





Basics of Alopecia

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Lecture Objectives

- Processing of tissue
- Big concepts
- Diagnostic quandaries

Alopecia tissue processing

- Many studies—pathologist and labs have different techniques
- Transverse/horizontal never fully accepted
- Levels overwhelm the pathologist

HoVert

- Solves all problems but hard to process
 - ◆ Samples often without subcutis or <4mm

Proposed Working Classification Primary Cicatricial Alopecia*

- Lymphocytic
- Neutrophilic
- Mixed
- Nonspecific (idiopathic)

*Olsen E *et al.* *Summary of North American Hair Research Society (NAHRS) sponsored workshop on cicatricial alopecia, Duke University Medical Center February 10 and 11, 2001. JAAD 48:103-10, 2003.*

Proposed Working Classification

Primary Cicatricial Alopecia

- Lymphocytic

- ◆ Chronic cutaneous lupus erythematosus
- ◆ Lichen planopilaris
 - ◆ Classic
 - ◆ Frontal fibrosing
 - ◆ Graham-Little syndrome
- ◆ Classic pseudopelade (Brocq)
- ◆ Central centrifugal cicatricial alopecia
- ◆ Alopecia mucinosa
- ◆ Keratosis follicularis spinulosa decalvans.

Proposed Working Classification

Primary Cicatricial Alopecia

- Neutrophilic
 - ◆ Folliculitis decalvans
 - ◆ Dissecting cellulitis/folliculitis (perifolliculitis abscedens et suffodiens)
- Mixed
 - ◆ Folliculitis (acne) keloidalis.
 - ◆ Folliculitis (acne) necrotica.
 - ◆ Erosive pustular dermatosis.
- Nonspecific (idionopathic)

Patchy vs diffuse

- Patchy—Scarring, AA, trichotillomani
- Diffuse—FPHL, CTE (or both)

Common versus Uncommon

- Common—FPHL, LPP
- Uncommon—Lupus, CTE

Easy Patterns

- “Not all in the same grade at school”
- Insert fphl

Female pattern hair loss (androgenetic alopecia)

- “Not all in the same grade at school”
- Insert fphl

Easy Patterns

- Too many catagen/telogen to count
- Insert AA

Alopecia areata, subacute phase

- Too many catagen/telogen to count
- Insert aa

Easy Patterns

- No catagen/telogen phase follicles
- Insert lpp—ck15

Lichen planopilaris

- No catagen/telogen phase follicles
- Insert lpp

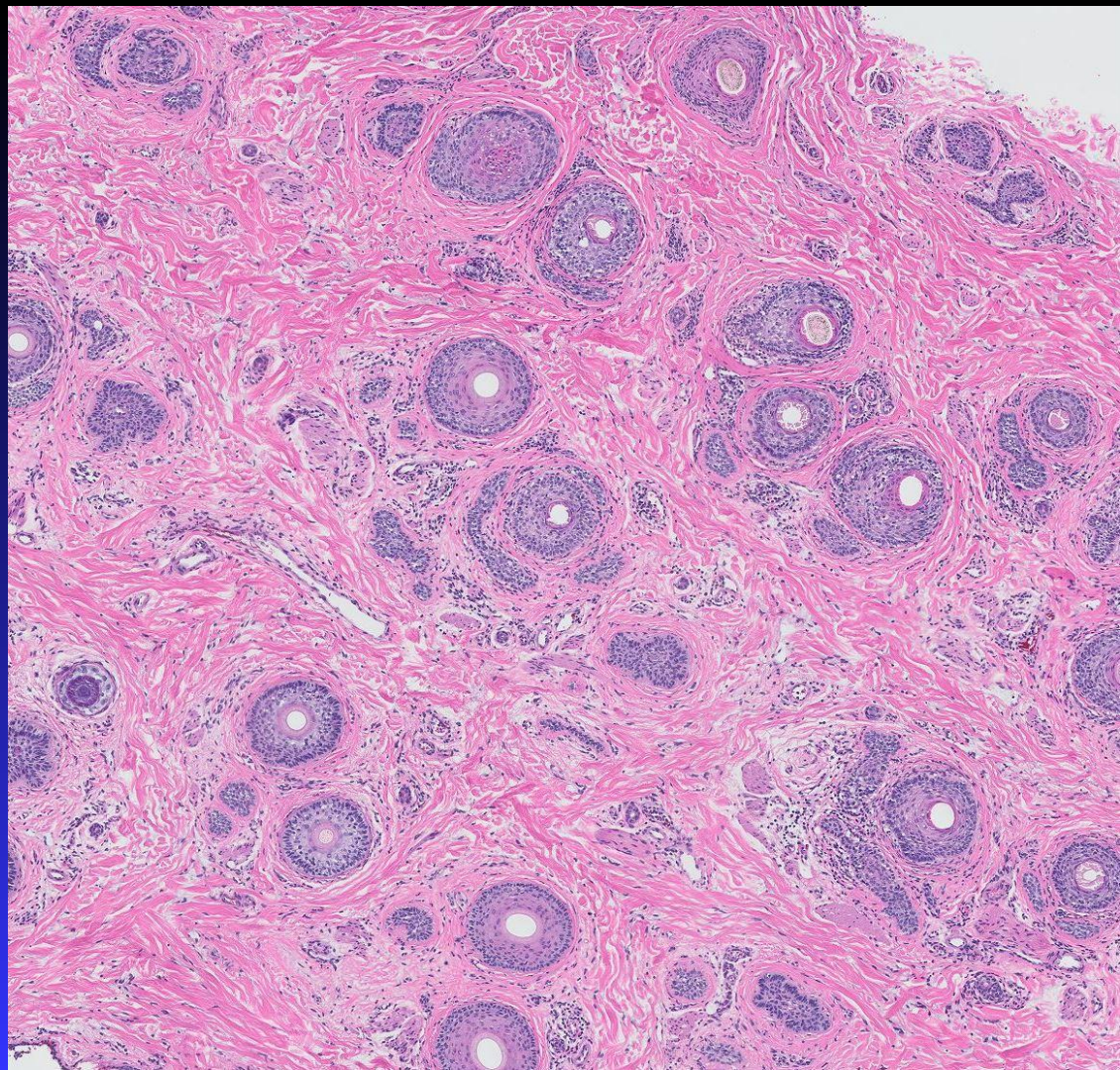
Easy Patterns

- Lichen simplex chronicus
- trichotill

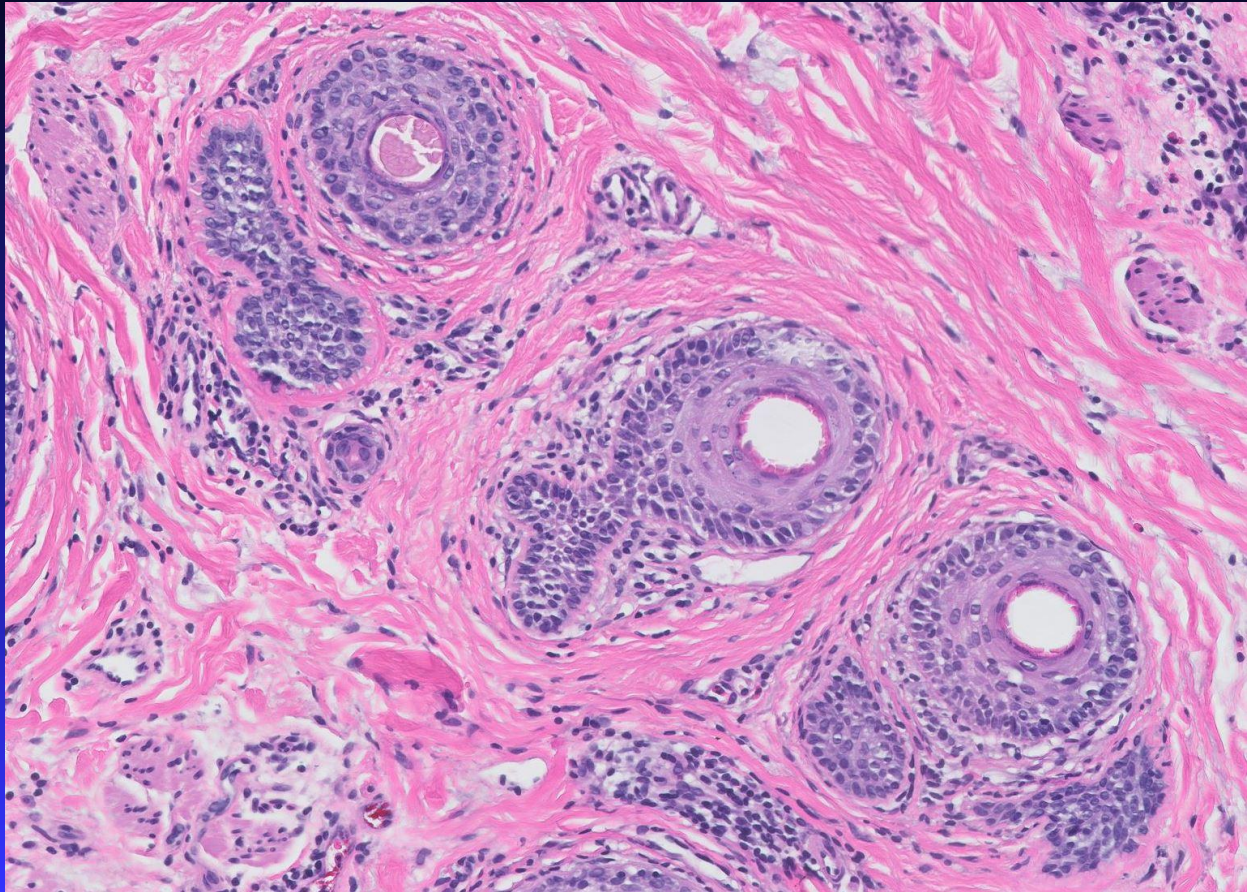
Trichotillomania

- Lichen simplex chronicus
- trichotill

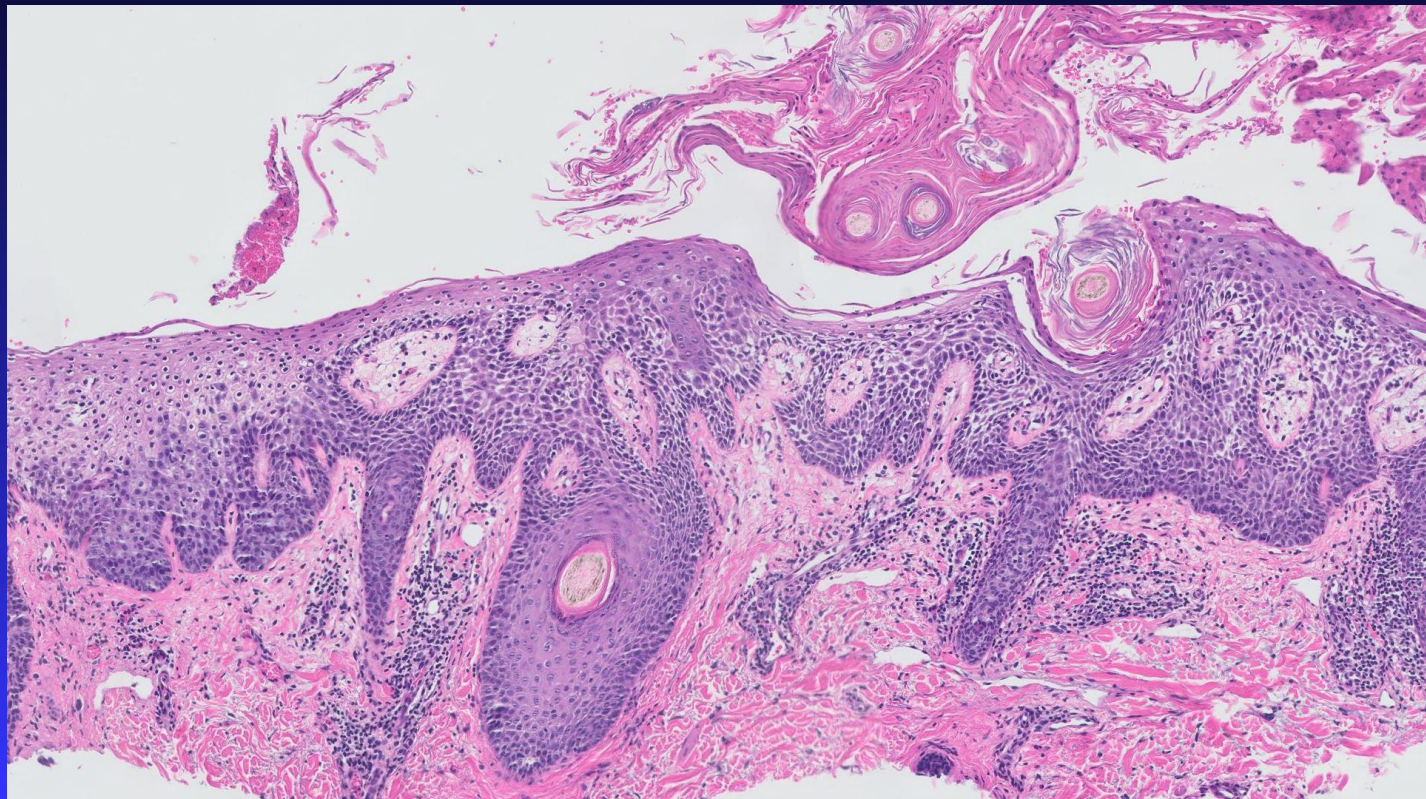
Case 1



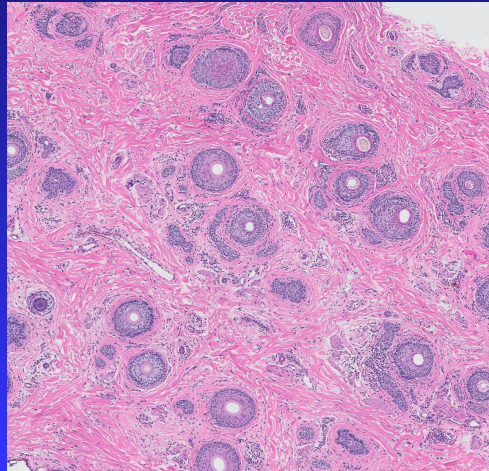
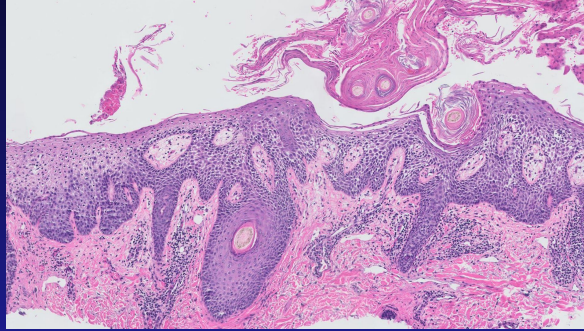
Case 1



