Isotretinoin (Accutane)

- **Salicylic acid**

- **Antinflammatory effect**
  1. Intrallesional corticosteroids
  2. Oral corticosteroids
  3. Nonsteroidal antiinflammatory agents
  4. Antibiotics (prevent neutrophile chemotaxis)
<table>
<thead>
<tr>
<th>Acne Severity</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
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<tbody>
<tr>
<td><strong>1st Choice</strong></td>
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<tr>
<td>Comedonal</td>
<td>Topical retinoid</td>
<td>Topical retinoid + topical antimicrobial</td>
<td>Oral antibiotic + topical retinoid ± topical BPO</td>
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<tr>
<td>Mixed and papular/pustular</td>
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<tr>
<td>Nodular</td>
<td>Oral isotretinoin</td>
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<tr>
<td>Nodular/conglobate</td>
<td>Oral isotretinoin or high-dose oral antibiotic + topical retinoid ± topical BPO</td>
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<thead>
<tr>
<th>Alternative(s)</th>
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<tr>
<td>Alt. topical retinoid or azelaic acid or salicylic acid</td>
<td>Oral antiandrogen + topical retinoid ± topical antimicrobial</td>
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<tr>
<td>Alt. topical retinoid or topical antimicrobial or alt. topical retinoid + topical antimicrobial or azelaic acid</td>
<td>Oral antiandrogen + topical retinoid ± topical antimicrobial</td>
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<tr>
<td>See 1st choice</td>
<td>Oral antiandrogen + topical retinoid ± topical antimicrobial</td>
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<tr>
<th>Alternative(s) for females</th>
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<tr>
<td>Oral antiandrogen + topical retinoid ± topical antimicrobial</td>
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<tr>
<td>High-dose oral antiandrogen + topical retinoid ± topical antimicrobial</td>
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<th>Maintenance therapy</th>
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<td>Topical retinoid ± BPO</td>
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Alt: alternative; BPO: benzoyl peroxide

Topical medications

- Benzoyl peroxide
- Retinoids
- Antibiotics
- Dapsone
- Combination products
- Salicylic acid
- Sulfur products
Topical antibacterials

- Benzoyl peroxide preparations
  - 2.5–20% - eg. Benzac AC, Oxy, Benoxyl, PanOxyl, Clindoxyl, BenzaClin, Tactupump

- Antibiotics
  - Clindamycin phosphate (1-2%)
    - Dalacin T, Clindets
  - Erythromycin (1-5%)

- Dapsone
  - Aczone 5% gel
Retinoids : Vitamin A acid

- Tretinoin (Stieva-A, Retin A)
- Retin A micro
- Adapalene (Differin, Differin XP)
- Tazarotene (Tazorac)
Combination Formulations

- Antibiotic combo
  - Benzamycin gel (5% benzoyl peroxide + 3% erythromycin)
- Antibiotic + benzoyl peroxide
  - Clindoxyl gel/Benzaclin gel (5% benzoyl peroxide + 1% clindamycin)
- Antibiotic + retinoids
  - Stievamycin Gel (0.01-0.05% tretinoin + 4% erythromycin)
  - Biacna Gel (clindamycin 1.2% + tretinoin 0.025%)
- Benzoyl peroxide + retinoids
  - Tactupump (Epiduo) gel (adapalene 0.1%+ BP 2.5%)
  - Tactupump (Epiduo) forte(adapalene 0.3% +BP 2.5%)
Systemic therapies

- Oral antibiotics
- Oral contraceptives and antiandrogens
- Oral retinoids
Antibiotics

- **Tetracyclines**
  - Most commonly prescribed for moderate to severe acne
  - Tetracycline, doxycycline, minocycline
    - Suppress growth of *P. acnes*
    - Intrinsic anti-inflammatory properties
    - Avoid excessive sun exposure (except minocycline)
    - Avoid in pregnant women
    - Improvement in 6 weeks but may take 3-6 mo.
Adverse Effects of tetracyclines

Gastrointestinal – nausea, vomiting, epigastric burning
  ▪ Tetracycline > doxycycline & minocycline

