Hair Loss

Basic Dermatology Curriculum

Last updated November 16, 2016
Goals and Objectives

Goal: To help learners develop a clinical approach to the evaluation of hair loss

After completing this module, the learner will be able to:

• List common causes of hair loss
• Differentiate sudden and gradual hair loss, and common causes of focal vs diffuse hair loss
• Discuss initial recommendations for common treatable causes of hair loss
Psychological impact

- Hair loss (alopecia) can be emotionally traumatic
  - Listen with empathy
- Patients complaining of hair loss may be fearful of going bald and often don’t feel heard by their doctors
- Many patients need reassurance and may benefit from support groups for hair loss
History of hair loss

1. How long have you noticed your hair loss? Was it sudden or gradual?
2. What areas of your scalp are affected by your hair loss?
3. Is the hair shedding by the roots or breaking off in the middle?
4. Have you had any medical problems, changes in medications, hospital stays, or significant emotional stressors?
5. Are you having scalp symptoms, such as itching, flaking, or burning?
Common causes of hair loss:
Sudden (shedding) vs Gradual (thinning)

- **Sudden loss**
  - Alopecia areata
  - Telogen effluvium
  - Tinea capitis
  - Some scarring alopecias

- **Gradual loss**
  - Female and male pattern hair loss
  - Traction alopecia
  - Trichotillnosis
  - Some scarring alopecias
Common causes of hair loss: Focal vs Diffuse

- **Focal hair loss**
  - Alopecia areata
  - Female and male pattern hair loss
  - Tinea capitis
  - Traction alopecia
  - Trichotillnosis
  - Scarring alopecias

- **Diffuse hair loss**
  - Alopecia totalis (type of alopecia areata)
  - Drug-induced hair loss
  - Iron deficiency anemia, hypothyroidism
  - Telogen effluvium
Physical Exam

- Examine scalp for inflammation (redness and scale)
- Compare part width of top of scalp with back of scalp
- Examine the entire scalp by making small parts in the hair
- Make note of location & extent of hair thinning or loss
- Perform a hair pull test to see if hairs come out at roots
- Perform a tug test to evaluate hair strength
Case One

Leticia Rivera
Case One: History

- HPI: Leticia Rivera is a healthy 18-year old latina woman who complains of a month of sudden, complete hair loss in two patches
- PMH: none
- Allergies: none
- Medications: none
- Family History: noncontributory
- Social History: senior in high school
- ROS: negative for weight changes
Two mostly hairless, smooth patches without scale, erythema, or inflammation, on vertex and right parietal scalp, maximum diameter 4cm, with positive hair pull test at periphery,
--Few wispy hairs on edge of one of the patches
--Hair pull test is positive if you grasp a lock of hair, and gentle pull on it until the end of the hairs, and more than a few hairs come out
Ms. Rivera has two patches of focal hair loss without scale or inflammation. What is the most likely diagnosis?

- a. Alopecia areata
- b. Discoid lupus alopecia
- c. Seborrheic dermatitis
- d. Telogen effluvium
- e. Tinea capitis
Case One, Question 1

Answer: a

Ms. Rivera has two patches of focal hair loss without scale or inflammation. What is the most likely diagnosis?

a. **Alopecia areata**

b. Discoid lupus alopecia (inflammation, scarring)

c. Seborrheic dermatitis (scaling, often diffuse, only rarely has hair loss)

d. Telogen effluvium (diffuse loss at the roots)

e. Tinea capitis (usually scaling)
Examples of alopecia areata
Alopecia Areata

- Autoimmune attack on hair follicles by lymphocytes → hairs fall out in patches
- Usually resolves without treatment in about 6 months—regrowth can start with thin hairs, or white hairs
- Associated with other autoimmune disorders, most commonly thyroid
  - Consider TSH/T4 if positive review of systems
- Can be in beard or any hair-bearing part of body
  - Can also have nail pitting
- Refer to dermatology if large area involved
Case One, Question 2

Which is an appropriate treatment recommendation?

a. Oral finasteride 5 mg per day
b. Topical 0.05% clobetasol solution
c. Topical dinitrochlorobenzene
d. Topical 1% hydrocortisone cream
e. Topical squaric acid
Answer: b

