Frontal Fibrosing Alopecia Causation and Diagnosis

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And
Clinical Professor of Dermatology and Pathology
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*No conflict of interest

Lecture Overview

- History of FFA
- Causation of FFA
- New diagnostic techniques
  - 2mm punch
  - Mucin stain
- General alopecia pathology advice

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Arch Dermatol. 1994 Jun;130(6):770-4.

Postmenopausal frontal fibrosing alopecia. Scarring alopecia in a pattern distribution.

Kossard S[1].

Author information Papers

Erratum in
Arch Dermatol 1994 Nov;130(11):1407.

Abstract

BACKGROUND: Recession of the frontal hairline is a common event in postmenopausal women. This has been shown not to be a marker of gross androgenization, and is usually a progressive nonscarring alopecia. Six postmenopausal women, who developed a progressive frontal scarring alopecia, were studied and their clinical and laboratory data, as well as the results of scalp biopsy specimens in all six patients, were analyzed and compared with recognized forms of scarring alopecia and recently described findings in androgenetic alopecia.

OBSERVATIONS: The six postmenopausal women developed a progressive frontal hairline recession that was associated with perifollicular erythema within the marginal hairline, producing a frontal fibrosing alopecia extending to the temporal and parietal hair margins. Scalp biopsy specimens from the frontal hair margin showed perifollicular fibrosis and lymphocytic inflammation concentrated around the isthmus and infundibular areas of the follicles. Immunophenotyping of the lymphocytes showed a dominance of activated T-helper cells. Clinical review of all six cases showed a progressive marginal alopecia without the typical multifocal areas of involvement seen in lichen planopilaris or pseudopelade. None of the patients had mucous membrane or skin lesions typical of lichen planus. Hormonal studies, in five patients, showed no elevated androgen abnormalities.

CONCLUSIONS: Progressive frontal recession in postmenopausal women may show clinical features of a fibrosing alopecia. The histologic findings are indistinguishable from those seen in lichen planopilaris. However, the absence of associated lesions of lichen planus in all six women raises the possibility that this mode of follicular destruction represents a reaction pattern triggered by the events underlying postmenopausal frontal hairline recession.

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Lichen Planopilaris (LPP)

- Mini-epidemic?
  - Hair loss clinicians observing increased incidence.
  - Traditionally West Coast > East Coast

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Lichen Planopilaris Increasing Incidence

- ?Nanoparticle?
  - Sunscreen?
  - Lichen planus—Metals, especially dental implicated
    - Gold, mercury—dental*
    - Nail LP associated with +metal patch test**

*Sasaki G et al. J Dermatol 23:890, 1996.
**Nishizawa A et al. J Eur Acad Dermatol Venerol 27:e231, 2013.

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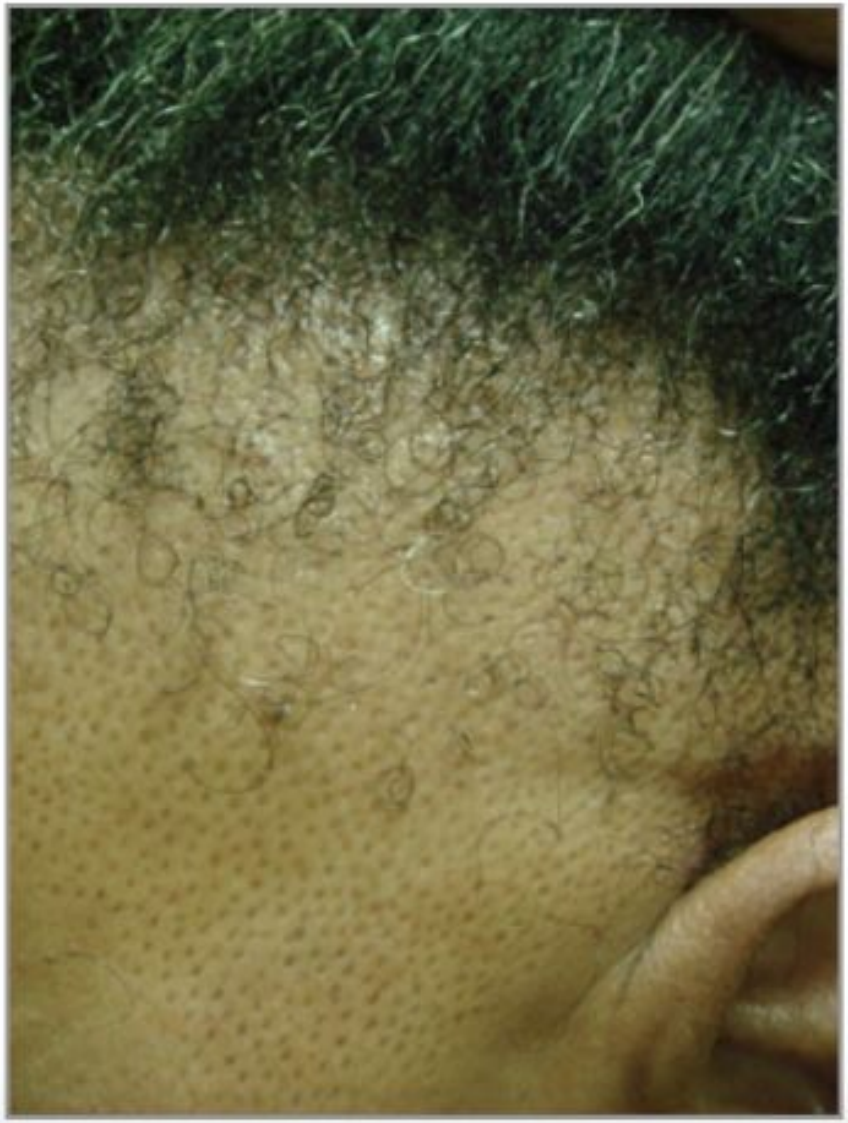
African people with FFA



Dlova NC *et al.* BRJ 169:939-41, 2013.

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Br J Dermatol. 2016 Oct;175(4):762-7. doi: 10.1111/bjd.14535. Epub 2016 Jun 30.

Frontal fibrosing alopecia: possible association with leave-on facial skin care products and sunscreens; a questionnaire study.

Aldoori N[1], Dobson K[1], Holden CR[1], McDonagh AJ[1], Harries M[2], Messenger AG[3].

Author information

Abstract

BACKGROUND: Since its first description in 1994, frontal fibrosing alopecia (FFA) has become increasingly common, suggesting that environmental factors are involved in the aetiology.

OBJECTIVES: To identify possible causative environmental factors in FFA.

METHODS: A questionnaire enquiring about exposure to a wide range of lifestyle, social and medical factors was completed by 105 women with FFA and 100 age- and sex-matched control subjects. A subcohort of women with FFA was patch tested to an extended British standard series of allergens.

RESULTS: The use of sunscreens was significantly greater in the FFA group compared with controls. Subjects with FFA also showed a trend towards more frequent use of facial moisturizers and foundations but, compared with controls, the difference in frequencies just failed to reach statistical significance. The frequency of hair shampooing, oral contraceptive use, hair colouring and facial hair removal were significantly lower in the FFA group than in controls. Thyroid disease was more common in subjects with FFA than controls and there was a high frequency of positive patch tests in women with FFA, mainly to fragrances.

CONCLUSIONS: Our findings suggest an association between FFA and the use of facial skin care products. The high frequency of sunscreen use in patients with FFA, and the fact that many facial skin care products now contain sunscreens, raises the possibility of a causative role for sunscreen chemicals. The high frequency of positive patch tests in women with FFA and the association with thyroid disease may indicate a predisposition to immune-mediated disease.

