Tips on getting the most from your alopecia pathology reports

Lynne J. Goldberg, MD
Jag Bhawan Professor of Dermatology and Pathology & Laboratory Medicine
Boston University School of Medicine
Director, Hair Clinic, Boston Medical Center
Disclosures

NONE RELEVANT TO THIS LECTURE
(Advisor – Living Proof)
(Royalties – UptoDate)
Why give this lecture?

- Hair loss evaluations are difficult
- Biopsies are often helpful
- Sometimes there is poor clinicopathologic correlation
- What can you do?
  - Call the pathologist
  - Have your pathologist review the slides
  - Do another biopsy
  - Sometimes a careful reading of the pathology report is all that is necessary!
Components of a pathology report

- Demographic Information
- Clinical Information
- Diagnosis
- Microscopic description
- Comment
- Gross Description
What the dermatopathologist wants to know

• We know you are busy
• More than “alopecia” and “scalp”
• Location, pattern, duration
• Additional pertinent history, treatment, etc.
• Why? Because CPC is essential
• I will share a few instructive patients
CLINICAL INFO: 44 year old F with variation in hair shaft size and PHL. FPHL vs. TE vs. AA

DIAGNOSIS: Non scarring alopecia with increased catagen/telogen hair follicles and focal inflammation within streamers, suggestive of alopecia areata

COMMENT: There is miniaturization with pinpoint hair shafts. While these findings are not diagnostic, I favor a diagnosis of alopecia areata. Clinicopathologic correlation is recommended.
Case #1 – What the clinician did not say...

- Patient diagnosed with breast cancer in 2013
- She underwent chemotherapy with a regimen including:
  - Docetaxel, carboplatin, and transtuzumab
  - Still on Tamoxifen
- Typical anagen effluvium within a month
- Regrowth was incomplete

**DIAGNOSIS:** Permanent chemotherapy induced alopecia
Case #1 – Permanent CIA. What did the report really say?

**DIAGNOSIS:** Non scarring alopecia with increased catagen/telogen hair follicles and focal inflammation within streamers, *[suggestive of]* alopecia areata

Could have read:

**DIAGNOSIS:** Alopecia areata

**DIAGNOSIS:** … consistent with alopecia areata
COMMENT: There is miniaturization with pinpoint hair shafts. While these findings are not diagnostic, I favor a diagnosis of alopecia areata. Clinicopathologic correlation is recommended.
The language of the report

- Is very important
- Expresses the dermatopathologist’s degree of certainty
  - Diagnostic of
  - Consistent/compatible with
  - Suggestive of
  - Non diagnostic but consistent with
  - Non diagnostic, differential includes…

SURE

NOT SO SURE
Case #2 – Importance of sampling

CLINICAL INFO: 68 year old white F with a clinical diagnosis of LPP vs. seb derm

DIAGNOSIS: Scarring alopecia, focal, c/w LPP

MICROSCOPIC DESCRIPTION: 24 hair follicles, predominantly in anagen and terminal in size. Half of the specimen exhibits loss of sebaceous glands and perifollicular fibrosis, and some of these follicles exhibit thinning of follicular epithelium. Dilated eccrine ducts and naked hair shafts are noted.
Where to biopsy

- Depends on what information you are seeking
  - Bald patch, is there scarring? Right in the middle!
  - Known scarring, what type? An area with inflammation where hair is still present
- FPHL vs. TE? An androgen dependent area
- Indicate if the biopsy was taken at the edge of a lesion
- There are times where a second biopsy is necessary
The “meat”

- Demographic Information
- Clinical Information
- Diagnosis
- Microscopic description
- Comment
- Gross Description
What the clinician wants

- The diagnosis
- Other things that may help us manage the patient
- As a dermatopathologist, I have received biopsies to
  - Assess degree of inflammation
  - Assess response to therapy
  - Assess potential donor grafts
• Hair follicles - Total number, size, cycle
• Sebaceous glands - Present, absent, focal loss
• Inflammation - Type, degree, depth
• Fibrosis
  • Location - perifollicular, interfollicular
  • Presence of fibrous tracts or follicular scars
• Misc. findings – pigment casts, naked hair shafts, mucin, etc.
• Don’t just focus on the diagnosis!
How the microscopic description helps