Which is an appropriate treatment recommendation?

a. Oral finasteride 5 mg per day (not appropriate for alopecia areata)

b. Topical 0.05% clobetasol solution

c. Topical dinitrochlorobenzene (possibly carcinogenic, not for limited involvement)

d. Topical 1% hydrocortisone cream (not strong enough)

e. Topical squaric acid (not for limited involvement)
Alopecia Areata treatment

• For limited involvement (<50%)
  – Reassurance: spontaneous resolution is common if few patches; some trials show no treatment is as good as topicals
  – Topical steroids (start with potent steroids)
  – Topical minoxidil may be added to steroids
  – Intraleisonal triamcinolone 2.5-10 mg/mL every 4-6 weeks
    • May cause atrophy, hypopigmentation
Alopecia areata treatment (cont.)

- For extensive involvement (>50%)
  - **Refer to dermatology**
  - Can use topical immunotherapy such as squaric acid dibutyl ester or diphencyprone
  - Can use topical anthralin
  - Consider psychological impact and recommend support groups like the National Alopecia Areata Foundation
Case Two

Travis Carey
Case Two: History

- **HPI:** Travis Carey is a 6-year-old with 3 weeks of hair loss in a single patch with overlying scale.
- **PMH:** none
- **Allergies:** none
- **Medications:** none
- **Family History:** 12-year old sister unaffected
- **Social History:** first-grader; lives with parents and sister; has a cat
- **ROS:** negative
- **Weight:** 24 kilograms
Case Two: Skin Exam
What is the most likely diagnosis of this patch of hair loss with overlying scale?

a. Alopecia areata
b. Discoid lupus alopecia
c. Seborrheic dermatitis
d. Telogen effluvium
e. Tinea capitis
What is the most likely diagnosis of this patch of hair loss with overlying scale?

a. Alopecia areata (doesn’t have scale)
b. Discoid lupus alopecia (scarring)
c. Seborrheic dermatitis (on the differential, but usually doesn’t cause hair loss)
d. Telogen effluvium (not single patches)
e. Tinea capitis

Answer: e.
Case Two, Question 2

• What is the best test to perform to confirm diagnosis?
  a. Anti-nuclear antibodies
  b. Bacterial culture
  c. Ferritin
  d. Fungal culture
  e. Thyroid stimulating hormone
Case Two, Question 2

• Answer: d.

• What is the best test to perform to confirm diagnosis?
  a. Anti-nuclear antibodies
  b. Bacterial culture
  c. Ferritin
  d. Fungal culture
  e. Thyroid stimulating hormone
Noninflammatory Tinea Capitis Variants

- Seborrheic variant
- "Black dot" variant
Inflammatory Tinea Capitis: Kerion

- A kerion is a painful inflammatory, boggy mass with broken hair follicles.
- May discharge pus, frequently confused with bacterial infection, but can also be superinfected.
- Kerion carries a higher risk of scarring (permanent hair loss) than other forms of tinea capitis.
- Expeditious referral to or contact with a dermatologist recommended.
- May consider oral prednisolone with an antifungal if kerion is present.
Case Two, Question 3

Travis’s KOH exam shows spores in the hair follicle. What is the most appropriate treatment?

a. Intrallesional triamcinolone
b. Oral griseofulvin 10 mg/kg/day
c. Oral nystatin 1-2 lozenges 4 times/day
d. Oral terbinafine 125 mg/day
e. Topical ketoconazole shampoo
Case Two, Question 3

Answer: d
Travis’s KOH exam shows spores in the hair follicle. What is the most appropriate treatment?

a. Intralesional triamcinolone (sometimes used for kerions; not for noninflammatory)

b. Oral griseofulvin 10 mg/kg/day (appropriate choice but dosing too low for tinea capitis)

c. Oral nystatin 1-2 lozenges 4 times/day (for candida species, not dermatophytes)

d. **Oral terbinafine 125 mg /day (based on 24 kg weight)**

e. Topical ketoconazole shampoo (not as effective as oral therapies)
Tinea capitis treatment