Frontal fibrosing alopecia in men: an association with facial moisturizers and sunscreens

DOI: 10.1111/bjd.15311

Dear Editor, Frontal fibrosing alopecia (FFA) was first described by Kossard in 1994 in six postmenopausal women.[1] FFA remained rare during the 1990s, but in the last 10–15 years it has become increasingly common, a phenomenon observed worldwide. The recent onset and apparently rising incidence of FFA suggest involvement of environmental factors in the aetiology. We previously reported a questionnaire study in women with FFA that asked about a wide range of medical, social and environmental exposures. The results suggested an association between FFA and leave-on facial products, including moisturizers and sunscreens.[2] However, although the regular use of moisturizers was greater in women with FFA, these products are used by most women and we were unable to show a significant difference in their use between women with FFA and similarly aged controls. The use of primary sunscreens was significantly greater among women with FFA than in controls, but we were not able to assess whether patients were also exposed to sunscreens from other sources.

We have therefore repeated our questionnaire study in men with FFA, as we anticipated that their use of leave-on facial skincare products would be lower than in women.

As FFA is rare in men, patients were recruited from across the U.K. and one case was recruited from Belgium. In all cases the diagnosis was made by a clinician with special expertise in hair disease, and it was supported by histology in most cases. The clinical diagnosis was based on scarring alopecia affecting the frontal hairline causing recession of the hairline. Additional features included loss of eyebrows, follicular erythema of the frontal hairline and loss of sideburn and beard hair. Male controls aged 35–80 years were recruited from three sites (Sheffield, Salford and Glasgow). The patients completed a questionnaire similar to that used in our female study, but inviting more detailed information on the use of facial skincare and hair care products. Male patients with FFA were asked about the timing and distribution of hair loss, but otherwise the questionnaires completed by both groups were identical.

Seventeen men with FFA and 73 controls were recruited. The mean age of onset of hair loss in the patients with FFA was 54·5 years (range 35–77). All had loss of hair from the frontal hairline, and 16 (94%) had lost eyebrows. Twelve men (71%) reported loss of hair from the beard and 13 (76%) reported loss of hair from the limbs. All men with FFA reported using facial moisturizers, compared with 40% in the control group. Facial moisturizers were used at least twice a week by 94% of patients with FFA, but by only 32% of controls ($P < 0·001$) (Table 1). Sixteen patients reported using moisturizers for a period consistent with their use prior to the onset of FFA. The use of primary sunscreens by men with FFA was significantly more common than by controls. Overall 35% of men with FFA reported using a sunscreen at least twice a week all year round, compared with 4% of controls ($P = 0·0012$).

When moisturizers containing sunscreen chemicals were included in the analysis, at least 71% of men with FFA applied a product containing a sunscreen at least twice a week all year

Table 1 Reported use of skincare and hair care products by patients with frontal fibrosing alopecia (FFA) and controls

	Patients with FFA	Controls	P-value
Number of patients	17	73	
Age (years), mean (range)	63·1 (42–80)	59·1 (37–79)	
Age at onset of hair loss (years), mean (range)	54·5 (35–77)		
Facial moisturizer[a]	16 (94)	23 (32)	< 0·001
Primary sunscreen[b]	6 (35)	3 (4)	0·0012
Sunscreen[b]	12 (71)	8 (11)	< 0·001
Facial cleanser[a]	4 (24)	5 (7)	0·066
Facial scrub[a]	0	0	
Facial mask[a]	0	0	
Aftershave[a]	7 (41)	28 (39)	1·00
Shampoo[a]	13 (76)	62 (85)	0·27
Conditioner[a]	4 (24)	13 (18)	0·73
Hair spray[a]	1 (6)	2 (3)	0·48
Hair mousse[a]	0	0	
Hair gel[a]	2 (12)	10 (14)	1·00
Hair dye[c]	2 (12)	3 (4)	0·26

Values are n (%) unless stated otherwise. [a]Twice a week or more frequently. [b]Twice a week or more frequently all year round. [c]At least once a year. Sunscreen includes exposure to sunscreen chemicals in primary sunscreens and moisturizers. Analyses were performed after excluding subjects who failed to answer the question. Frequencies in the FFA and control groups were compared using Fisher's exact test.

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Debroy Kidambi A *et al.* Br J Dermatol 177:260-1, 2017.

Original article

CED
Clinical and Experimental Dermatology

Risk factors associated with frontal fibrosing alopecia: a multicentre case–control study

O. M. Moreno-Arrones,[1] D. Saceda-Corralo,[1] A. R. Rodrigues-Barata,[1] M. Castellanos-González,[2] M. A. Pugnaire,[3] R. Grimalt,[4] A. Hermosa-Gelbard,[1] C. Bernárdez,[5] A. M. Molina-Ruiz,[6] N. Ormaechea-Pérez,[7] P. Fernández-Crehuet[8] and S. Vaño-Galván[1,9]

[1]Dermatology Department, Hospital Universitario Ramon y Cajal, Madrid, Spain; [2]Dermatology Department, Hospital del Sureste, Madrid, Spain; [3]Dermatology Department, Hospital Universitario Campus de la Salud, Granada, Spain; [4]Dermatology Department, Universitat Internacional de Catalunya, UIC, Barcelona, Spain; [5]Dermatology Department, Hospital Ruber Juan Bravo, Madrid, Spain; [6]Dermatology Department, Hospital Universitario Fundación Jiménez Díaz, Madrid, Spain; [7]Dermatology Department, Hospital Universitario Donostia, San Sebastián, Spain; [8]Dermatology Department, Hospital Universitario Reina Sofía, Clínica Fernández-Crehuet, Córdoba, Spain; and [9]Department of Medicine and Medical Specialties, University of Alcalá, Alcalá de Henares-Madrid, Madrid, Spain

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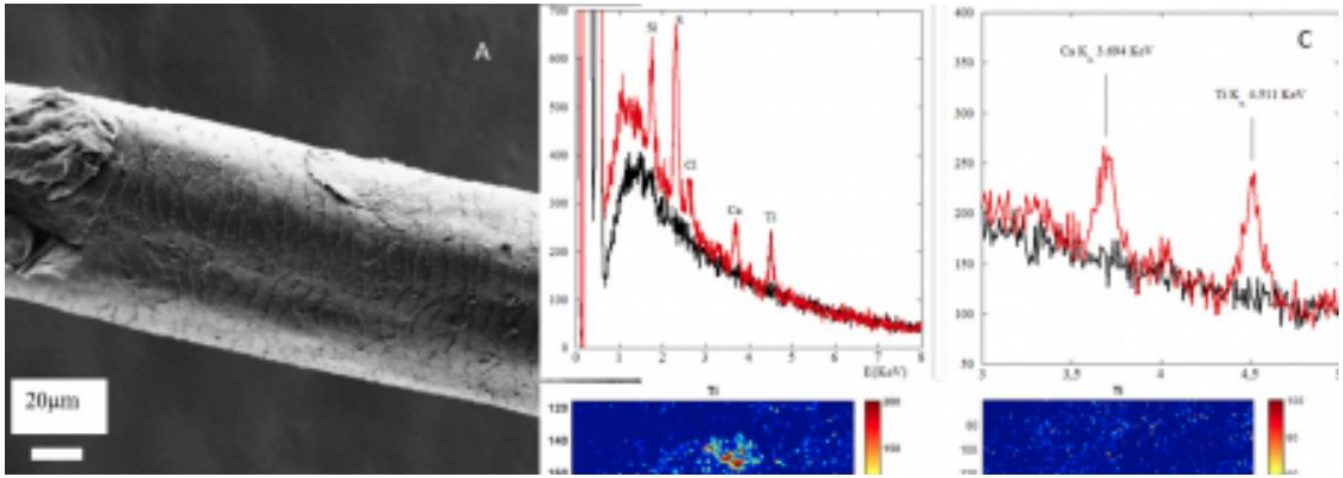
Titanium on the hair shaft

Le long des follicules, à leur surface, ont ainsi été mis en évidence des agrégats de microparticules de TiO_2 (0,5 – 1 μm) associées à des nanoparticules de TiO_2.



