ALOPECIA
HANDLING YOUR PATIENT WITH HAIR LOSS

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DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIP(S) WITH INELIGIBLE COMPANIES

• Nothing to disclose

REFERENCES TO OFF-LABEL USAGE(S) OF PHARMACEUTICALS OR INSTRUMENTS

• Discussing off label treatments for both scaring and non-scarring alopecia—all generic medications.

All relevant financial relationships have been mitigated.
LEARNING OBJECTIVES

01
Understand the hair cycle and how it relates to clinical presentations of alopecia

02
Discuss the diagnosis and management of common types of alopecia

03
Review the signs and symptoms of scarring alopecia that should prompt early referral

BACKGROUND BASICS

ALOPECIA
DISORDER OF HAIR FOLLICLES

A hair follicle is a tube-like structure that is continuous with the epidermis and associated with sebaceous glands

Hair is produced through successive keratinization in hair bulb
Average growth is 2-6 years
100 hairs shed normally
Metabolically inert

5 million hair follicles
Density varies by anatomic site
100,000 on the scalp
30,000 on the face
Remainder on the body
ALOPECIA
THREE MAIN CAUSES

<table>
<thead>
<tr>
<th>Disorders of hair size</th>
<th>Androgenic Alopecia</th>
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<tbody>
<tr>
<td>Normal hair diameter = Terminal hair (0.06 mm)</td>
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<tr>
<td>Reduced hair diameter = Intermediate/Vellus hair (&lt;0.05 mm)</td>
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<td>Many small diameter hairs = Alopecia</td>
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<table>
<thead>
<tr>
<th>Disorders of hair growth</th>
<th>Telogen Effluvium</th>
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<tr>
<td>80% growing (Anagen)</td>
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<tr>
<td>15% resting/shedding (Telogen/Catagen)</td>
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<tr>
<td>Fewer growing hairs over time = Alopecia</td>
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<tr>
<th>Disorders of hair number</th>
<th>Discoid Lupus</th>
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<td>Inflammatory process</td>
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<td>Destruction of hair bulb = No hair = Scarring Alopecia</td>
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<tr>
<td>Lichen Planopilaris</td>
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<td>Folliculitis Decalvans</td>
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<td>Dissecting Cellulitis</td>
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ALOPECIA LIMITATIONS OF BIOPSY

4mm punch is standard

Limited information on follicle number and growth phase if processed standard

Vertical vs Horizontal Sectioning

Horizontal sectioning requires special processing protocol

Necessary in many cases for proper diagnosis
NON-SCARRING ALOPECIA

ANDROGENIC ALOPECIA

MALE PATTERN

Distribution:
- Involvement of Crown
- Temporal Regression
- Occipital Scalp Spared
- Near Complete Alopecia Possible

ANDROGENIC ALOPECIA

FEMALE PATTERN

Distribution:
- Initially Hair Part Widening
- Then Progressive Involvement of Crown
- Frontal Hair Line Preserved
- Absence of Complete Alopecia
ANDROGENIC ALOPECIA

• Hair diameter influenced by
  • Anatomical location
  • Mesenchyme imprinting is the basis of hair transplantation
  • Androgens
• In men on the face, promotes vellus to terminal hairs (“virilization”) yielding a beard
• On scalp with permissive genetics, promotes terminal to vellus (“miniaturization”) hairs producing alopecia

TREATMENT

PROLONG HAIR GROWTH
Minoxidil – mechanism unknown
Topical
• 5% foam daily OTC
• Irritant and contact dermatitis not uncommon
Oral
• Females: 1.25 mg to 2.5 mg daily
• Males: 2.5 mg to 5 mg daily
• Titrate higher after 12 wks based on response
• LE edema possible in some

MINIMIZE ANDROGEN SENSITIVITY
Finasteride – 5-alpha reductase inhibitor
Oral
• 1 mg daily
• Sexual dysfunction rare
• Implications on PSA screening
• Differential impact/import
• Males: “Freeze effect”; more important
• Females: less benefit given lower baseline androgen levels; post-menopausal severe only.
Consider spironolactone 100 mg daily as alternative.

A 63-year-old African American female with progressive scalp alopecia for over a decade. No improvement with Nizoral shampoo. Denies erythema or scaling.