Controversy over relationship with OCP

**Tetracycline**
  ▪ Inhibited by iron, zinc & calcium
  ▪ Serum sickness & Stevens Johnson syndrome – rare!

**Minocycline**
  ▪ Dizziness & pseudotumor cerebri
  ▪ Lupus & hyperpigmentation

**Doxycycline**
  ▪ Photosensitivity
Other antibiotics

- Macrolide
  - Erythromycin
- Sulfonamide
  - Trimethoprim-Sulfamethoxazole
Dosage examples

- Tetracycline 500 mg po bid or tid
- Doxycycline 100 mg po bid
- Minocycline 50-100 mg po qhs – bid
  - Doses of tetracyclines vary, as anti-inflammatory effect needs lower doses and antimicrobial higher doses, so depends on treatment aims and philosophy
  - All these are often continued for months (short courses unlikely to do much)
Hormonal- Women only

- **Oral Contraception**
  - **Tri-Cyclen**
    - Ethinyl estradiol (35mcg)/Norgestinate
  - **Diane 35**
    - Ethinyl estradiol & cyproterone acetate (androgen blockade)
  - **Yasmin**
    - Ethinyl estradiol & spironolactone derivative (drospirenone)
- **Aldactone (Spironolactone)**
Oral retinoids

- Isotretinoin (Accutane, Clarus, Epuris)
  - 13-cis retinoic acid
  - Moderate-severe unresponsive acne
  - 85% of pts clear their acne
  - 90% reduction of sebum production
  - *P. acnes* unable to survive
  - Normalization of follicular keratinization
Dosage

- Isotretinoin
  - 0.5 – 1.0 mg/kg/day (40mg/d avg. teen)
  - Total dose 120 mg/kg (up to 150mg/kg)
  - Usually start low 0.5 mg/kg X 4 wks. then increase to 1 mg/kg/day
    - Practically, for average-sized person, start at 40 mg/day, then increase to 60 or 80 mg/day after a month or so if tolerated
Adverse Effects

- Teenager
  - Flare first month
  - Dry eyes, dry nose, dry mouth
  - Active teens = sore joints and muscles
  - Can’t drink EtOH (liver)
  - Females must not get pregnant while on it and for at least 6 wks. following discontinuation of drug – potent teratogen
    - Some guidelines quote 3 months
Adverse Effects

- Liver toxicity
  - Monitor with liver function test
- Serum Triglycerides, Cholesterol may increase
- Teratogenicity ~50%, most significant adverse effect
- EtOH – must avoid
- Depression - controversial
Should you do monthly labs?

- Lipid and hepatic screen baseline and repeat in 2 months
- In women consider regular pregnancy testing
Physical Agents

- Acne surgery
  - manual removal of comedones
  - drainage of pustules and cysts
- Intrallesional corticosteroid therapy
- Cryosurgery
- Chemical peels
- Blue light
- Photodynamic therapy
  - photosensitizer + light – shrinks sebaceous glands
- Laser
Part 2 – Hidradenitis Suppurativa
Hidradenitis Suppurativa

- Chronic, recurrent, inflammatory disease
- Axilla, mammary, inguinal, perianal, perineal
- Multiple nodules, sinus tracts, fistulas and scarring
HS Comorbidities

- Smoking
- Obesity
- Hypertension
- Dyslipidemia
- Diabetes
- Thyroid Disorders
- Psychiatric Disorders
- Arthropaties
HS Hurley Stages

Stage I – 68% of patients
Single or multiple abscesses

Stage II – 28% of patients
Recurrent abscesses, sinus tract formation

Stage III – 4% of patients
Diffuse involvement of area, multiple interconnected tracts and abscesses

HS Treatments

- Antibiotics (topical and oral, dapsone)
- Surgery (Local excision, grafting)
- Biologic Therapies
  - Approved: Adalimumab
  - Others: Infliximab, Ustekinumab
- Retinoids
- Hormonal Therapies
- Intralesional steroids
- Laser (CO2 laser, NdYAG laser)
PEARLs

- **Acne**
  - Chronic condition – multiple treatment modalities
  - Topical retinoids – 1\(^{st}\) line treatment in acne; used in maintenance
  - Systemic therapy early to avoid scarring acne

- **HS**
  - Chronic condition associated with smoking and obesity
  - New biologic treatments