Case 1



Case 1 Psoriatic Alopecia



Case 1 Psoriatic Alopecia

- Scaly patch—with or without hair loss
- Often with diagnosis of psoriasis
- Regrowth may or may not occur
- TNF- α inhibitor identical

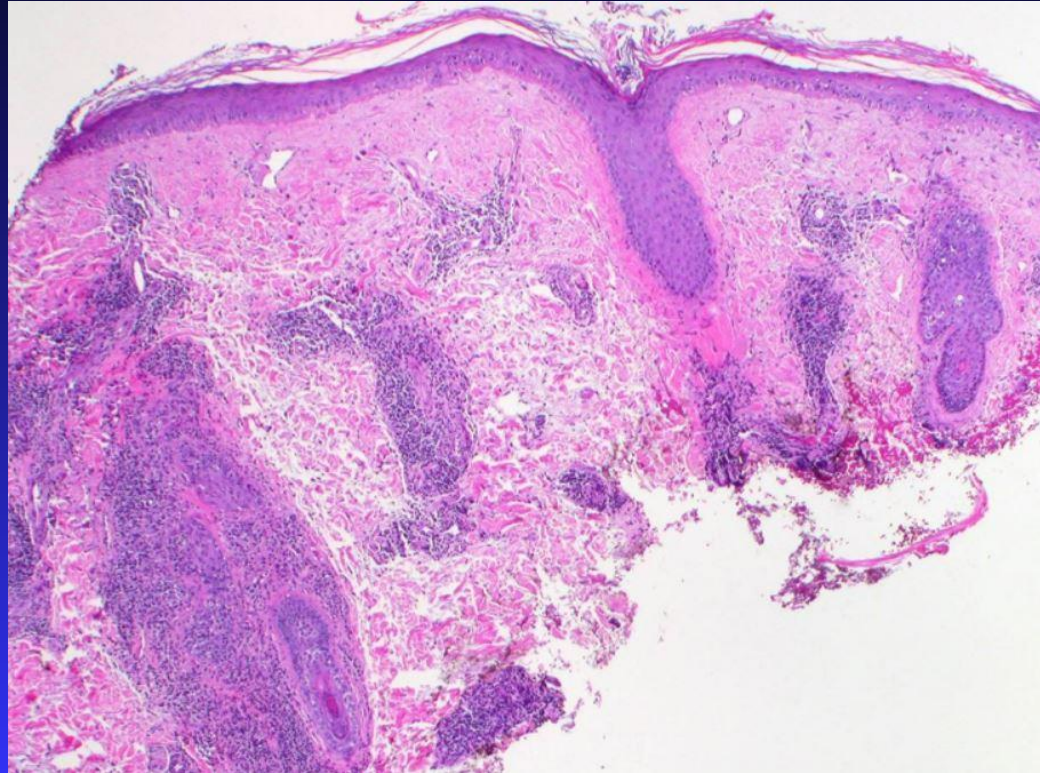
Case 1 Psoriatic alopecia

- Differential
 - ◆ Trichotillomania
 - ◆ Broken hairs, melanin casts
 - ◆ No miniaturization
- Site of sampling
 - ◆ Edge of hairline—more vellus
- Alopecia areata-like pattern

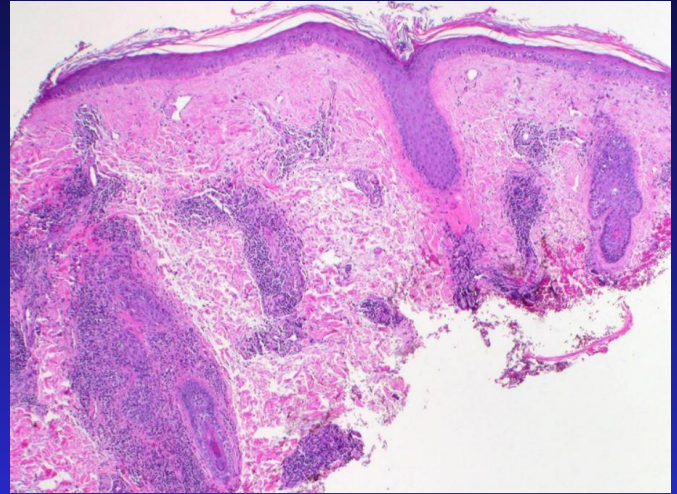
Case 1 Alopecia areata-like pattern

- Reports of alopecia areata (AA) in psoriasis or with TNF- α inhibitor are likely not AA

Alopecia areata-like pattern

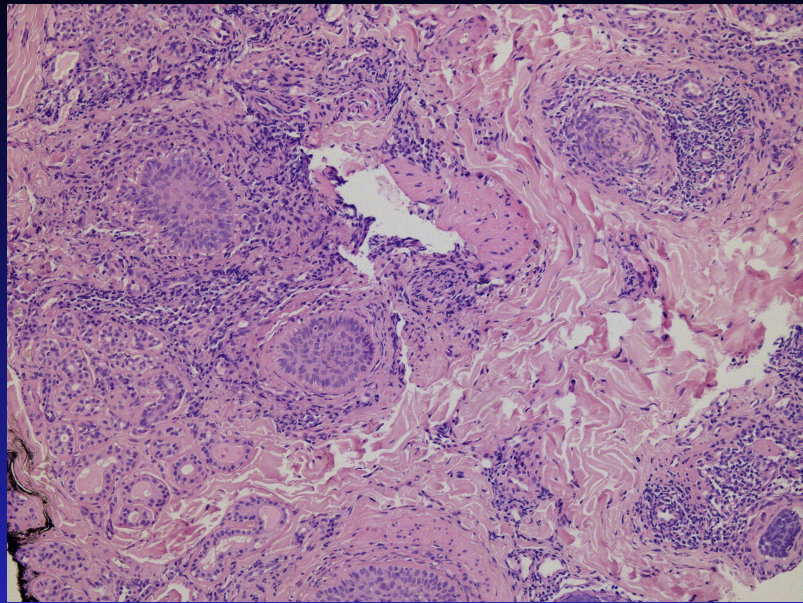
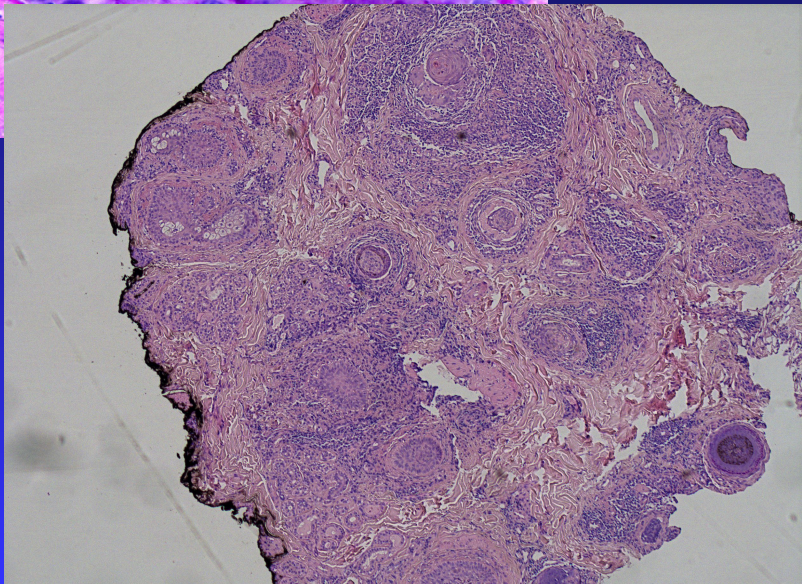
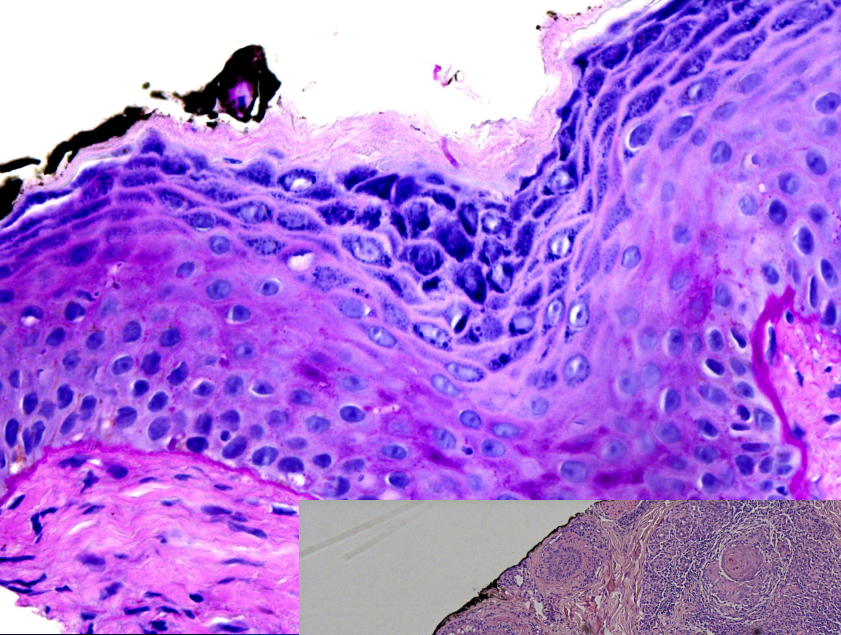


Systemic lupus erythematosus AA-like pattern

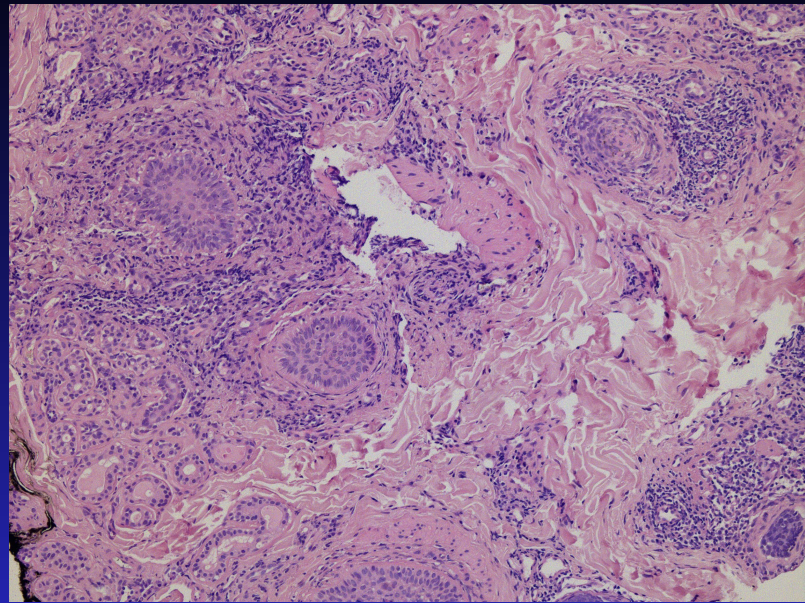
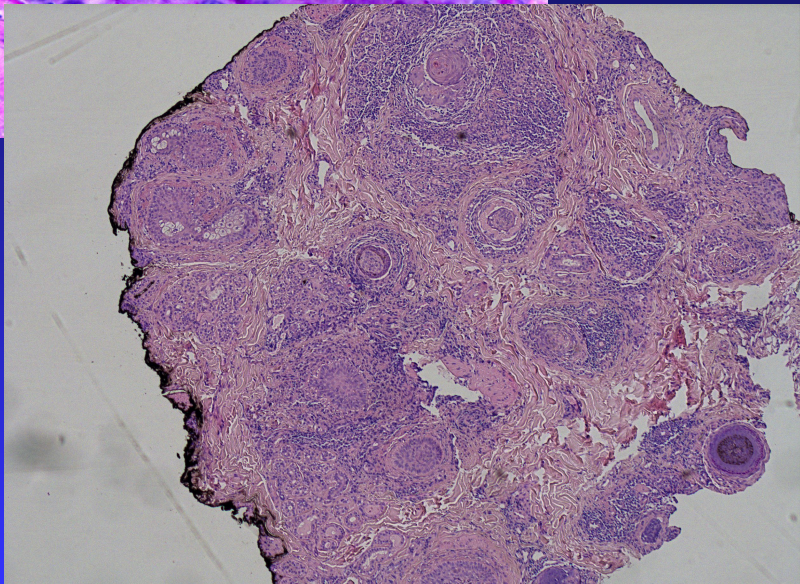
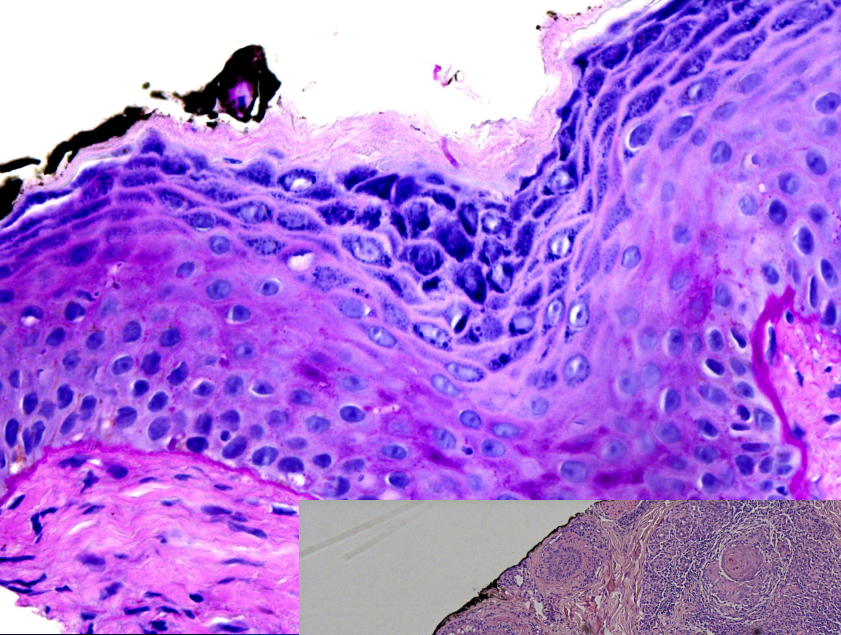