- Base treatment on fungal culture results

- *Trichophyton tonsurans* is most common in U.S. (90%)
  - Responds slightly better to terbinafine than griseofulvin
  - **Griseofulvin** 20-25 mg/kg/day for 8 weeks
    - May be less expensive than terbinafine, and is available in a children’s formulation
  - **Terbinafine** may not be available in children’s formulation; you can crush adult tablets and mix the granules in pudding, but this makes dosing for small children less accurate
    - Approximate doses: 62.5 mg/d (10-20 kg), 125 mg/d (20-25 kg), 187.5 mg/d (25-40 kg), 250 mg/d (>40 kg) for **4-8 weeks**

- *Microsporum canis* 2nd most common
  - Responds better to griseofulvin
  - Itraconazole is an alternative
  - May take longer to treat
Tinea capitis treatment

- Alternative treatments:
  - Fluconazole (3-6 mg/kg/d) is the only FDA-approved antifungal for children < 2 years of age
  - Itraconazole may also be used

- Lab evaluation
  - Meta-analysis shows severe adverse events are rare (less than 1%) for terbinafine and griseofulvin
  - In healthy patients, probably don’t need routine liver testing for short treatments, but parents should contact doctor if children have nausea, abdominal discomfort, jaundice, dark urine, or pale stools
Tinea capitis treatment (cont.)

- Treatment should be based on fungal culture
- Consider follow-up in 6-10 weeks
  - 1st visit: obtain fungal culture; empiric therapy
  - 2nd visit: evaluate for clinical response; consider repeat culture if not responding to therapy
- Sometimes treatment needs to go on for longer if not responding
- Give a treatment at least 8 weeks trial period before switching to an alternative
- If repeat fungal cultures are negative or no response after 3 months, consider referral to dermatology
Prevent spread

- Don’t share towels, brushes, combs, hats, or hair accessories
- Clean hair clippers with antifungal sprays
- Screen family members for symptoms and culture them; treat if present
- Ketoconazole or selenium sulfide shampoo (left on 5-10 minutes before rinsing) several times a week may help reduce spread
Let’s look at other common causes of focal hair loss

- Trichotilllilosis (trichotillomania)
- Traction alopecia
- Localized scarring alopecia
  - Includes discoid lupus, central centrifugal scarring alopecia, lichen planopilaris, etc.
Trichotilllitosis (trichotillilomania)

- Caused by pulling on the hair
- Different lengths of hair in the patch; may also have black dots from short hairs
- Lacks scale or inflammation
- Screen for anxiety, depression

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Traction alopecia

- Gradual loss of hair at frontal hairline and sides due to history of pulling hairstyles
- Characterized by “fringe” along hairline
- More common in African-American women
Localized scarring alopecia

- Alopecia with inflammation and scarring should be referred to a dermatologist
- Scarring: hair follicles destroyed by inflammation; shiny and lack pore markings (follicular ostia); scarring is permanent
- May need biopsy to differentiate causes
Case Three

Alice Netherton
Case Three: History

- **HPI:** Alice Netherton is a 32 year-old woman complains that her hair is falling out over the past three months. She has noticed a lot more hair in her brush and in the shower and is worried all her hair is going to fall out. She is tearful during the visit because her hair used to be so thick and was always a source of pride for her.
- **PMH:** seasonal allergies
- **Allergies:** none
- **Medications:** loratadine, oral contraceptives
- **Family History:** noncontributory
- **Social History:** lives with her spouse and two children, ages 4 months and 2 years
Case Three: Exam

Hair part less than 1cm

Positive hair pull test
Almost all of pulled hairs have a white bulb on the end
Case Three, Question 1

Alice’s exam shows a normal scalp, normal hair density, normal hair part width, with a positive hair pull. All the hairs have a white bulb at the end. What is the most likely diagnosis?

a. Alopecia areata  
b. Anagen effluvium  
c. Female pattern hair loss  
d. Telogen effluvium  
e. Traction alopecia
Case Three, Question 1

Answer: d

Alice’s exam shows a normal scalp with a positive hair pull. All the hairs have a white bulb at the end. What is the most likely diagnosis?