Brunet-Possenti F *et al.* JEADV 32:e442-3, 2018.

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Br J Dermatol. 2019 Jan 16. doi: 10.1111/bjd.17639. [Epub ahead of print]

Identification of titanium dioxide on the hair shaft of patients with and without frontal fibrosing alopecia: A pilot study of 20 patients.

Thompson CT[1,2], Chen ZQ[3], Kolivras A[4], Tosti A[5].

Author information Papers

Abstract

Frontal fibrosing alopecia (FFA) has increased markedly in incidence since it was first reported in 1994. A possible role of cosmetic ingredients has been suspected, especially UV blockers, since these were added to products in the late 1980s. Daily, year-round use of facial moisturizers, most of which contain a sunscreen, has

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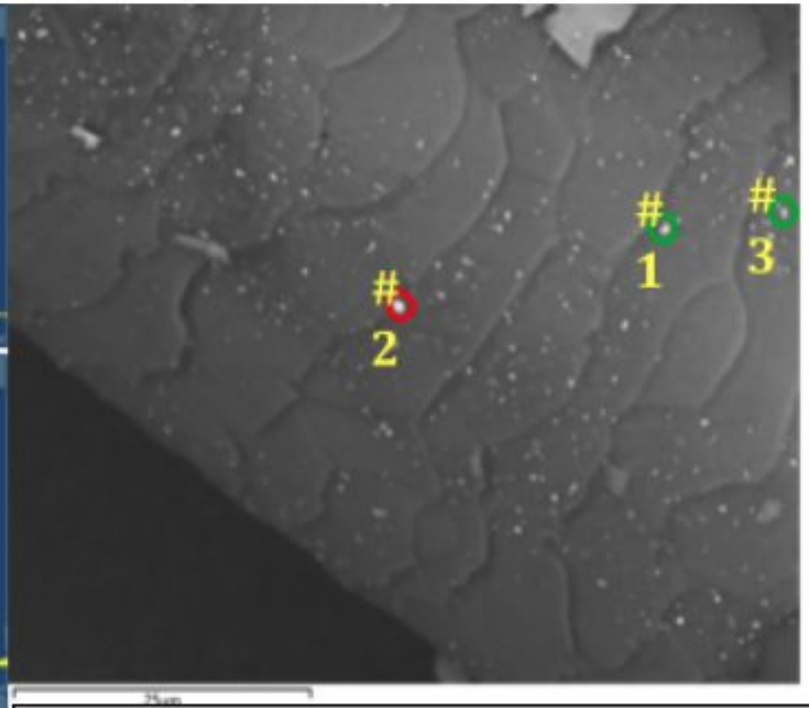

Fig. 1 Right: a backscattered electron image taken from one of typical hair shafts with SEM showing the presence of particles with brighter contrast on a hair shaft; Left: EDX spectra collected from particle 1-3 showing the presence of Ti species on particle 1 and 3.

20 Patient Pilot Study

- 16 Female patients with FFA Positive Ti
- 3 Female patients without FFA Positive Ti
- 1 Male patient without FFA Negative Ti
  - No product usage on face or hair

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Physical Properties of TiO_2

- **Pigment Form—Larger particles**
  - Paint, cosmetics, food
- **Non-Pigment Form--Nanoparticles**
  - Reduces unwanted shine. “Matte” type cosmetics.
  - **Texture** – Smoother more sheer but opaque formations—conceals blemishes
  - **UVA/UVB absorption and scattering.**
- **Waterproof and Long-lasting**

https://tdma.info/titanium-dioxide-the-cosmetic-industrys-best-kept-secret/

TiO_2 Nanoparticle Toxicity

- 1985—Mouse study—Chronic exposure led to lung bronchioloalveolar adenomas and cystic keratinizing squamous cell carcinomas
  - 5 days/week for 2 years

Lee KP, Trochimowicz HJ, Reinhardt CF, "Pulmonary response of rats exposed to titanium dioxide (TiO2) by inhalation for two years", Toxicol Appl Pharmacol. 1985;79:179–92.

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TiO_2 Nanoparticles—1990s

- 200-250nm in size but there are fragments 100nm
- Small enough to enter cells

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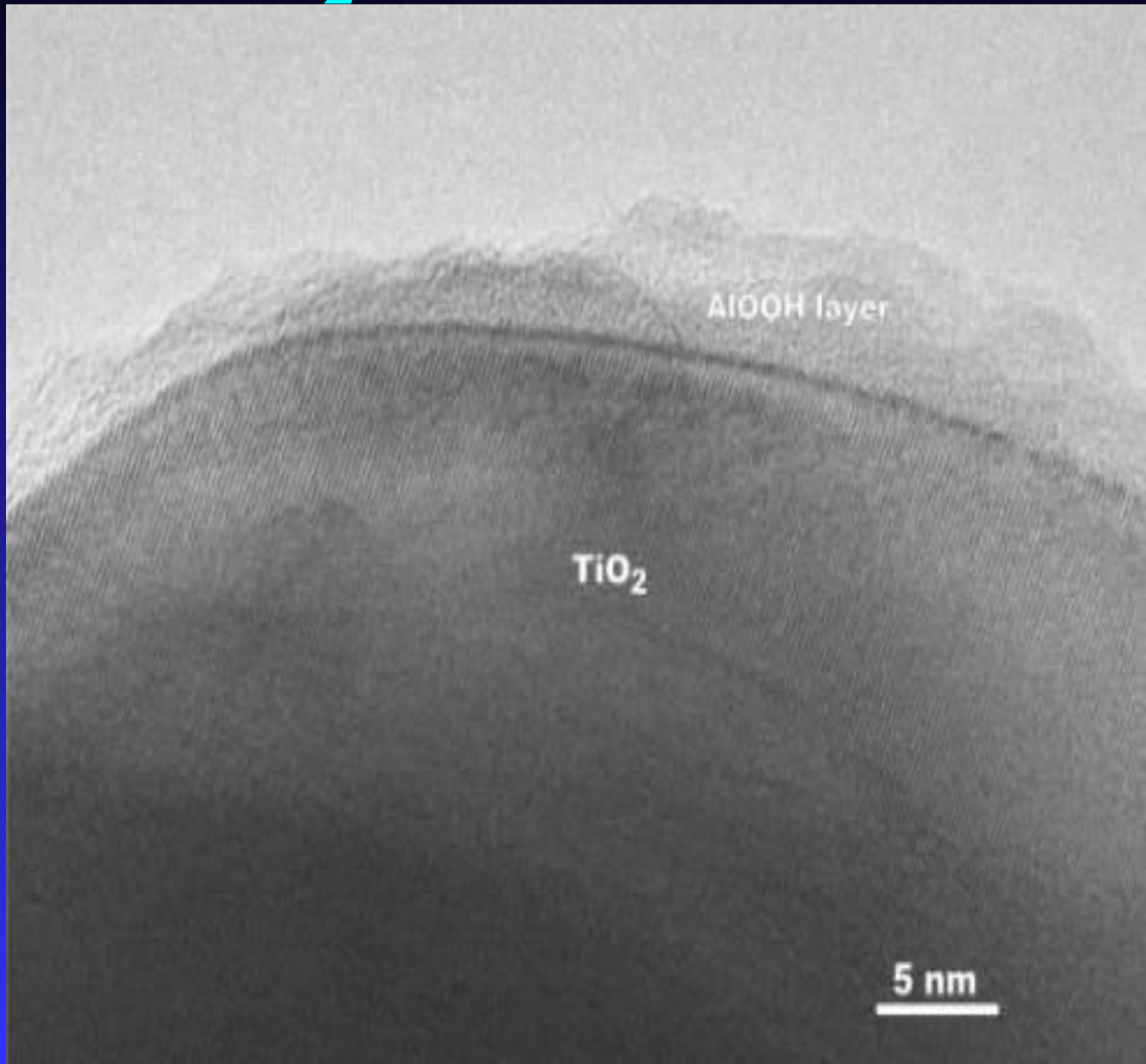
Coating of TiO_2 Nanoparticles