Which diagnostic study would you obtain?
A) Serum testosterone & DHEA-S
B) VDRL and RPR
C) Hair Trichogram
D) Serum TIBC and Ferritin
E) Scalp Biopsy
A) Serum testosterone and DHEA-S → Androgenic alopecia reflects ↑ sensitivity not ↑ levels; helpful if other signs of virilization.

B) VDRL and RPR → Syphilitic alopecia is patchy & focal (“moth-eaten”)

C) Hair Trichogram → Hair shaft disorders or to exclude Tinea Capitis with KOH prep

D) Serum TIBC and ferritin → history, extent and pattern not consistent with TE

E) Scalp biopsy → rule out scarring alopecia which will change treatment; suspect in any female patient of color w/ “extreme” or early onset male distribution androgenic pattern.

CENTRAL CENTRIGUICAL CICATRIAL ALOPECIA
A MIMIC OF SEVERE ANDROGENIC ALOPECIA

African Americans Females
Alopecia Begins at Vertex and Expands
Scarring but usually does not appear inflammatory

TELOGEN EFFLUVIUM

Diagnosis is mainly historical
“More hair on the pillow, with combing or with washing”
Extensive or discrete alopecic patches are rare
No involvement outside the scalp

Alternations to the normal ratio of anagen to telogen hairs produces alopecia
TELOGEN EFFLUVIUM

TRIGGERS
Febrile illness
Chronic systemic illness
Medication changes involving hormones
Extreme dieting
Pregnancy

WORKUP
Biopsy frequently not diagnostic
Ferritin, Vitamin D, Zinc, TSH – less may be more

OUTCOMES
Self limited in three to six months
– Rare chronic variant in elderly

TREATMENT
Reassure
– Will not go bald

Minoxidil – short term
• 5% foam x 12 weeks
• 1.25 mg PO x 12 weeks

43-year-old female presents with visible areas of hair loss first noticed 3 months ago. She also reports increased hair shedding, but her scalp is otherwise asymptomatic.

What is the most likely diagnosis?
A) Telogen Effluvium
B) Alopecia Areata
C) Female Pattern Alopecia
D) Mixed Non-Scarring Alopecia
E) Scarring Alopecia

Mixed Non-Scarring Alopecia
Subclinical/mild female pattern alopecia "unmasked" by acute (chronic) telogen effluvium
ALOPECIA AREATA

- The most prevalent autoimmune disorder
- 2% of the global population
- Increasing incidence
- Adults > Children
- Females > Males
- Asian > Black > Hispanic > White
- Darker hair types, sedating anesthesia
- Other associated conditions:
  - Vitiligo
  - Thyroid disease
  - Anxiety/Depression

Ovoid, smooth, hairless patches on scalp

ALOPECIA AERATA

“SWARM OF BEES”

- Loss of follicular immune privilege
- Lymphocytic inflammation around anagen hair bulb
- Conversion into catagen and telogen hairs
- Hair shedding w/o regrowth

Alopecia

ALOPECIA AERATA

CONVENTIONAL - LIMITED

Grey hairs seen in early disease or in the recovery phase
ALOPECIA AERATA
CONVENTIONAL - EXTENSIVE

Uniform hair length helps to exclude severe cases for trichotillomania

ALOPECIA AERATA
OPHIASIS

Preferential involvement of temporal and occipital scalp. Rx resistant

ALOPECIA AERATA
DIFFUSE

Frequently confused with androgenic alopecia
ALOPECIA AERATA
TOTALIS TO UNIVERSALIS SPECTRUM

LOCALIZED, LIMITED – treatment responsive, remission common in 1 year
- IL Kenalog (5-10 mg/cc) q 4-6 weeks for up to 6 months
- Topical high potency corticosteroids daily
- Immunotherapy

EXTENSIVE, PROGRESSIVE – treatment resistant, full recovery rare
- Prednisone – high response rate; rapid relapse with discontinuation
- Pulsed weekly prednisone + MTX, mycophenolate mofetil, azathioprine – low efficacy (33% partial response); poor steroid sparing effect

- JAK Kinase inhibitors – new therapeutic class
  - Remission of alopecia totalis in patient with rheumatoid arthritis treated with tofacitinib
  - Baricitinib – selective JAK1 and JAK2 inhibitor; FDA approved for AA