Journal of American Academy of Dermatology 2010; 63: 333-6

Sperling LC, Cowper SE, Knopp EA. An Atlas of Hair Pathology with Clinical Correlation
2nd ed. Boca Raton (FL): Taylor and Francis Group, 2012.



DIAGNOSIS?

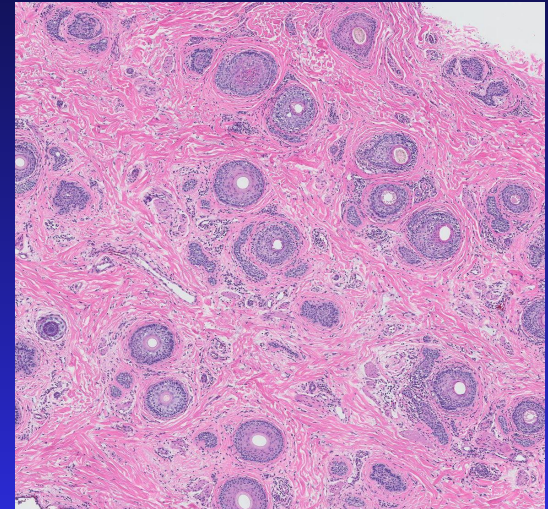


*Trichophyton
violaceum*

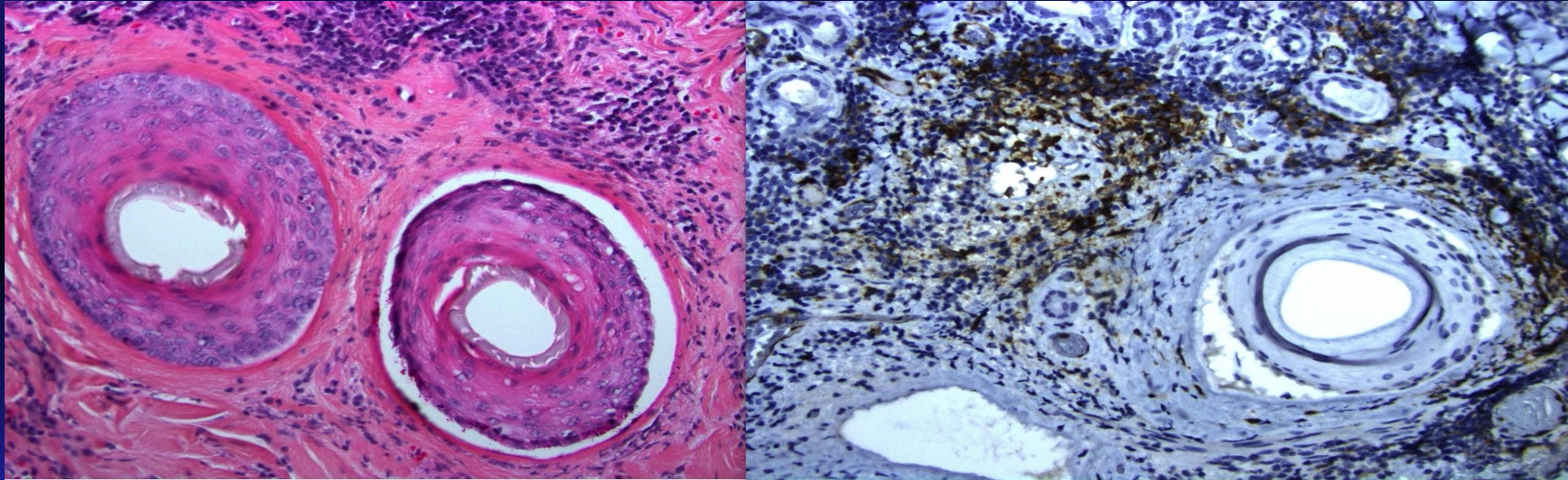
Alopecia Areata-like Pattern

Marked miniaturization with reduced anagen phase:

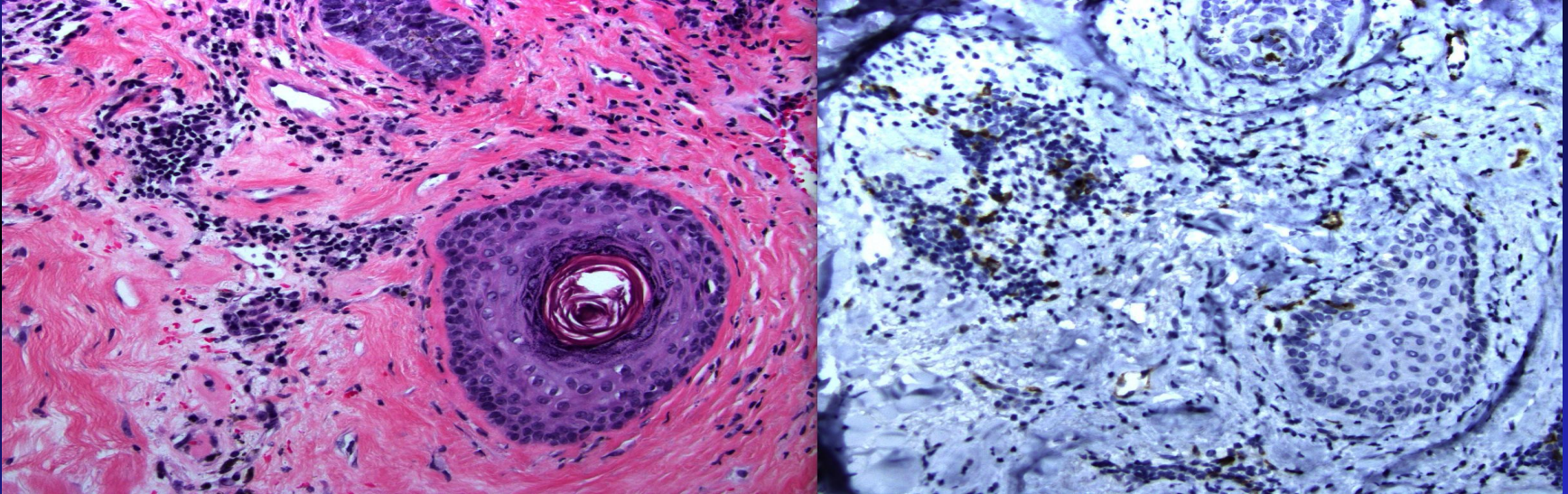
- Alopecia areata
- Psoriatic alopecia
- TNF-alpha inhibitor induced psoriasiform alopecia
- Syphilitic alopecia
- Non-scarring alopecia of systemic lupus erythematosus
- Dermatophytosis



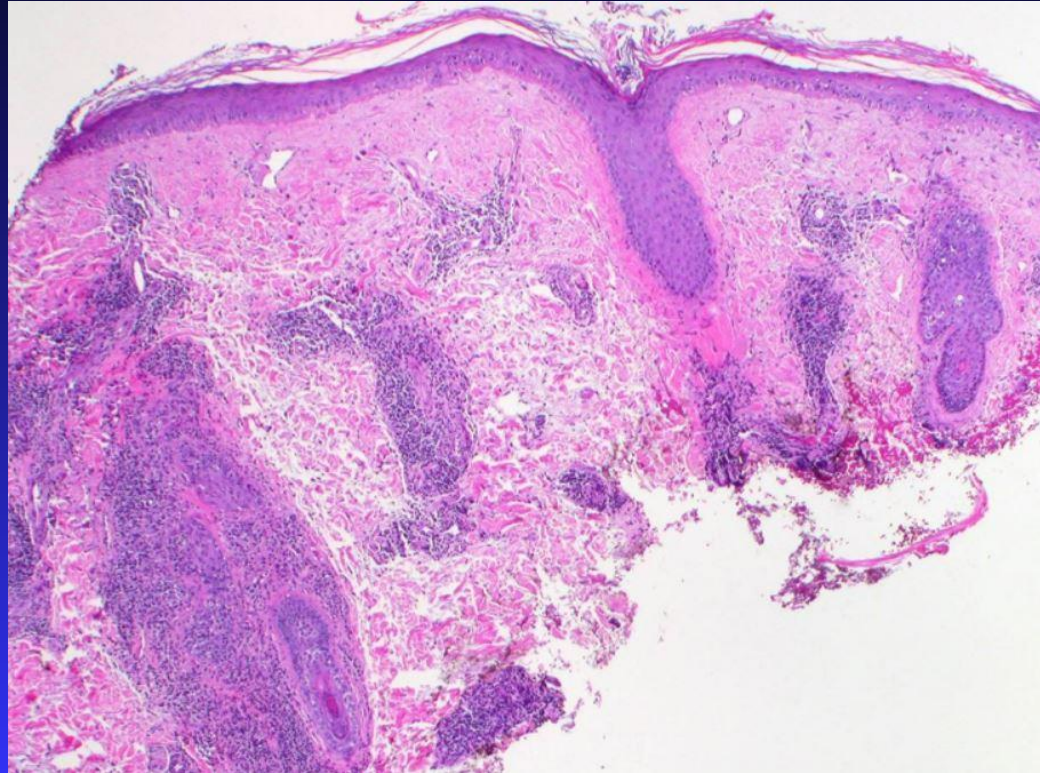
Clusters of CD123 = Lupus



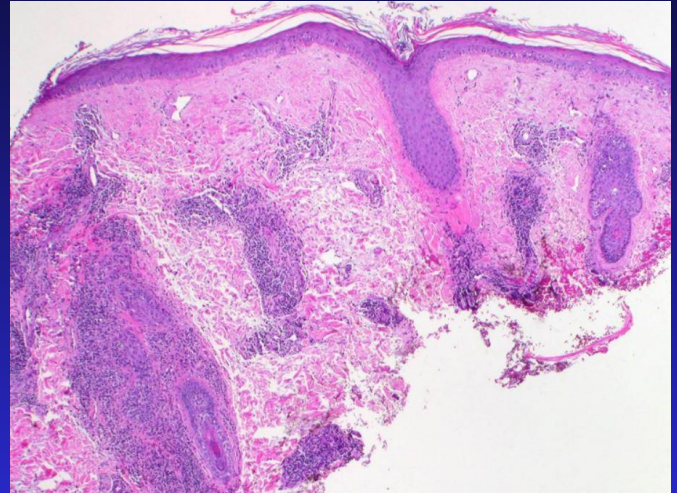
CD123 positive in endothelium



Alopecia areata-like pattern



Systemic lupus erythematosus AA-like pattern

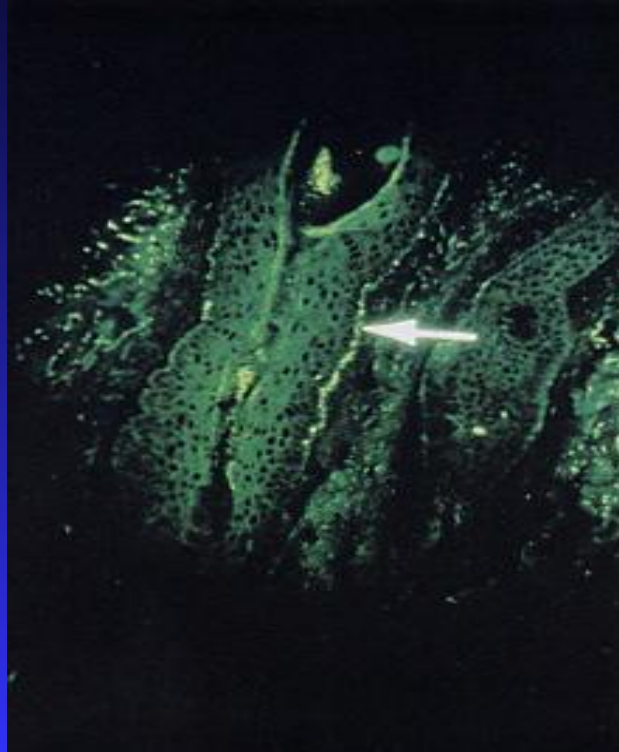
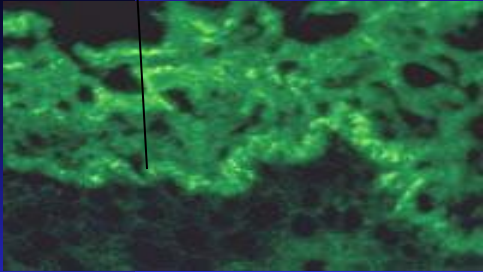


Journal of American Academy of Dermatology 2010; 63: 333-6

Sperling LC, Cowper SE, Knopp EA. An Atlas of Hair Pathology with Clinical Correlation. 2nd ed. Boca Raton (FL): Taylor and Francis Group, 2012.