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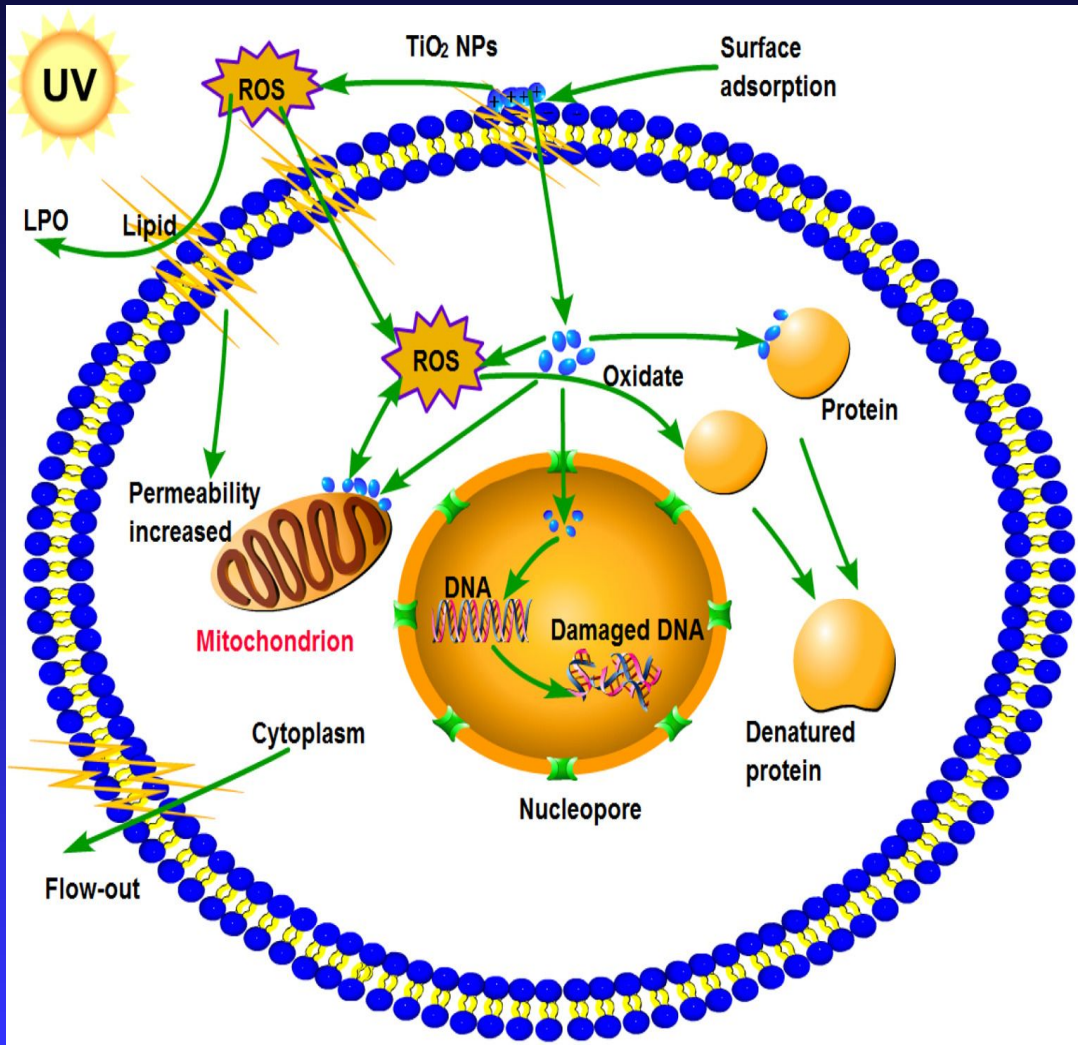
Mechanism of TiO_2 nanoparticle toxicity

- Oxygen Radical Species upon UV exposure
  - O_2^-,
  - H_2O_2,
  - hydroxyl OH^-



J. Hou *et al.* Toxicity and mechanisms of action of titanium dioxide nanoparticles in living organisms. [illegible]tal Sci 75:40-53, 2019.

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Titanium dioxide

- 20 FFA and 20 Control patients
  - Chlorine, silicon, Mg, Fe increased FFA
  - Titanium—8.6X greater than controls

Lyakhovitsky A et al. Hair shaft morophlogy, elemental composition and nanoparticles in frontal fibrosing alopecia: a case-control study. Acta Derm Venereol 101(9), 2021, doi: 10.2340-00015555-3891.

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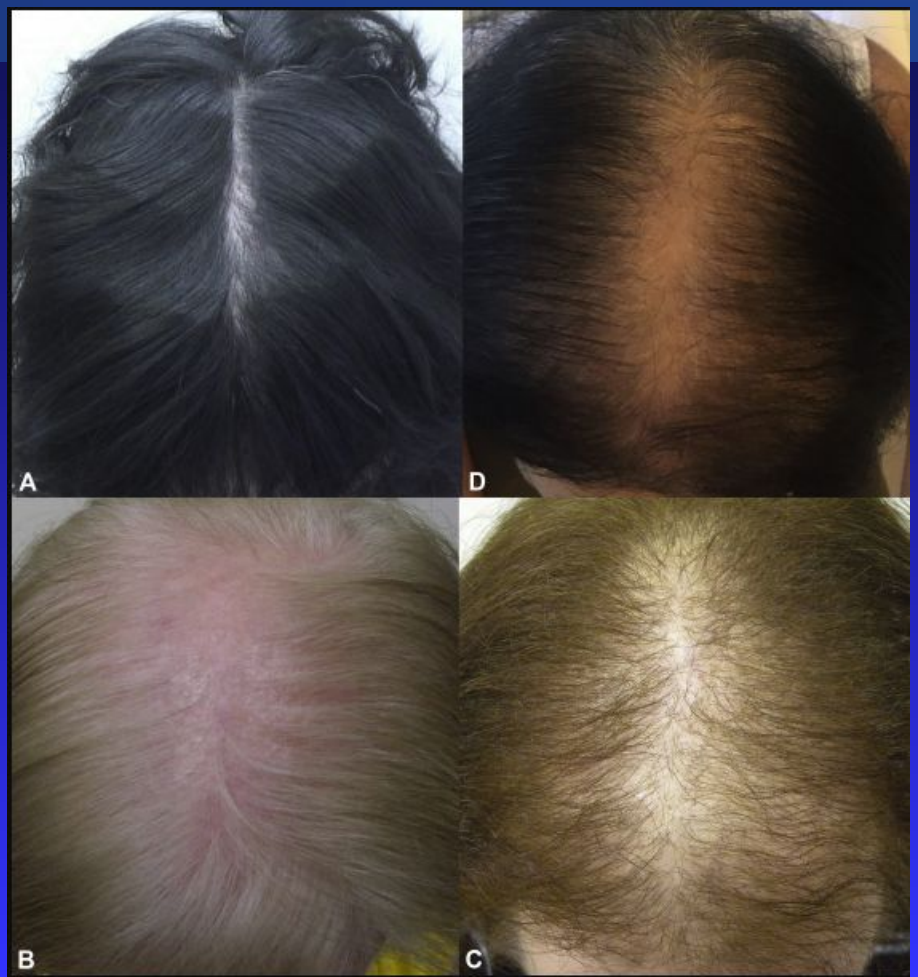
Fibrosing alopecia in a pattern distribution