ALOPECIA AREATA
TREATMENT WITH BARICITINIB

- Adults > than 50% hair loss
- Duration < 8 years
- Progression in the last 6 months

BARICITINIB 2mg/day
BARICITINIB 4mg/day

- Week 6
  - Randomization: 1:1
  - 2:3 (Placebo: 2mg/4mg)

- Week 36
  - Primary endpoint: Proportion of patients achieving a SADL score of ≤20
  - 80% scalp hair regrowth
ALOPECIA AREATA TREATMENT WITH BARICITINIB

- 2 MG DAILY
- 4 MG DAILY

PERCENTAGE OF PATIENTS WHO ACHIEVED ≥80% SCALP HAIR REGROWTH AT WEEK 36 AND WEEK 52

- PLACEBO < 2%

- N=1303; median 532 days of exposure
- No deaths
- Drug related treated events vs placebo
  - Acne
  - Elevated CPK
- Immune related events vs placebo
  - Herpes Zoster (N=34)
  - MI (N=1), PE (N=1)

Integrated safety analysis of baricitinib in adults with severe alopecia areata from two randomized clinical trials

- Benoit Engler 1, Alice Megens 1, Mylène Visson-Bouzereau 2, Athanasios Efstathopoulos 3, Dongham Song 1, 2, Gideon E. Bawa-Raphe 1, Jie Yan 1, Sheng-Ling Liu 1, Jenny Wu 1, Shang Li 1, 2, Xuewen You 1, 2, Min Bahk 1, 2, 3, 4, and Joon-Ho Kim 1, 2

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### SCARRING ALOPECIA

**Natural History and Classification**

Inflammatory process destroys the hair follicle producing a scar
- Hair loss is permanent and irreversible
- Chronic slow progressive time course with spontaneous "remission"
- Difficult to treat
- Early intervention has large impact on outcome

#### Lymphocytic Group
- Discoid Lupus
- Lichen Planopilaris
- Frontal Fibrosing Alopecia
- Central Centrifugal Cicatricial Alopecia

#### Neutrophilic Group
- Folliculitis Decalvans
- Dissecting Cellulitis of the Scalp
- Acne Keloidalis Nuchae

### DISCOID LUPUS

**Most Common Scarring Alopecia**

Skin limited (ANA-) and in association with SLE (ANA+)

Produces skin scarring and permanent alopecia in hair bearing areas

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**Active DLE**

- Scaling red partially alopecic plaque

**Inactive DLE**

- Smooth scarred nearly completely alopecic patch
**LICHEN PLANOPILARIS**
- Vertex involvement usually
- Multi-focal with variable confluence
- Erythema, perifollicular scaling
- Pruritus, pain

**FRONTAL FIBROSING ALOPECIA**
A CLINICAL VARIANT OF LICHEN PLANOPILARIS
- Post-menopausal females almost exclusively
- LLP changes limited to frontal hairline

**FOLLICULITIS DECALVANS**
- Rare
- White males
- Hypersensitivity to Staph Aureus antigens
- Pustules with crusted and tufted folliculitis admixed into patches of scarring alopecia
OTHER NEUTROPHILIC SCARRING ALOPECIAS
Predominate in patients of color
Postulated follicular keratinization defect leading to occlusion and rupture

Dissecting Cellulitis of the Scalp - boggy nodules with alopecia and draining sinuses
Acne Keloidalis Nuchae - pustules with firm papules and plaques on occipital scalp

CLUES TO EARLY SCARRING ALOPECIA
WHEN TO REFER
Erythema, scale >> overt alopecia in early disease

"Seborrheic dermatitis"-appearing process that fails to respond to topical steroids or OTC anti-dandruff shampoos
- 1/3 – early scarring alopecia
- 2/3 – scalp psoriasis

CLUES TO EARLY SCARRING ALOPECIA
WHEN TO REFER
Diminished lateral eyebrows
"Tinea Capitis" in an adult

"Kerion"-like plaques common in neutrophilic scarring alopecias

"Seborrheic dermatitis"-appearing process that fails to respond to topical steroids or OTC anti-dandruff shampoos
- 1/3 – early scarring alopecia
- 2/3 – scalp psoriasis