Lupus Erythematosus

Lupus band in
76% of patients



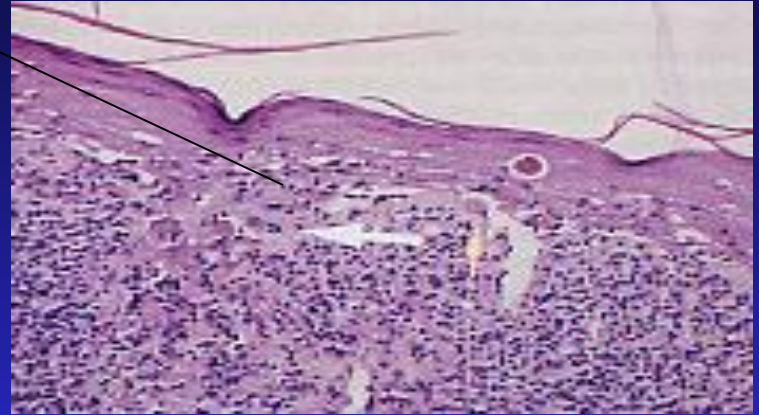
- Linear/ granular
- IgG, IgM, C3 at DEJ

Lichen Planopilaris.



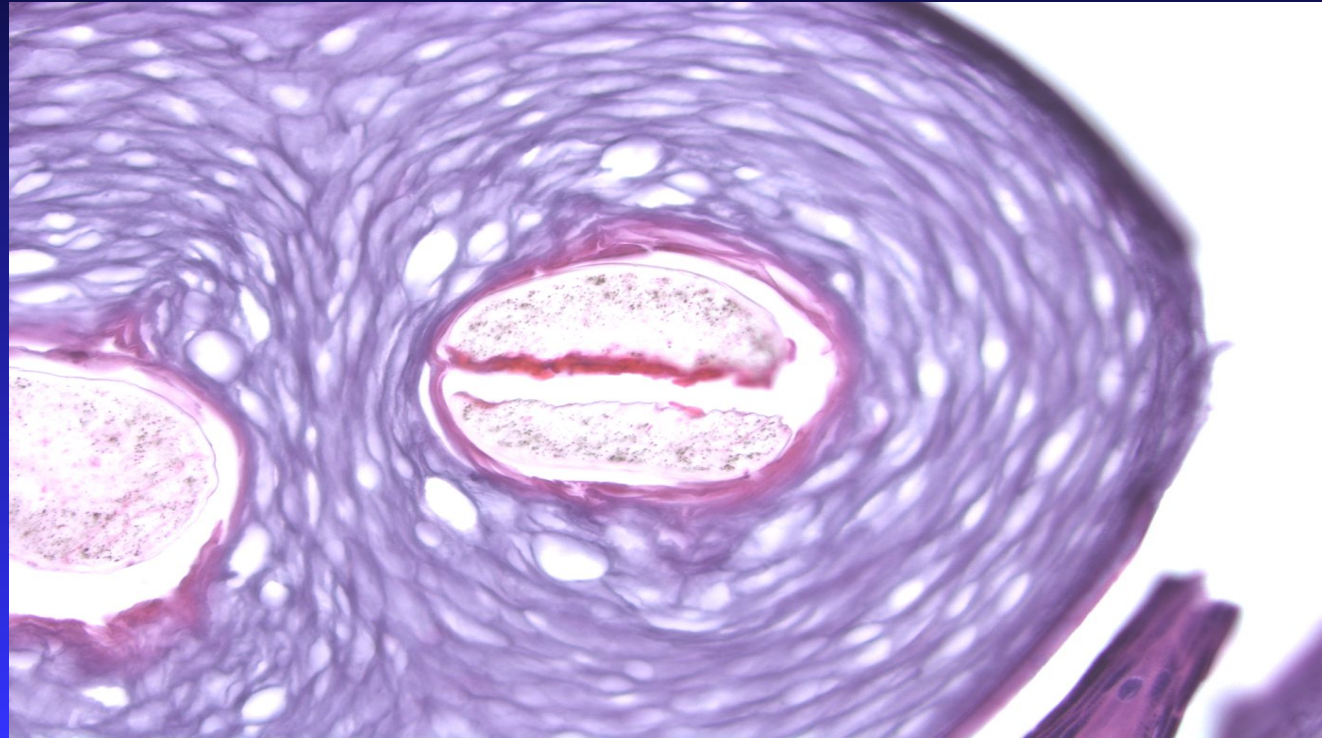
Colloid bodies

- Globular fluorescence of IgM, IgA and C3 (not IgG)

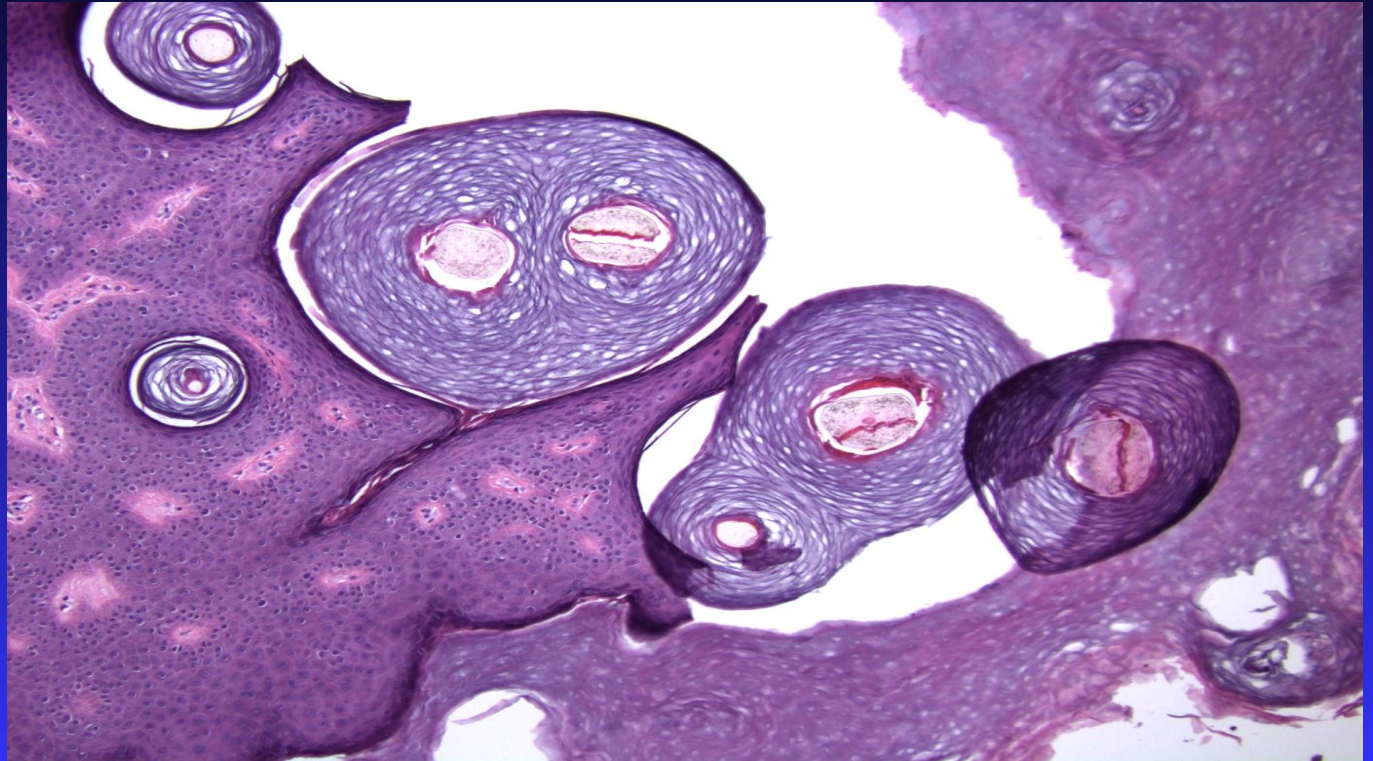


Trichotillois: Hamburger Sign

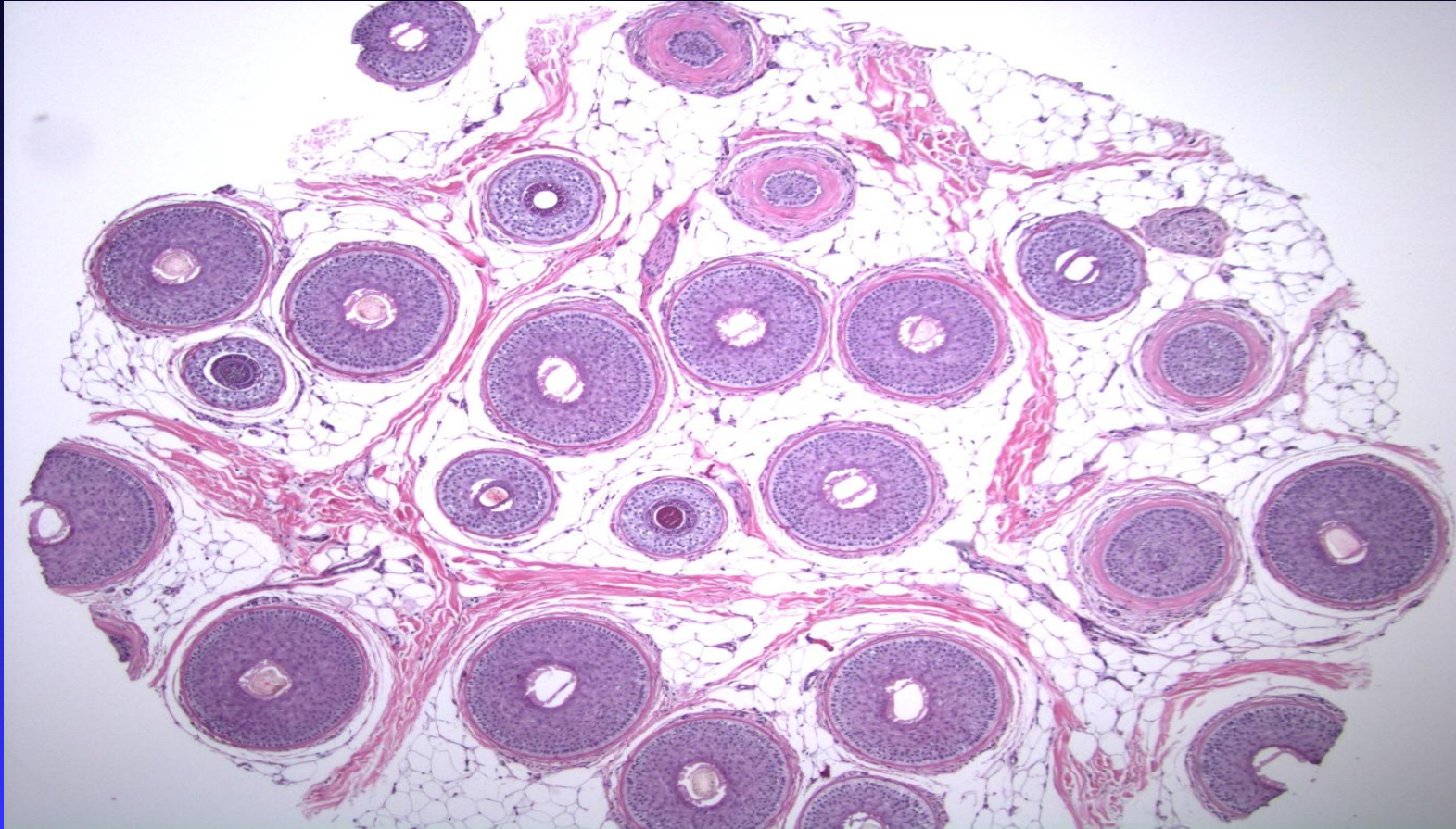
Royer MC and Sperling LC. Splitting hairs: the 'hamburger sign' in Trichotillomania. J Cutan Pathol. 33Suppl 2:63-4, 2006.