Jacob Griggs, BA • Ralph M. Trüeb, MD • Maria Fernanda Reis Gavazzoni Dias, MD • Maria Hordinsky, MD • Antonella Tosti, MD

Published: January 08, 2020 • DOI: https://doi.org/10.1016/j.jaad.2019.12.056



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Is there a pathogenetic link between frontal **fibrosing alopecia**, androgenetic **alopecia** and **fibrosing alopecia** in a **pattern distribution**?

Katoulis AC, Diamanti K, Sgouros D, Liakou AI, Bozi E, Avgerinou G, Panayiotides I, Rigopoulos D.

J Eur Acad Dermatol Venereol. 2018 Jun;32(6):e218-e220. doi: 10.1111/jdv.14748. Epub 2018 Jan 15. No abstract available.

Fibrosing alopecia in a pattern distribution

Jacob Griggs, BA • Ralph M. Trüeb, MD • Maria Fernanda Reis Gavazzoni Dias, MD • Maria Hordinsky, MD • Antonella Tosti, MD

Published: January 08, 2020 • DOI: https://doi.org/10.1016/j.jaad.2019.12.056

The observation of familial occurrence of FAPD with FFA[8] and the presence of facial papules characterized by vellus follicle involvement[6] and/or extrafacial follicular red dots[10,21] in both FFA and FAPD suggest that these 2 conditions may be pathogenically related.

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Skin Appendage Disorders

Novel Insights from Clinical Practice

Lichen Planopilaris in the Setting of Hair Sunscreen Spray

Canavan T.N.[a] · McClees S.F.[b] · Duncan J.R.[a] · Elewski B.E.[a]

Author affiliations

Keywords: Lichen planopilaris · Frontal fibrosing alopecia · Benzyl salicylate · Sunscreen · Scarring alopecia

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Sunscreen

- Avobenzone, Homosalate, Octinoxate, Octisalate, Octocrylene, Oxybenzone
- Sd Alcohol 40, C12-15 Alkyl Benzoate, Acrylates Octylacrylamide Copolymer, Caprylyl Glycol, Dimethyl Capramide, Aloe Barbadensis (**Aloe Vera**) Leaf Extract, Retinyl Palmitate, Tocopherol, Fragrance.

Present in 96% of the U.S. population

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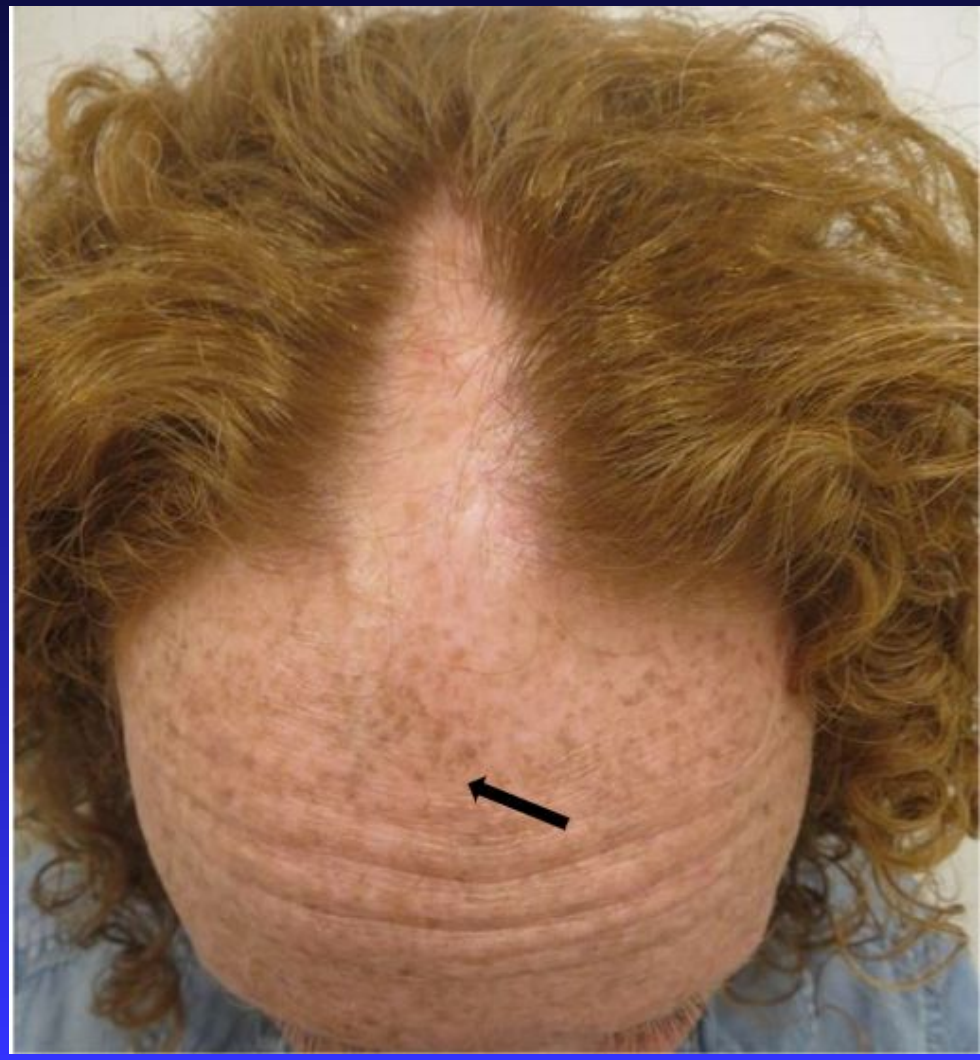
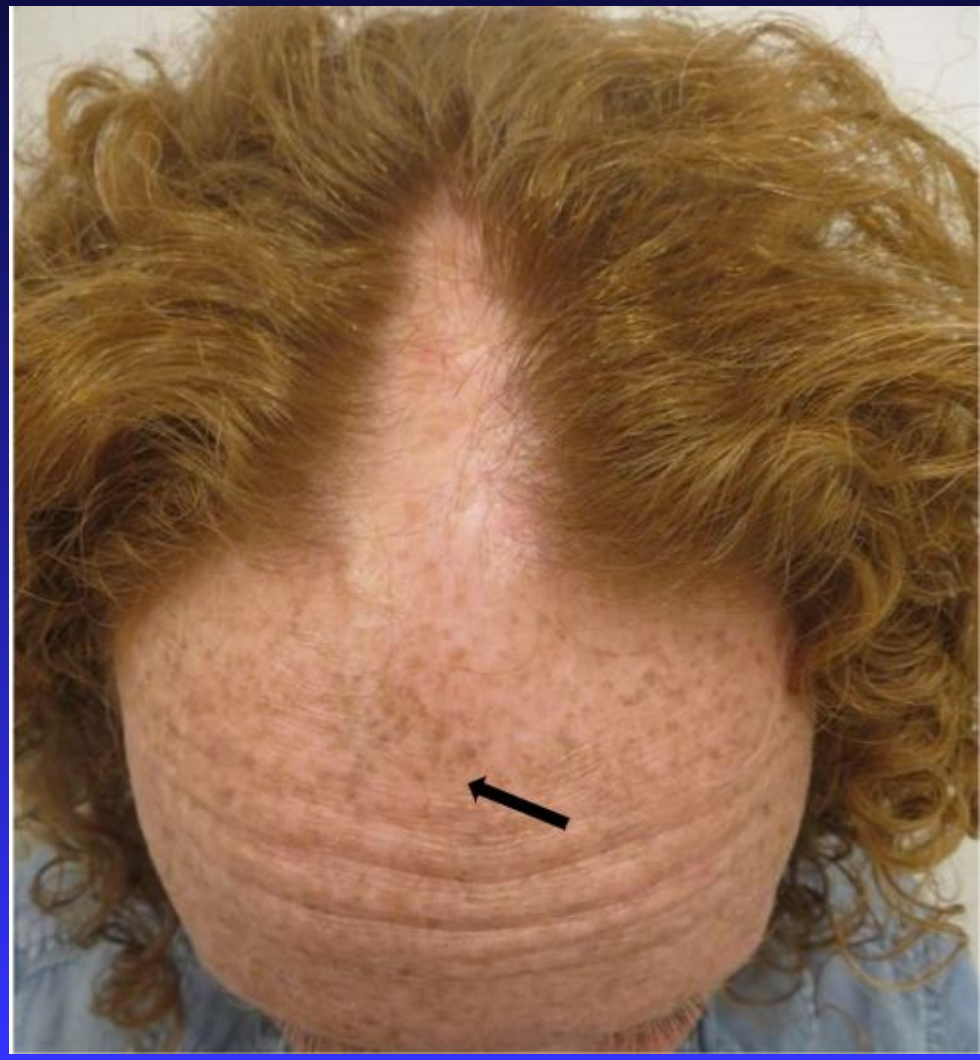
Sunscreen in the hair part