- An increase in telogen hairs does not equal TE
- Both the cycle and the size are necessary

<table>
<thead>
<tr>
<th></th>
<th>Controls</th>
<th>CTE</th>
<th>AGA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cases</td>
<td>22</td>
<td>355</td>
<td>412</td>
</tr>
<tr>
<td>Avg # total hairs</td>
<td>40</td>
<td>39</td>
<td>35</td>
</tr>
<tr>
<td>Avg # term hairs</td>
<td>35</td>
<td>35</td>
<td>23</td>
</tr>
<tr>
<td>Avg # vellus hairs</td>
<td>5</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>T:V ratio</td>
<td>7:1</td>
<td>9:1</td>
<td>1.9:1</td>
</tr>
<tr>
<td>% telogen hairs</td>
<td>6.5%</td>
<td>11%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Pay attention to the total follicular number

- Normal depends on race, wide variation
  - Caucasian 36 (26-45)
  - African American 21 (10-32)
- If follicular number is decreased, suspect scarring
- Not all scarring alopecias are primary
- Secondary scarring alopecia – traction alopecia, androgenetic alopecia, alopecia areata, permanent chemotherapy induced alopecia, etc.
Microscopic description for primary scarring

- Inflammatory cell type(s) present, if any
- Pay attention to the presence of plasma cells
  - They do not always mean syphilis
  - They can be seen in discoid lupus and morphea
  - They are often plentiful in neutrophilic scarring alopecia
- The depth of the inflammation
  - Infundibular lymphocytic inflammation ≠ scarring
  - Helpful in neutrophilic scarring
Inflammation depth in neutrophilic scarring alopecia

- Folliculitis decalvans
- Dissecting cellulitis
• This is where the thinking takes place
• Your dermatopathologist correlates the microscopic findings with the clinical information
• If the findings are not specific, you may get a differential diagnosis
• Pay attention to the language
Components of a pathology report

- Demographic Information
- Clinical Information
- Diagnosis
- Microscopic description
- Comment
- Gross Description

Nguyen et al. J Cutan Pathol 2011
The “Gross Description” – often overlooked!

- Should indicate 3 dimensions – width, length and depth
- Will often tell you if the biopsy is adequate
  - A 4 mm punch that is only 0.1 mm deep is a shave!
  - A 2 mm punch will likely not have enough follicles for adequate assessment
- The gross description will also tell you how the biopsy was cut – horizontal (“Headington technique”) or vertical
- Vertical sections are often inadequate for non-scarring alopecia
Ways in which a scalp biopsy can be cut

**Vertical sections**
- Cut through tissue top to bottom

**Horizontal sections**
- Cut across the tissue parallel to the epidermis

Nguyen et al. J Cutan Pathol 2011
Go to the gross description first

- “Dimensions: 2.5 mm”
- “3 mm punch”
- “Cylindrical specimen of skin measuring 4 mm in diameter”
- What is missing?

The depth!!
CLINICAL INFO: Diffuse, non-scarring hair loss. DDX: Alopecia. Punch biopsy parietal scalp

DIAGNOSIS: Early scarring alopecia with focal lichenoid interface folliculitis s/o lichen planopilaris

COMMENT: Discoid lupus is a consideration but not favored. No fungi or BMZ thickening on PAS stain, and no mucin on Alcian blue stain.

GROSS DESCRIPTION: Two fragments measuring 0.2 x 0.1 x 0.1 cm and 0.2 x 0.1 x 0.1 cm
Case #3 – How gross description can help

**CLINICAL INFO:** Diffuse, non-scarring hair loss. DDX: Alopecia. Punch biopsy parietal scalp

**DIAGNOSIS:** Early scarring alopecia with focal lichenoid interface folliculitis s/o lichen planopilaris

**COMMENT:** Discoid lupus is a consideration but not favored. No fungi or BMZ thickening on PAS stain, and no mucin on Alcian blue stain.