Lichen simplex chronicus



Trichotillosis—Catagen shift

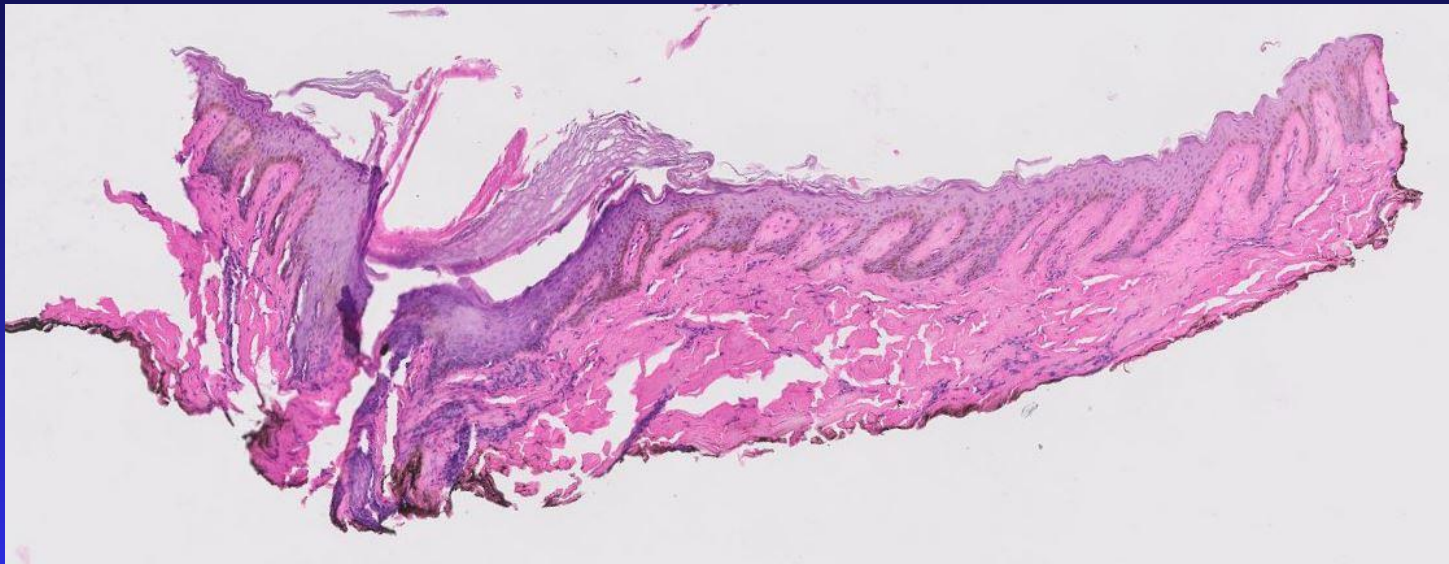


Case 2

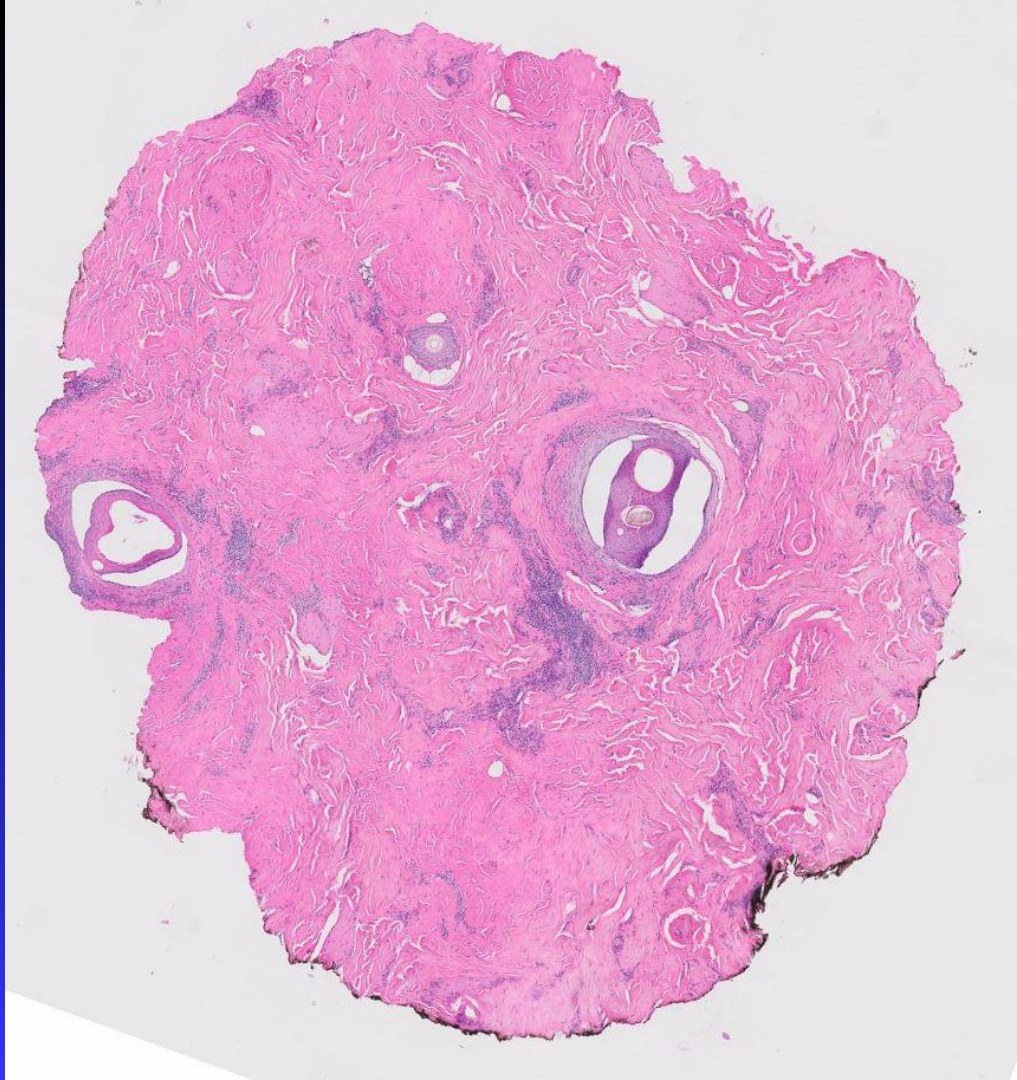
- 53 y/o female of African descent with an alopecic patch on crown of head



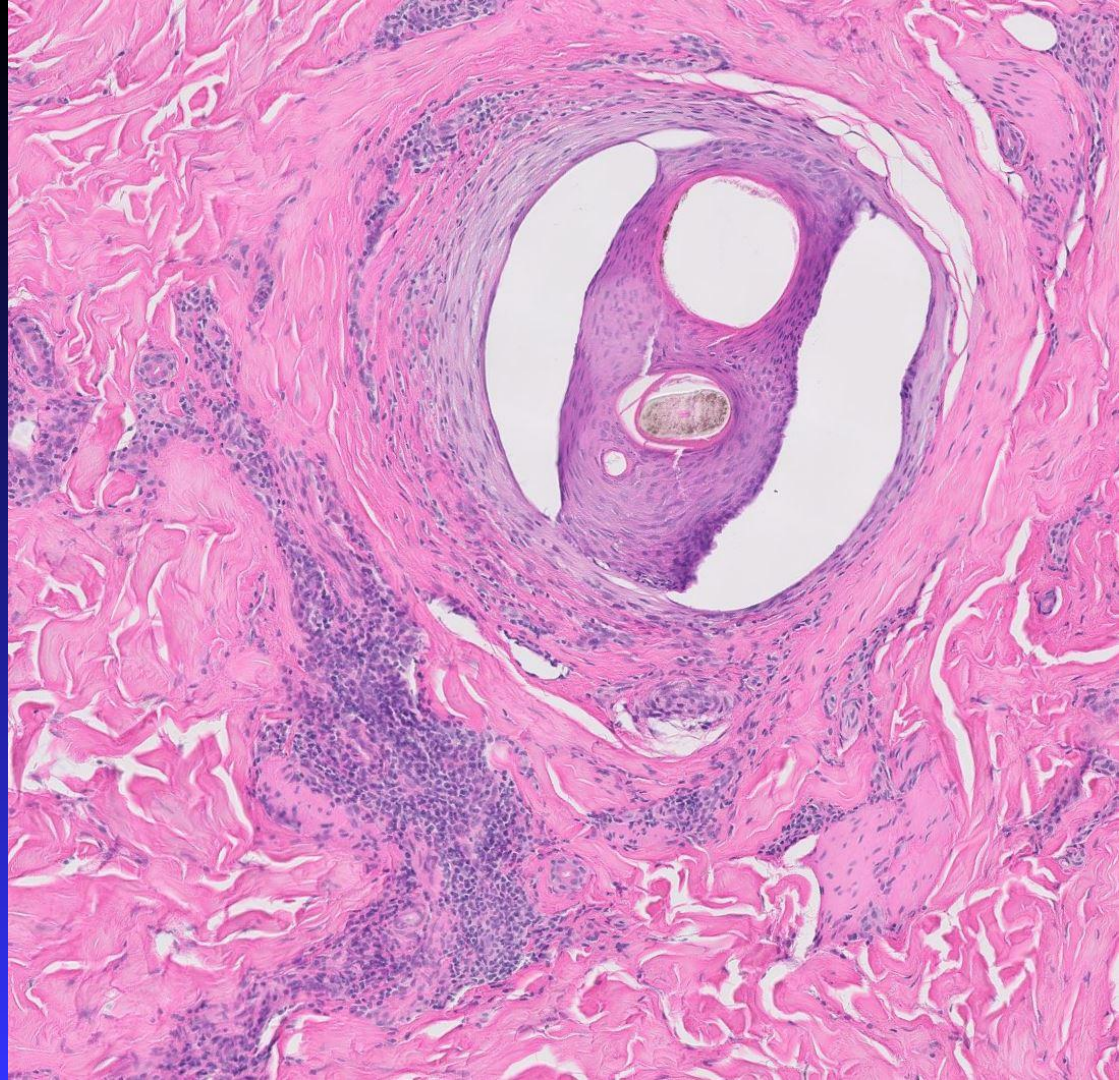
Case 2



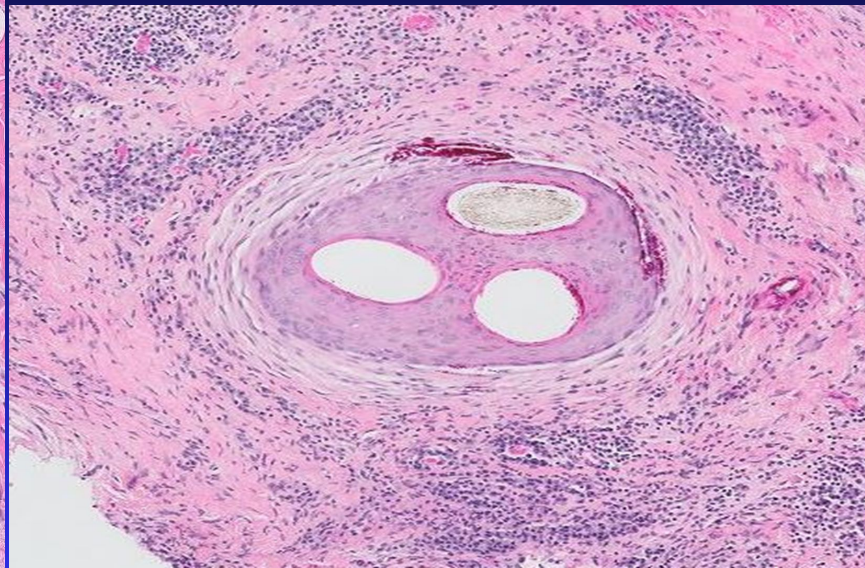
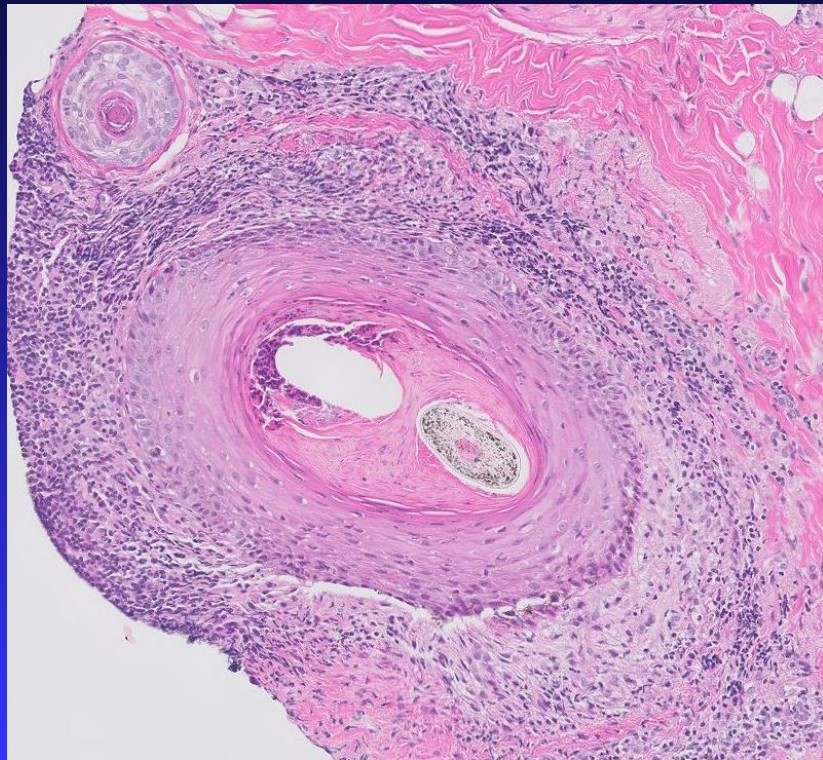
Case 2