Mirmirani P and Vanderweil SG. Dermatology Online 26(11):2020.

Sunscreen in the hair part

Avobenzone
Oxybenzone
No Titanium O_2



Mirmirani P and Vanderweil SG. Dermatology Online 26(11):2020.

Sunscreen

- Avobenzone, Homosalate, Octinoxate, Octisalate, Octocrylene, Oxybenzone
- Sd Alcohol 40, C12-15 Alkyl Benzoate, Acrylates Octylacrylamide Copolymer, Caprylyl Glycol, Dimethyl Capramide, Aloe Barbadensis (**Aloe Vera**) Leaf Extract, Retinyl Palmitate, Tocopherol, Fragrance.

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Sunscreen for sure implicated

REVIEW | VOLUME 82, ISSUE 3, P723-728, MARCH 01, 2020

Sunscreen and frontal fibrosing alopecia: A review

Gabrielle Robinson, MD • Amy McMichael, MD • Steve Q. Wang, MD • Henry W. Lim, MD

Published: October 22, 2019 • DOI: https://doi.org/10.1016/j.jaad.2019.09.085 • Check for updates

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nature COMMUNICATIONS

ARTICLE

https://doi.org/10.1038/s41467-019-09117-w OPEN

Genome-wide association study in frontal fibrosing alopecia identifies four susceptibility loci including *HLA-B*07:02*

Christos Tziotzios et al.#

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Table 1 Genome-wide significant loci for UK, Spain and meta-analysis

								UK cohort		Spanish cohort		Meta-analysis	
Locus	Gene	Position (hg19)	SNP ID	RA	PA	RAF_{Cases}	$RAF_{Controls}$	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
2p22.2	CYP1B1	38,298,139	rs1800440	T	C	0.87	0.81	1.62 (1.38-1.90)	5.89×10^{-9}	1.81 (1.28-2.58)	0.00090	1.65 (1.43-1.91)	2.44×10^{-11}
6p21.1	HLA-B	31,320,562	rs2523616	T	C	0.47	0.19	4.69 (4.07-5.40)	8.52×10^{-101}	4.97 (3.52-7.02)	8.09×10^{-20}	4.73 (4.15-5.39)	7.60×10^{-119}
8q24.22	ST3GAL1	134,503,229	rs760327	G	C	0.46	0.39	1.32 (1.18-1.47)	1.18×10^{-6}	1.50 (1.14-1.97)	0.00357	1.34 (1.21-1.49)	2.15×10^{-8}
15q26.1	SEMA4B	90,734,426	rs34560261	T	C	0.22	0.17	1.52 (1.32-1.76)	8.47×10^{-9}	1.51 (1.03-2.21)	0.03257	1.52 (1.22-1.74)	8.12×10^{-10}

Each SNP was tested for association by logistic regression using an additive regression model; total $N = 5161$ biologically independent subjects ($N_{cases} = 1044$ and $N_{controls} = 4145$)
RA risk allele, *PA* protective allele, *RAF* risk allele frequency, *OR* odds ratio, *RAF* risk allele frequency, *CI* confidence interval