a. Alopecia areata (focal hair loss)
b. Anagen effluvium (seen with cancer treatment)
c. Female pattern hair loss (she has normal density)

**d. Telogen effluvium**
e. Traction alopecia (no loss at front, sides)
The Hair Cycle

• The hair follicle has a normal cycle of growth, regression, rest, and regrowth
  – Anagen (growth), catagen (regression), telogen (rest)

• It is normal to lose 100-200 hairs a day, but they will regrow

• Reassurance to patient:
  – A new hair is pushing the old one out
  – Even though the hair is being shed, the roots (follicles) are healthy
  – They can see more hairs in their brush or in the shower drain because our eyes can detect small differences. It doesn’t mean they’re going to go completely bald.
Telogen effluvium

- Telogen effluvium results in faster cycling of the hair, and loss of telogen hairs at the roots
  - Often triggered by illnesses or hospitalizations, pregnancy, medications, or significant mental stressors
  - **Usually resolves within 6-12 months of onset**
  - Lasts longer for some people, especially with subtle changes in estrogens, thyroxine, androgens, retinoids, cortisol, ferritin, vitamin D3, beta blockers, and general anesthetics
  - These are involved in hair cycle regulation
Case Three, Question 2

Alice wants labs done to rule out an internal problem. Which of the following is an appropriate lab test for diffuse hair shedding in otherwise asymptomatic women?

a. Anti-nuclear antibodies
b. DHEA-S and free testosterone
c. Ferritin and iron studies
d. Follicle stimulating hormone, lutienizing hormone
e. Tissue transglutaminase antibodies
Case Three, Question 2

Answer: c

Alice wants labs done to rule out an internal problem. Which of the following is an appropriate lab test for diffuse hair shedding in otherwise asymptomatic women?

a. Anti-nuclear antibodies
b. DHEA-S and free testosterone
c. Ferritin and iron studies
d. Follicle stimulating hormone, lutienizing hormone
e. Tissue transglutaminase antibodies
Evaluation of diffuse hair shedding

- Labs: TSH, T4, CBC, ferritin, iron studies, Vitamin D3
  - Each of these can contribute to changes in hair cycling
  - Iron deficiency is the most common treatable cause of hair shedding in women
  - Consider RPR if at risk for syphilis
- Medications may cause hair loss
  - Estrogens, beta blockers, oral retinoids, levothyroxine, tricyclic antidepressants, metformin
  - Many medications are reported to cause hair loss in clinical trials because it’s a common complaint
Case Four

Laura Hamilton
Case Four: History

- HPI: Laura Hamilton is a 62 year-old woman who is concerned because of gradual thinning of her hair on the top of the scalp. She is worried there is an underlying medical problem causing this.
- PMH: hypertension
- Allergies: penicillin
- Medications: lisinopril
- Family history: non-contributory
- Social history: widowed, lives with sister
- ROS: infrequent hot flashes
Case Four: Skin Exam
Mrs. Hamilton has thinning on the top of the scalp and increased hair part width, but a normally placed hairline. What is the most likely diagnosis?

a. Alopecia areata
b. Anagen effluvium
c. Female pattern hair loss
d. Telogen effluvium
e. Traction alopecia
Case Four, Question 1

Answer: c

Mrs. Hamilton has thinning on the top of the scalp and increased hair part width, but a normally placed hairline. What is the most likely diagnosis?

a. Alopecia areata (focal hair loss)
b. Anagen effluvium (seen with cancer treatment)
c. **Female pattern hair loss**
d. Telogen effluvium (normal hair part width)
e. Traction alopecia (no loss at front, sides)
Examples of female pattern hair loss
Mrs. Hamilton has female pattern hair loss. What is the best recommendation for treatment?

a. Avoid dyes or hair coloring  
b. Estrogen supplemenation  
c. Intralesional triamcinolone 40 mg/mL  
d. Oral finasteride 1 mg tablet daily  
e. Topical minoxidil 5% foam daily
Answer: e

Mrs. Hamilton has female pattern hair loss. What is the best recommendation for treatment?