**GROSS DESCRIPTION:** Two fragments measuring 0.2 x 0.1 x 0.1 cm and 0.2 x 0.1 x 0.1 cm
Case # 3 – How gross description can help

**CLINICAL INFO:** Diffuse, non-scarring hair loss. DDX: Alopecia. Punch biopsy parietal scalp

**DIAGNOSIS:** Early scarring alopecia with focal lichenoid interface folliculitis s/o lichen planopilaris

**COMMENT:** Discoid lupus is a consideration but not favored. No fungi or BMZ thickening on PAS stain, and no mucin on Alcian blue stain.

**GROSS DESCRIPTION:** Two fragments measuring 0.2 x 0.1 x 0.1 cm and 0.2 x 0.1 x 0.1 cm
An adequate biopsy

- Punch biopsy
- Deep punch biopsy
- 4mms in diameter

<table>
<thead>
<tr>
<th>Punch Diameter</th>
<th>Square mms</th>
</tr>
</thead>
<tbody>
<tr>
<td>4mm</td>
<td>12.6</td>
</tr>
<tr>
<td>3mm</td>
<td>7.1</td>
</tr>
<tr>
<td>2mm</td>
<td>3.1</td>
</tr>
</tbody>
</table>

0.4 x 0.4 x 0.1
Case #3 – How gross description can help

**CLINICAL INFO:** Diffuse, non-scarring hair loss. DDX: Alopecia. Punch biopsy parietal scalp

**DIAGNOSIS:** Early scarring alopecia with focal lichenoid interface folliculitis s/o lichen planopilaris

**COMMENT:** Discoid lupus is a consideration but not favored. No fungi or BMZ thickening on PAS stain, and no mucin on Alcian blue stain.

**GROSS DESCRIPTION:** Two fragments measuring 0.2 x 0.1 x 0.1 cm and 0.2 x 0.1 x 0.1 cm
CLINICAL INFO: Lichen planopilaris

DIAGNOSIS: Sparse perivascular inflammation, without evidence of follicular destruction

COMMENT: The changes are subtle and non-specific. There is no interface dermatitis at the DEJ. In general, a 4mm punch biopsy from the active border is recommended for definitive diagnosis

GROSS DESCRIPTION: 0.2 x 0.1 x 0.2 cm cylindrical piece of tan skin
CLINICAL INFO: Lichen planopilaris

DIAGNOSIS: Sparse perivascular inflammation, without evidence of follicular destruction

COMMENT: The changes are subtle and non-specific. There is no interface dermatitis at the DEJ. In general, a 4mm punch biopsy from the active border is recommended for definitive diagnosis

GROSS DESCRIPTION: 0.2 x 0.1 x 0.2 cm cylindrical piece of tan skin
Case #3 – Repeat biopsy

**CLINICAL INFO:** Lichen planopilaris

**DIAGNOSIS:** Sparse perivascular inflammation, without evidence of follicular destruction

**COMMENT:** The changes are subtle and non-specific. There is no interface dermatitis at the DEJ. **In general, a 4mm punch biopsy from the active border is recommended for definitive diagnosis**

**GROSS DESCRIPTION:** 0.2 x 0.1 x 0.2 cm cylindrical piece of tan skin
Case #3 – FPHL

- This patient had an exam diagnostic of female pattern hair loss
- She was reassured and treated with topical minoxidil with improvement
- Take home message
  - Shallow biopsies are treacherous for dermatopathologists
  - Many of us are reluctant to say when a biopsy is too superficial
Take home points

• When you do a biopsy
  • Make it a deep 4mm punch
  • Give generous clinical information
• When you receive an alopecia (or any) path report
  • Read the wording carefully
  • Pay attention to the Gross Description
  • Make sure you have the info you need
• Do not hesitate to discuss the case
• Have the slides reviewed if necessary
• Rebiopsy if indicated
Thank You!