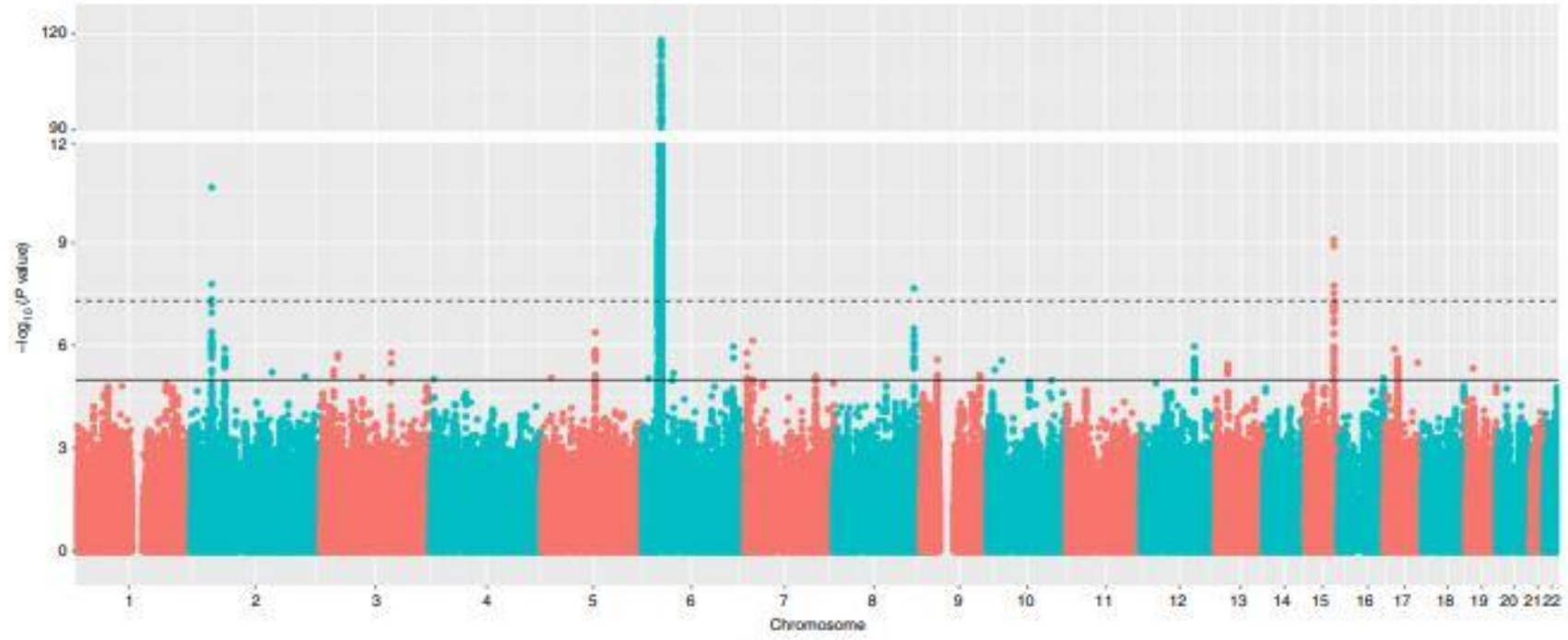

Fig. 2 Manhattan plot showing the *P* values for the meta-analysis genome-wide association study. Each SNP was tested for association by logistic regression using an additive regression model; the interrupted line indicates the threshold for genome-wide significance ($P = 5\times10^{-8}$); the *y* axis has been collapsed for better illustration of all genomic signals; the continuous line represents the threshold for suggestive significance ($P = 1\times10^{-5}$); $N = 5161$ biologically independent subjects ($N_{cases} = 1044$ and $N_{controls} = 4145$)

nature COMMUNICATIONS

ARTICLE

https://doi.org/10.1038/s41467-019-09117-w OPEN

Genome-wide association study in frontal fibrosing alopecia identifies four susceptibility loci including *HLA-B*07:02*

Christos Tziotzios et al.#

40% of cases are associated with certain genetic predisposition—HLA-B*07:02

Survey of hair loss experts

- 60 member of AHRS
- Increased incidence (>50 in 5 years)
- Unsure of sunscreen avoidance
  - 38% always give counsel
  - 50% sometimes give counsel
- 8% no sunscreen at all; 40% no chemical; 2% no physical;
- 33% concerned about ingredient—61% titanium dioxide; 22% avobenzone/oxybenzone

Tosti A et al. Response from the American hair research society to "sunscreen and frontal fibrosing alopecia; a review." JAAD 82(3):729-30, 2020, doi: 10.1016/j.jaad.2019.10.032.

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doi: 10.1111/ajd.12833

LETTER TO THE EDITORS

Case Letter

Dear Editor,

Frontal fibrosing alopecia: Regrowth following cessation of sunscreen on the forehead

Frontal fibrosing alopecia is a progressive cicatricial alopecia that most commonly affects postmenopausal women. The prevalence of frontal fibrosing alopecia has increased ten-fold over the past decade.[1] The pathophysiology remains uncertain, although a key element appears to be destruction of the epithelial hair follicle stem cells located in the bulge region of the hair follicle.[2] Hormonal, genetic, autoimmune, inflammatory and environmental factors are thought to contribute the pathophysiology. Daily facial sunscreen use has been suggested as an important contributor to the pathophysiology of frontal fibrosing alopecia.[3,5]

We report the case of a 54-year-old perimenopausal woman referred by a dermatologist to our specialist hair clinic with a clinical diagnosis of frontal fibrosing alopecia. She presented with a 1-year history of frontotemporal and eyebrow hair loss. Current medications included daily hydroxychloroquine 200 mg and clobetasole diproprionate 0.05% ointment. Previous medications included dutasteride 0.1 mg oral daily and novasone 0.1% cream. Examination revealed erythema and perifollicular hyperkeratosis, anterior hairline skin atrophy and prominent vessels (Fig. 1a). Treatment for associated female pattern hair loss was commenced with daily spironolactone 100 mg and minoxidil 1 mg. For her frontal fibrosing alopecia, she continued hydroxychloroquine and dutasteride. Triamcinolone 5 mg/

regrowth along the anterior hairline. Skin atrophy reduced as a result of the cessation of intralesional and topical steroid use, and the forehead veins were less prominent (Fig. 2a). Ciclosporin and hydroxychloroquine were ceased, and hair regrowth was sustained after 12 months (Fig. 2b). Frontotemporal trichoscopy showed normal number of hairs and average hair shaft thickness. The patient continues to attend for review every 6 months and to date there has been no evidence of reactivation of her FFA (Fig. 2c).

How sunscreen contributes to the pathophysiology of frontal fibrosing alopecia is unknown. One hypothesis is that sunscreen enters the follicular infundibulum and elicits an immune reaction.[4] Low sebum production in

Figure 2 (a) At 24 months: increased frontotemporal hair density following cessation of sunscreen on the forehead. Reduced erythema, perifollicular hyperkeratosis, skin atrophy and prominent vessels. (b) At 30 months: sustained hair regrowth despite ceasing systemic and topical therapy for frontal fibrosing alopecia. (c) At 36 months: sustained hair regrowth 12 months after ceasing systemic and topical therapy for frontal fibrosing alopecia.

may improve frontal fibrosing alopecia.

We now recommend that patients with frontal fibrosing alopecia avoid applying sunscreen products on the forehead and use a cap or hat for sun protection.

William C Cranwell[1,2,3,4] | Rodney Sinclair[1,5,6]

[1]Sinclair Dermatology, East Melbourne, [2]The Royal Melbourne Hospital, Parkville, [3]The Alfred Hospital, Melbourne, [4]Skin and Cancer Foundation Inc, Carlton, [5]Department of Medicine, University of Melbourne, Parkville, and [6]Epworth Dermatology, Melbourne, Victoria Australia

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2. Lyakhovitsky A, Barzilai A, Amichai B. Frontal fibrosing alopecia update. *World J. Dermatol.* 2015; **4**: 35–43.
3. Aldoori N, Dobson K, Holden CR *et al.* Frontal fibrosing alopecia: possible association with leave-on facial skin care products and sunscreens; a questionnaire study. *Br. J. Dermatol.* 2016; **175**: 762–7.
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5. Cranwell WC, Sinclair R. *The role of sunscreen and facial skin care products in frontal fibrosing alopecia*. In: Proceedings of the 10th World Congress for Hair Research; 31 Oct–3 Nov 2017; Kyoto, Japan. Abstract PS1-1.

A method for more precise sampling of the scalp and eyebrows in frontal fibrosing alopecia

Curtis T. Thompson, MD,[a,b,c] and Antonella Tosti, MD[d]
Portland, Oregon, and Miami, Florida

Key words: alopecia; biopsy; cicatricial; FFA; frontal fibrosing alopecia; lichen planopilaris; LPP; scarring.

TECHNICAL CHALLENGE

Early diagnosis of frontal fibrosing alopecia (FFA) often requires performing a biopsy on a cosmetically sensitive area, such as the widow's peak or eyebrows.[1]

SOLUTION

We present a modified, horizontal sectioning technique[2] that allows identification of diagnostic features from a 2-mm dermoscopy-guided punch biopsy specimen (Fig 1).[3] The biopsy specimen is first sent through histologic processing without sectioning or inking. After processing, the specimen is embedded epidermis down. The initial sections contain the epidermis, and the subsequent horizontal step−level sections are taken through the entire tissue segment for a total of 3 slides (3 sections per slide). A few unstained slides are obtained between each of the 3 slides) for possible special stains or research because no tissue remains in the paraffin block (Fig 2).