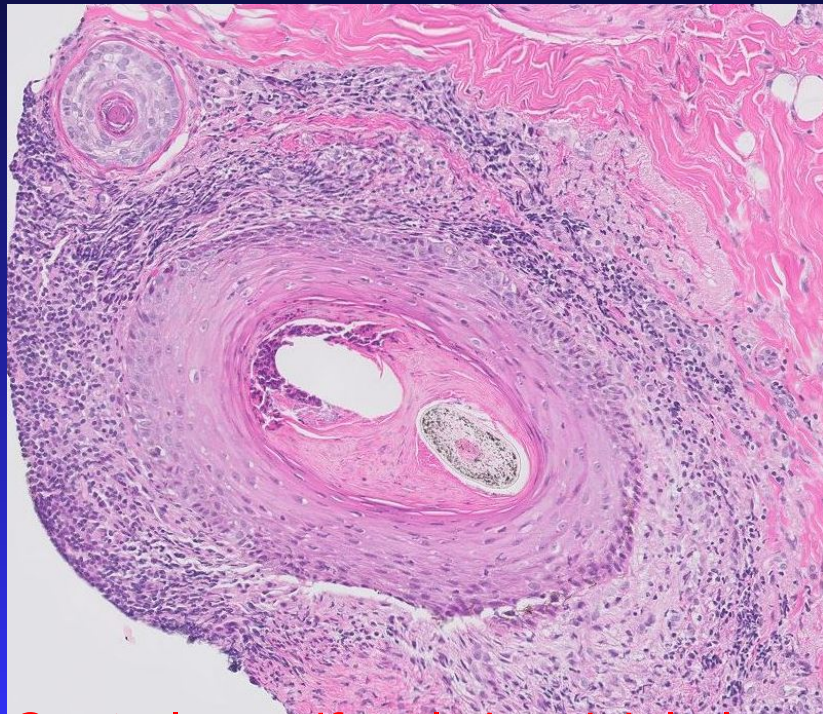
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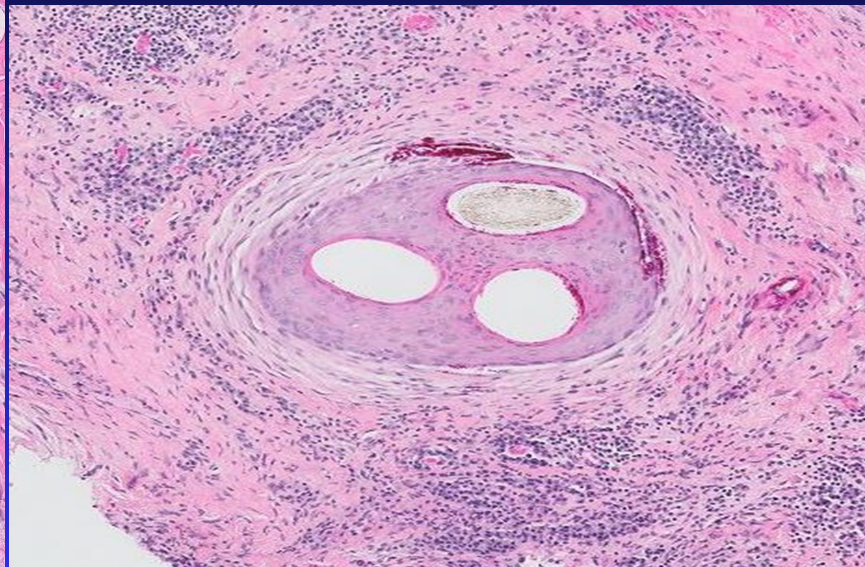
Case 2



Case 2



Central centrifugal cicatricial alopecia



Lichen planopilaris

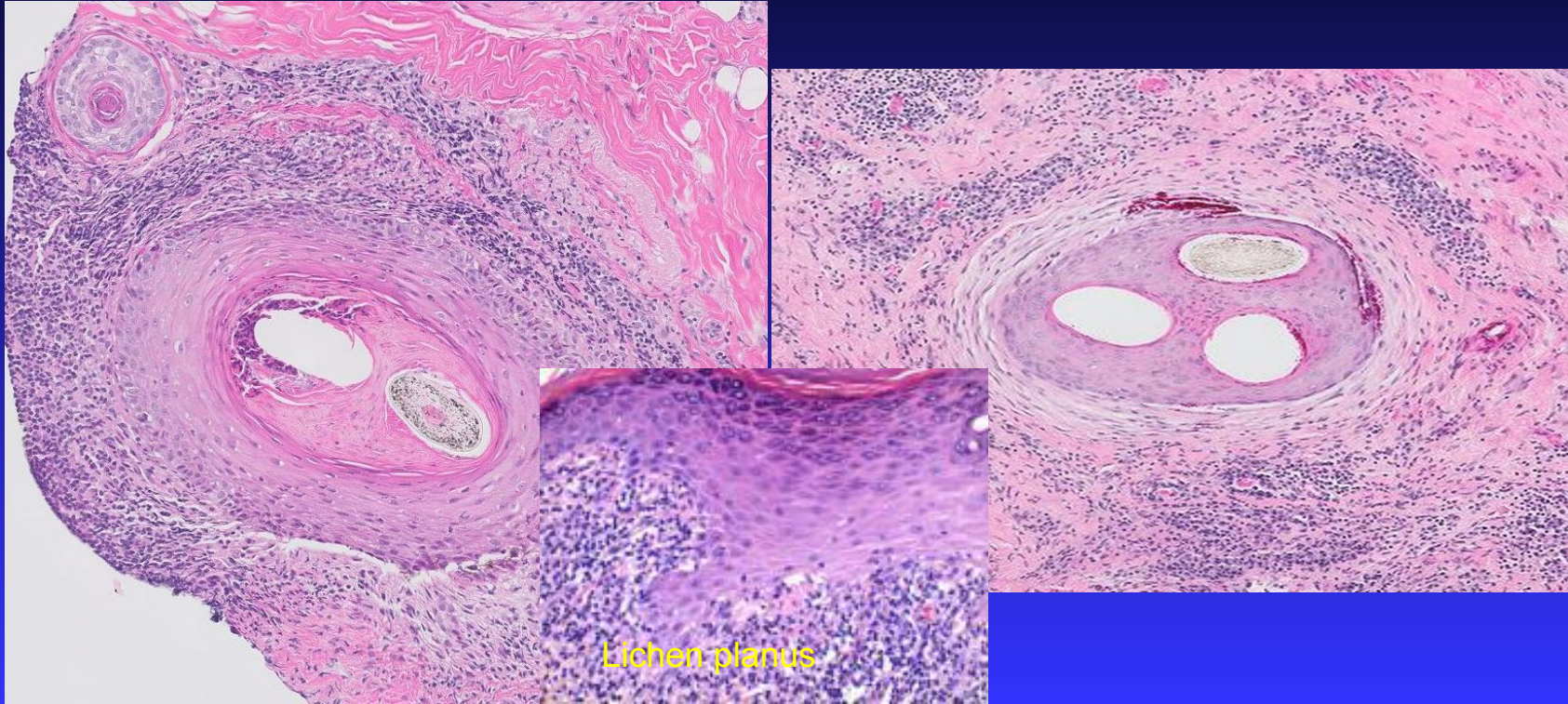
Case 2

- **Central centrifugal cicatricial alopecia-variant of lichen planopilaris (CCCA)**

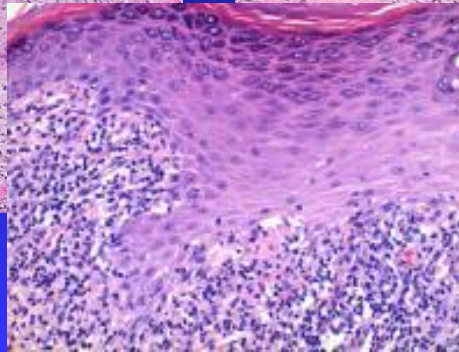
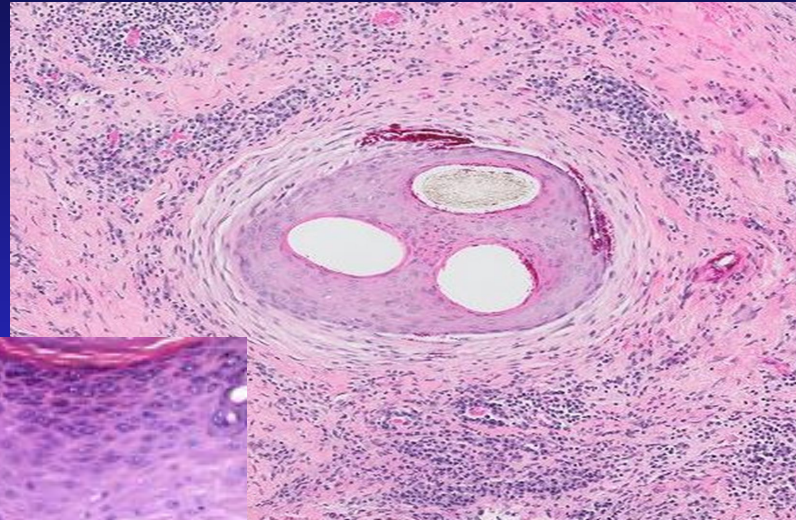
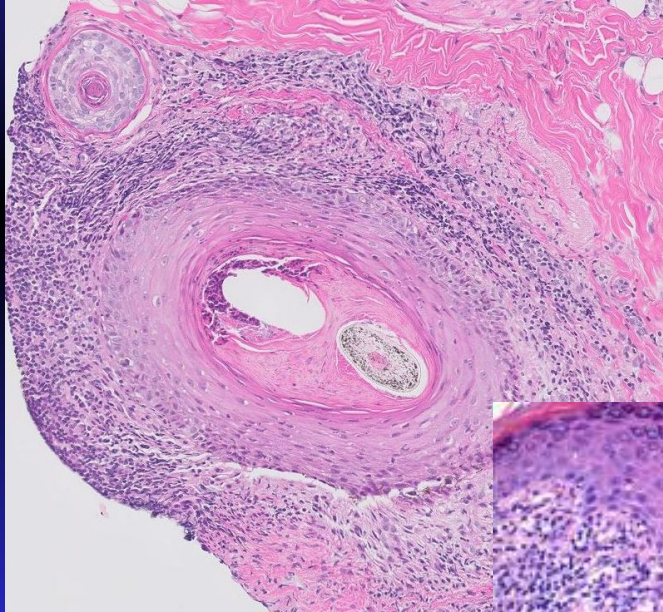
Case 2 CCCA variant of LPP

- Elusive entity with no specific etiology
 - ◆ Hair care practices likely induces disease
 - ◆ Heat
 - ◆ Traction
 - ◆ Chemicals

Case 2 CCCA variant of LPP



Premature desquamation of the inner root sheath
=
Squamization of the follicular epithelium



Case 2 CCCA variant of LPP

- Gray-staining, perifollicular fibrosis at the level of the superficial isthmus and infundibulum
- Perifollicular lymphocytes at the same level as the fibrosis which may scatter into the follicular epithelium
- Squamotization of the follicular epithelium, especially the basalis, in the area of inflammation with variable loss of the inner root sheath
- Compound follicles may or may not be present
- Near absence of catagen- and telogen-phase follicles

Case 2 CCCA variant of LPP

- Differential
 - ◆ Folliculitis decalvans
 - ◆ Mostly occurs in men whereas CCCA is in women
 - ◆ Interfollicular inflammation
 - ◆ Epidermal acanthosis

Case 2 Subtypes of LPP

- Classic
- Graham Little Piccardi Lasseur syndrome
- Frontal fibrosing alopecia
- CCCA

Interfollicular epidermis thickness differentiates LPP from FD

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³Abigail A. Thompson, BS and ^{4,5}**Curtis T. Thompson, MD**

¹Department of Dermatology, University of California, San Francisco

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⁴CTA Lab, Portland, Oregon

⁵Departments of Dermatology and Pathology

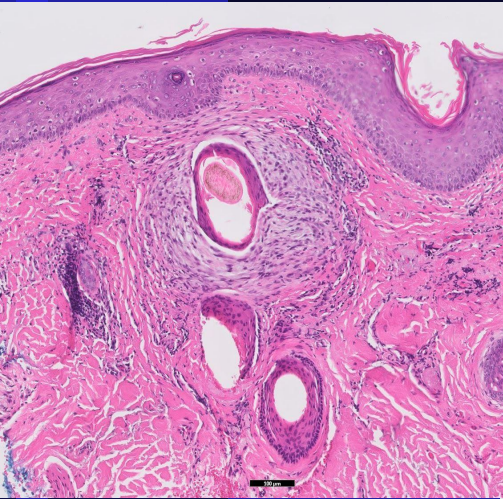
Oregon Health and Sciences University

Portland, Oregon

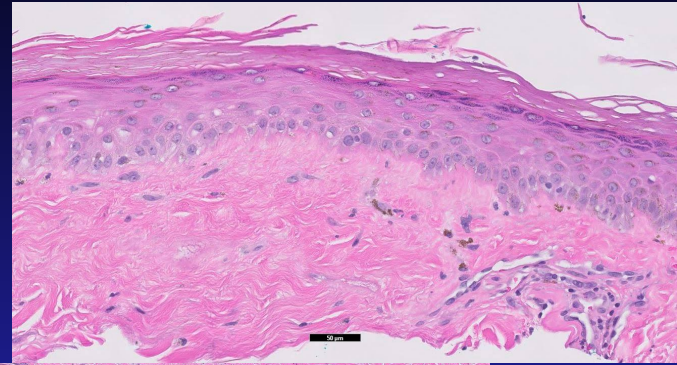
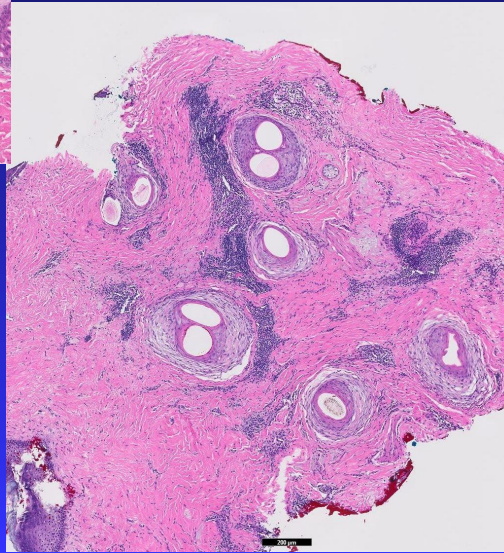
No conflict of interest