a. Avoid dyes or hair coloring (not applicable)
b. Estrogen supplementation (no benefit)
c. Intralesional triamcinolone 40 mg/mL (no benefit for FPHL; also too high a concentration)
d. Oral finasteride 1 mg tablet daily (equivocal; may need higher doses in postmenopausal women)
e. Topical minoxidil 5% foam daily
Female pattern hair loss

• FPHL occurs in half of women by their 80s
  – Unlike male pattern loss, women tend to maintain their hairline
  – Tend to thin on top and spread down slowly
  – Men go “bald”; Women go “thin”
  – May start much earlier in some women

• First line therapy is topical minoxidil
  – OTC 5% minoxidil foam daily is less irritating than using the solution twice daily
  – May have some shedding when first using
  – It takes 6-12 months to see if it will slow the loss
  – Discontinuing will result in some hair loss

• Second line therapies
  – May benefit from low-level laser light therapy
  – Finasteride (only if postmenopausal), [cyproterone, flutamide], and spironolactone

[not approved for use in United States]
Examples of male pattern hair loss
Male pattern hair loss

• MPHL occurs in half of men by their 50s
  – Frontal hairline recedes, bitemporal thinning, then thinning on top and crown
  – Rating with Hamilton scale

• Treatment with topical minoxidil and/or oral finasteride or dutasteride
  – Finasteride and dutasteride associated with 2-4% sexual side effects
  – Finasteride and dutasteride lower PSA levels

• Good results with hair transplant but expensive
# Summary Table

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Focal/Diffuse/Patterned</th>
<th>Sudden/Gradual</th>
<th>Clinical Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alopecia Areata</td>
<td>Focal (usually)</td>
<td>Sudden</td>
<td>Active hair pull, no scaling, smooth</td>
</tr>
<tr>
<td>Tinea capitis</td>
<td>Focal</td>
<td>Sudden</td>
<td>KOH +, fungal culture +, scaling or black dots</td>
</tr>
<tr>
<td>Traction alopecia</td>
<td>Focal</td>
<td>Gradual</td>
<td>Fringe sign, frontal hairline and sides</td>
</tr>
<tr>
<td>Trichotillnosis (trichotillomania)</td>
<td>Focal</td>
<td>Gradual</td>
<td>Different length hairs, may have black dots</td>
</tr>
<tr>
<td>Telogen effluvium</td>
<td>Diffuse</td>
<td>Sudden</td>
<td>Active hair pull with telogen bulbs</td>
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<tr>
<td>Pattern hair loss</td>
<td>Patterned</td>
<td>Gradual</td>
<td>Classic patterns for men and women</td>
</tr>
<tr>
<td>Scarring alopecia</td>
<td>Focal</td>
<td>Gradual</td>
<td>Shiny +/- inflammation</td>
</tr>
</tbody>
</table>
Take home messages

- History and physical exam help distinguish focal from diffuse hair loss, and sudden loss (shedding) from gradual loss (thinning)
- Small smooth patches of acute loss suggest alopecia areata
  - Refer to dermatology if extensive (>50% of scalp)
- Small scaly patches in children with broken hairs (black dots) suggest tinea capitis—perform fungal culture
- Screen for depression and anxiety when you see patches of hairs with different lengths (trichotillnosis)
- Recommend natural, non-pulling hairstyles for traction alopecia
- Patients with scarring hair loss should be referred to a dermatologist for evaluation.
Take home messages

- Diffuse shedding with white bulbs is telogen effluvium
- Labs for diffuse shedding:
  - TSH, ferritin, iron studies, CBC, +/- Vit D, +/- RPR
  - Estrogens, levothyroxine, beta blockers, retinoids, can all cause hair loss due to disruption of hair cycle regulation
- Recognize female and male pattern hair loss
  - Minoxidil is first line therapy
- Show empathy for patients with hair loss
  - Support groups may help deal with psychosocial impact
- See references for more treatment information
Acknowledgements

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• McMichael A. Female pattern hair loss. Up-to-date.
End of the Module

To take the quiz, click on the following link:

https://www.aad.org/quiz/hair-loss-learners