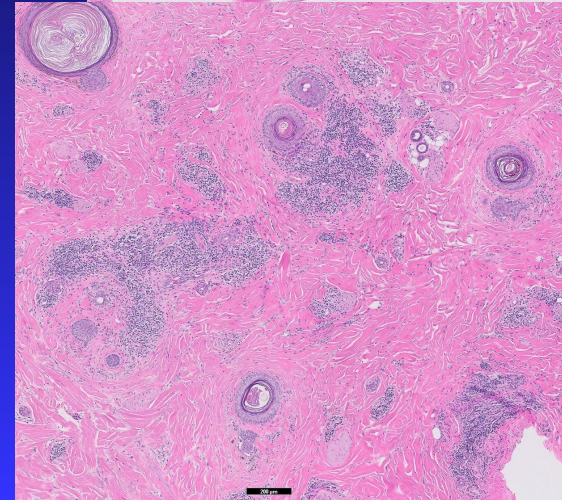
LPP \neq Lupus erythematosus



LPP



LE



2001 NAHRS Classification

Lymphocytic

Chronic cutaneous lupus erythematosus
Lichen planopilaris
 Classic lichen planopilaris
 Frontal fibrosing alopecia
 Graham-Little syndrome
Classic pseudopelade (Brocq)
Central centrifugal cicatricial alopecia
Alopecia mucinosa
Keratosis follicularis spinulosa decalvans

Neutrophilic

Folliculitis decalvans
Dissecting cellulitis/folliculitis (*perifolliculitis capitis
abscedens et suffodiens*)

Mixed

Folliculitis (acne) keloidalis
Folliculitis (acne) necrotica
Erosive pustular dermatosis

Nonspecific

Olsen EA *et al.*

JAAD 48:103-10, 2003

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Folliculitis decalvans



Male

Milano A, Eur J Pediatr Dermatol 28:124, 2018

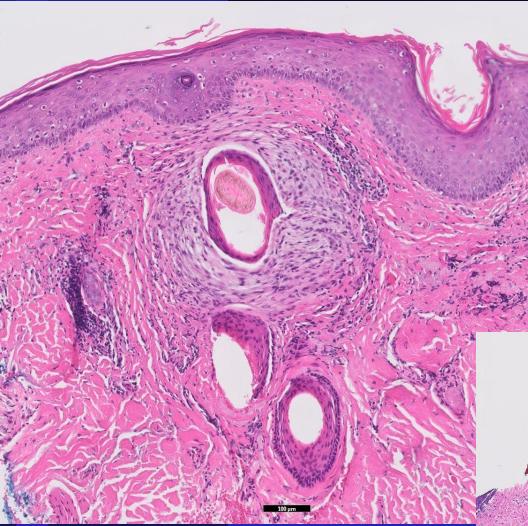
LPP



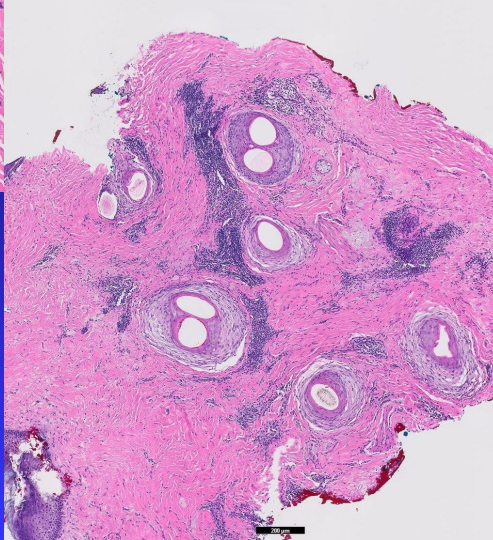
Female

<http://www.canadianhairlossfoundation.org/lichen-planopilaris>

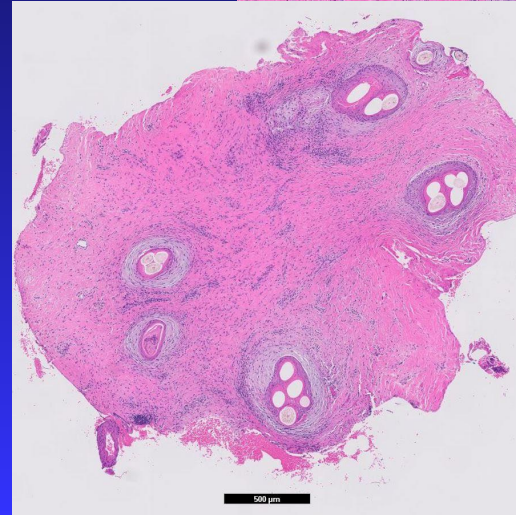
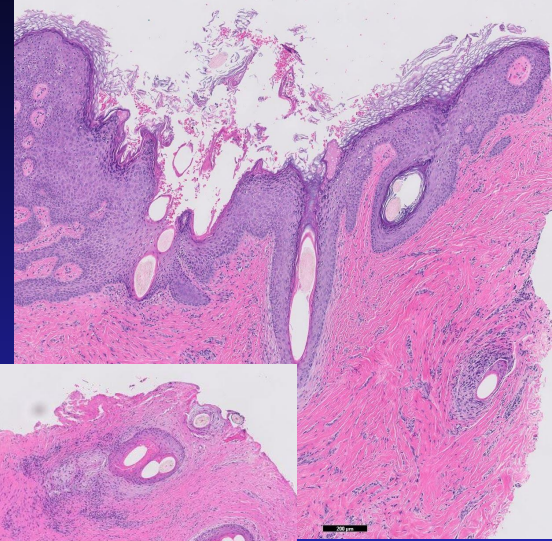
LPP vs Folliculitis decalvans



LPP



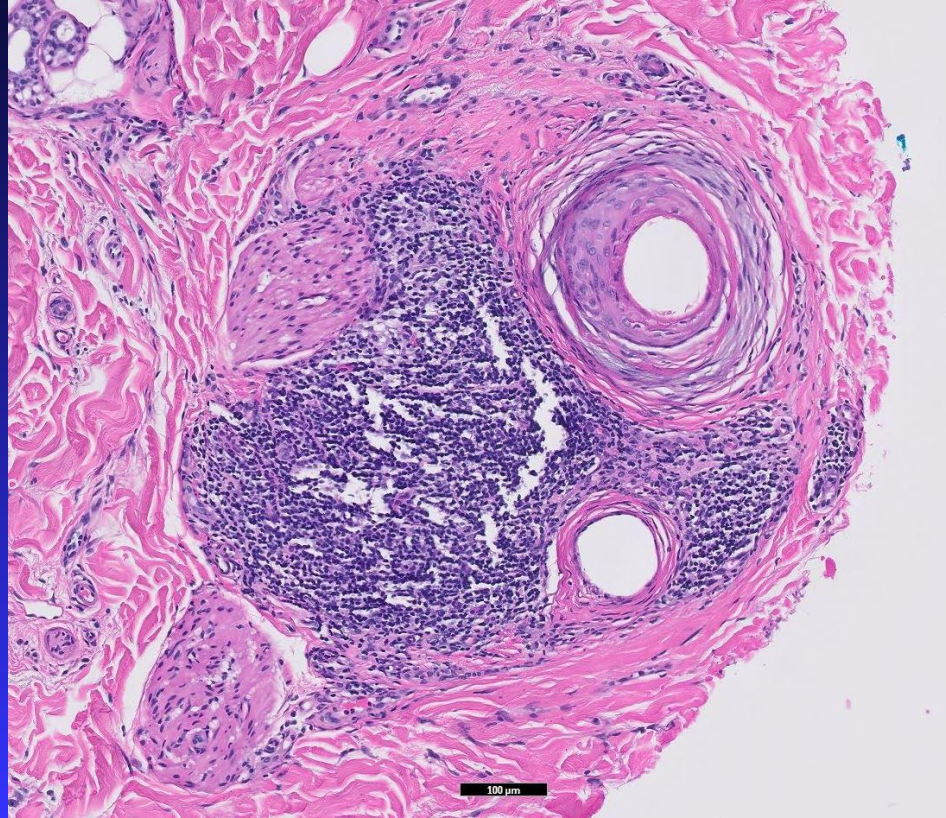
FD



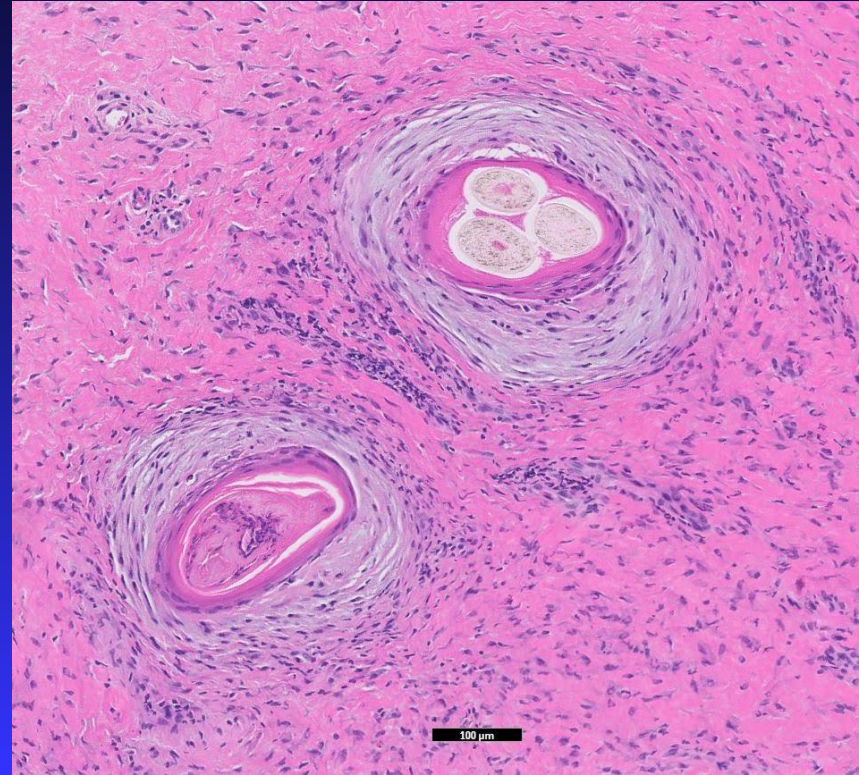
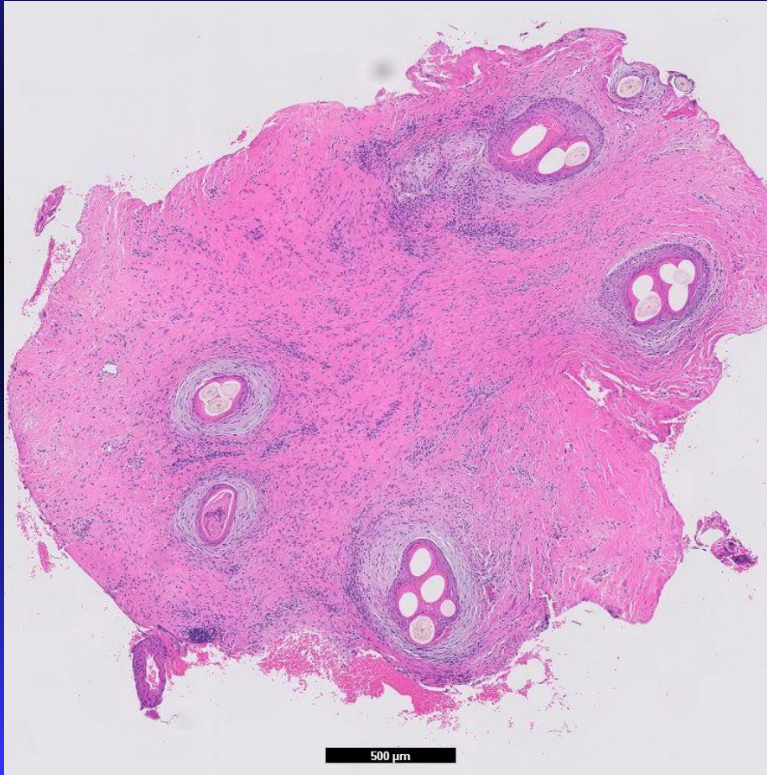
Folliculitis decalvans



Neutrophil-poor or Lymphocyte-predominant Folliculitis decalvans



Folliculitis decalvans often neutrophil-poor



2001 NAHRS Classification

Lymphocytic

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Folliculitis decalvans

Classic lichen planopilaris

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Olsen EA *et al.*

JAAD 48:103-10, 2003

Epidermal psoriasiform hyperplasia, an unrecognized sign of folliculitis decalvans: A histological study of 26 patients.

Matard B¹, Cavelier-Balloy B², Reygagne P¹.

Author information

1 Hôpital Saint-Louis, Centre Sabouraud, Paris, France.

2 Department of Dermatopathology, Policlinique Hôpital Saint Louis, Paris, France.

Abstract

BACKGROUND: Follicular hyperkeratosis along with hyperplasia of the follicular and interfollicular epithelia are major histopathological characteristics of hidradenitis suppurativa (HS). The presence of an occasional thickening of lesional skin in some folliculitis decalvans (FD) patients and histological similarities between FD and HS led us to look for epidermal hyperplasia and follicular hyperkeratosis in FD patients.

PATIENTS AND METHOD: We performed a retrospective histological analysis of 26 patients with FD.

OBJECTIVE: We sought to find out whether the presence of hyperplasia of the interfollicular epidermis and of the follicular epithelia could be verified in FD, with reference to the work of von Laffert et al. concerning HS.

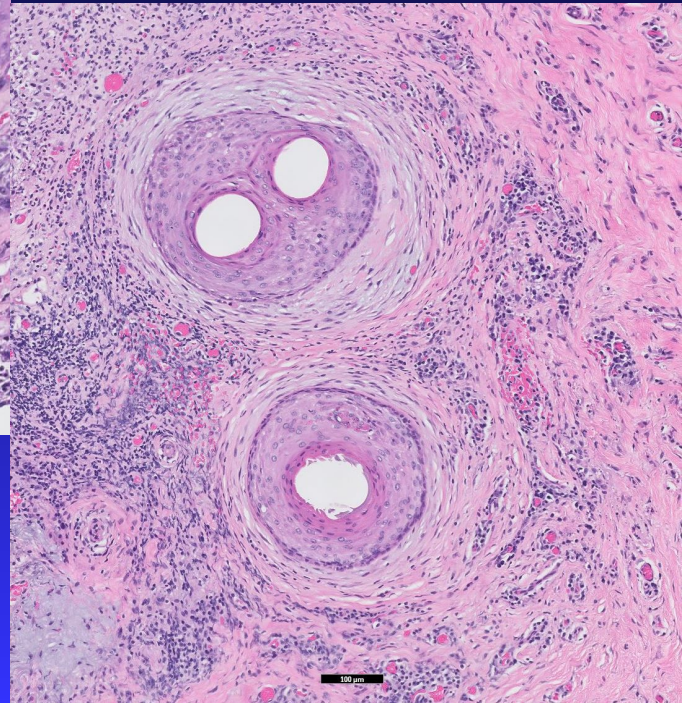
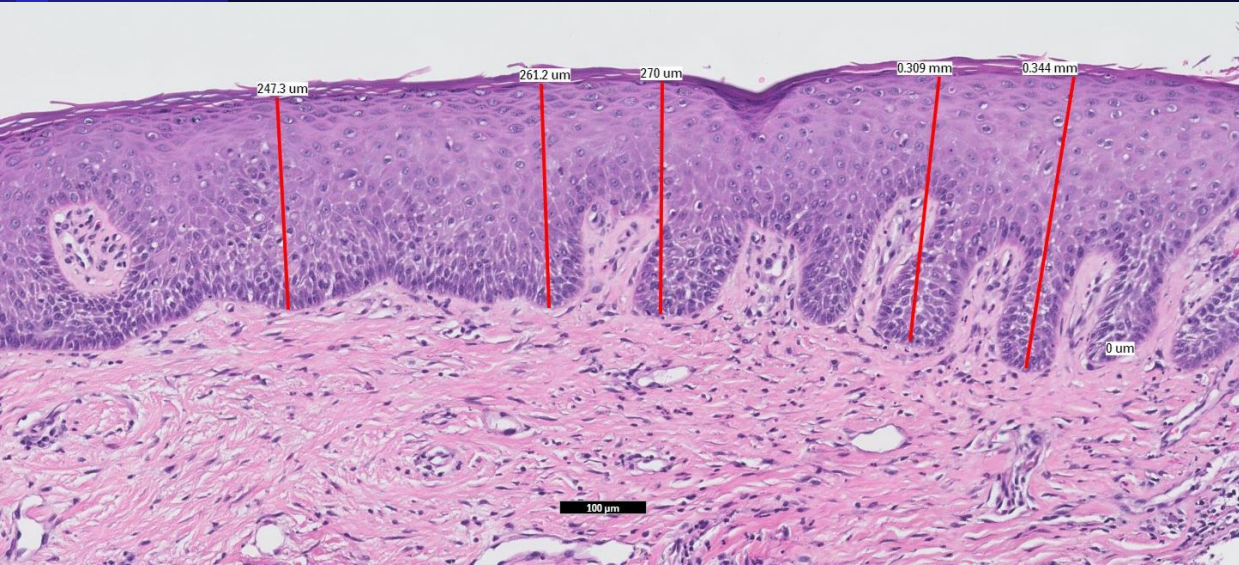
RESULTS: The main quantitative and qualitative data were: follicular hyperkeratosis (77%), hyperplasia of the interfollicular epidermis (92%) with a psoriasiform aspect (88%), atrophy of the follicular epithelia (85%), plasma cells in infiltrate (92%) in large quantities (42%), follicular microcysts (60%), atrophy of the sebaceous glands (85%) and polytrichia (54%).

CONCLUSION: Epidermal hyperplasia, sometimes psoriasiform and follicular microcysts, are significant histological signs of FD, which have been ignored until now although they seem very common.

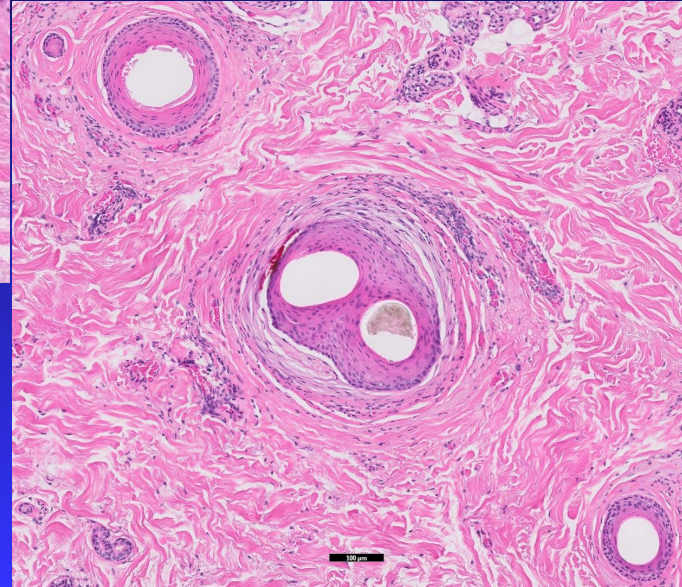
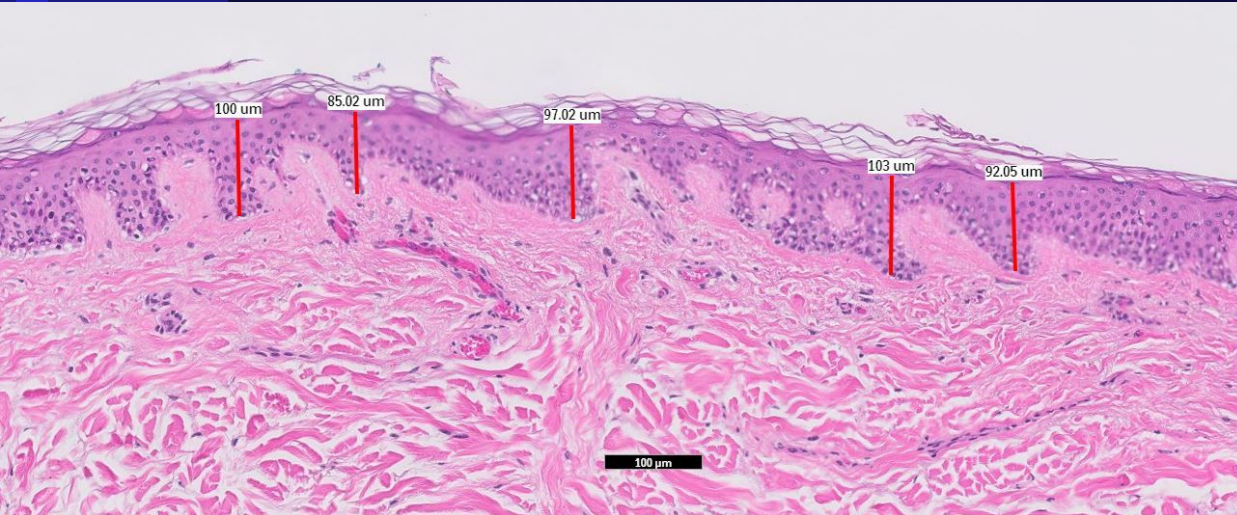
Study

| | Folliculitis decalvans | Lichen planopilaris |
|---|---------------------------|------------------------|
| Number of cases reviewed (N) | 30 | 26 |
| Mean epidermal thickness | 264.2 μm | 133.3 μm |
| 95% Confidence interval (95% CI) | [246.0, 282.4] | [126.9,139.7] |
| Standard deviation (SD) | +/- 17.7 | +/- 6.6 |
| Standard deviation of variance (σ) | 105.1 | 39.4 |
| P-value | P<0.0001 | |

Folliculitis decalvans—Thick epidermis



LPP—Thin epidermis

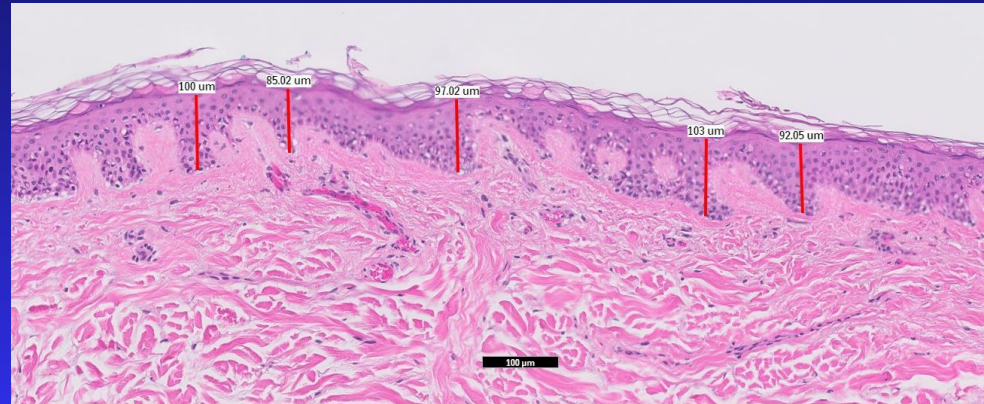
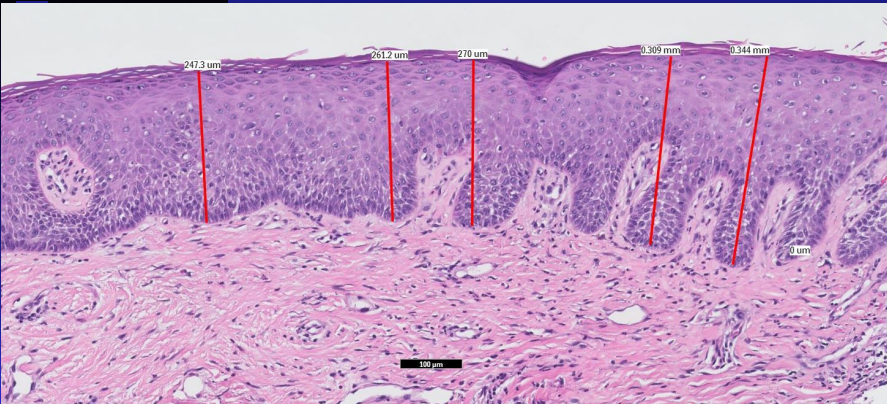


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| P-value | P<0.0001 | |

Folliculitis decalvans vs LPP

- Many cases of FD are neutrophil-poor
- Epidermal thickness $FD \gg LPP$



References

- 1) Matard B, Cavelier-Balloy B, Reygagne P. Epidermal psoriasiform hyperplasia, an unrecognized sign of folliculitis decalvans: A histological study of 26 patients. J Cutan Pathol. 2017; 44(4): 352-7.
- 2) Olsen EA, Bergfeld WF, Cotsarelis G, *et al.* Summary of North American Hair Research Society (NAHRS)-sponsored workshop on cicatricial alopecia, Duke University Medical Center, February 10 and 11, 2001. J Am Acad Dermatol. 2003;48(1):103-10.
- 3) Alsantali A, Shapiro J. Primary cicatricial alopecias. Expert Rev Dermatol. 2010; 5(2):213-227.
- 4) Tandon YK, Somani N, Cevasco NC, *et al.* A histologic review of 27 patients with lichen planopilaris. J Am Acad Dermatol. 2008; 59(1): 91-8.
- 5) Nguyen JV, Hudacek K, Whitten JA, *et al.* The HoVert technique: a novel method for the sectioning of alopecia biopsies. J Cutan Pathol. 2011; 38: 401-6.

Thanks!

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