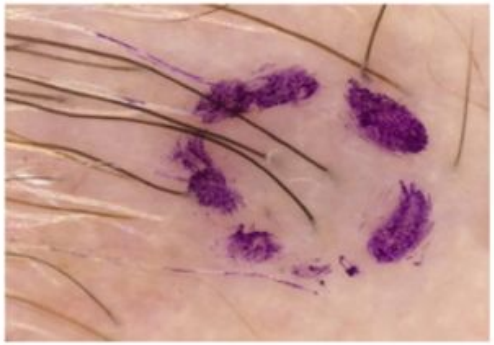

Fig 1. Dermoscopic image of a terminal hair with a peripilar cast, outlined before the 2-mm biopsy specimen is obtained.

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Dermoscopic identification of disease

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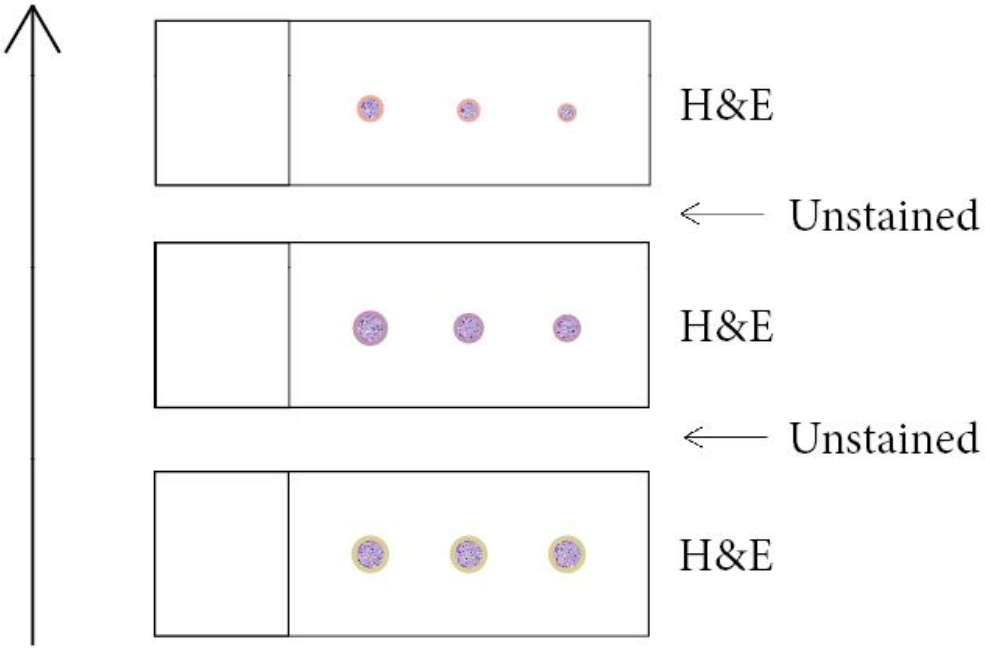
2mm punch—exhaust tissue

Skin Surface



3 slides total with 9 cross sections; 3 sections per slide

1. Tissue is embedded epidermis-down
2. Step through entire block on initial H&E stains
3. Obtain unstained slides

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Size of punch to use?

- 2mm for Frontal Fibrosing Alopecia
- 4mm for everything else

A method for more precise sampling of the scalp and eyebrows in frontal fibrosing alopecia

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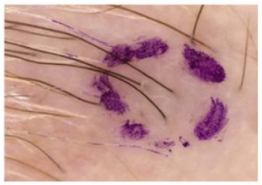

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Imaging modalities united!

- Dermoscopy
- *In vivo* confocal microscopy
- 2mm transverse H&E sectioning

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Dermoscopy

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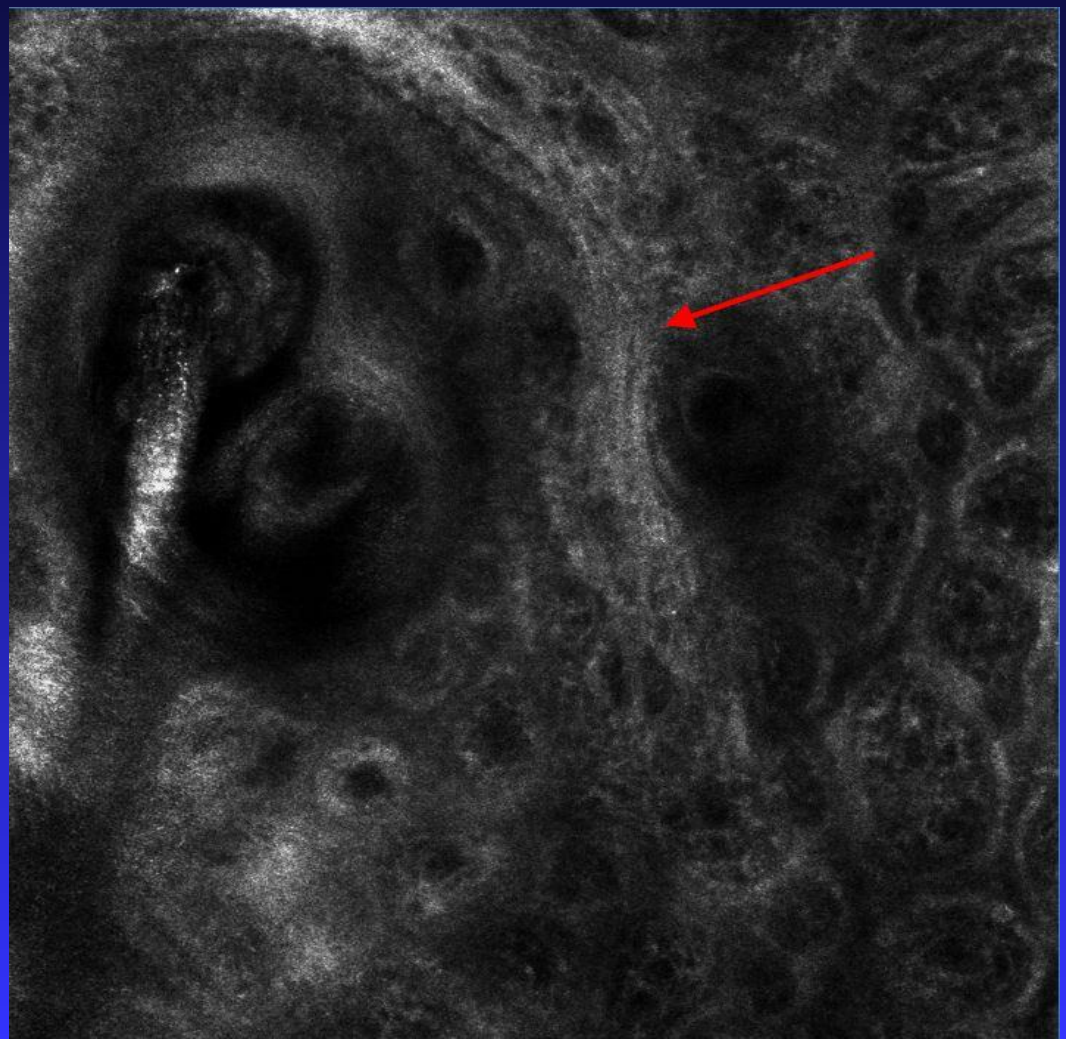
In vivo confocal microscopy



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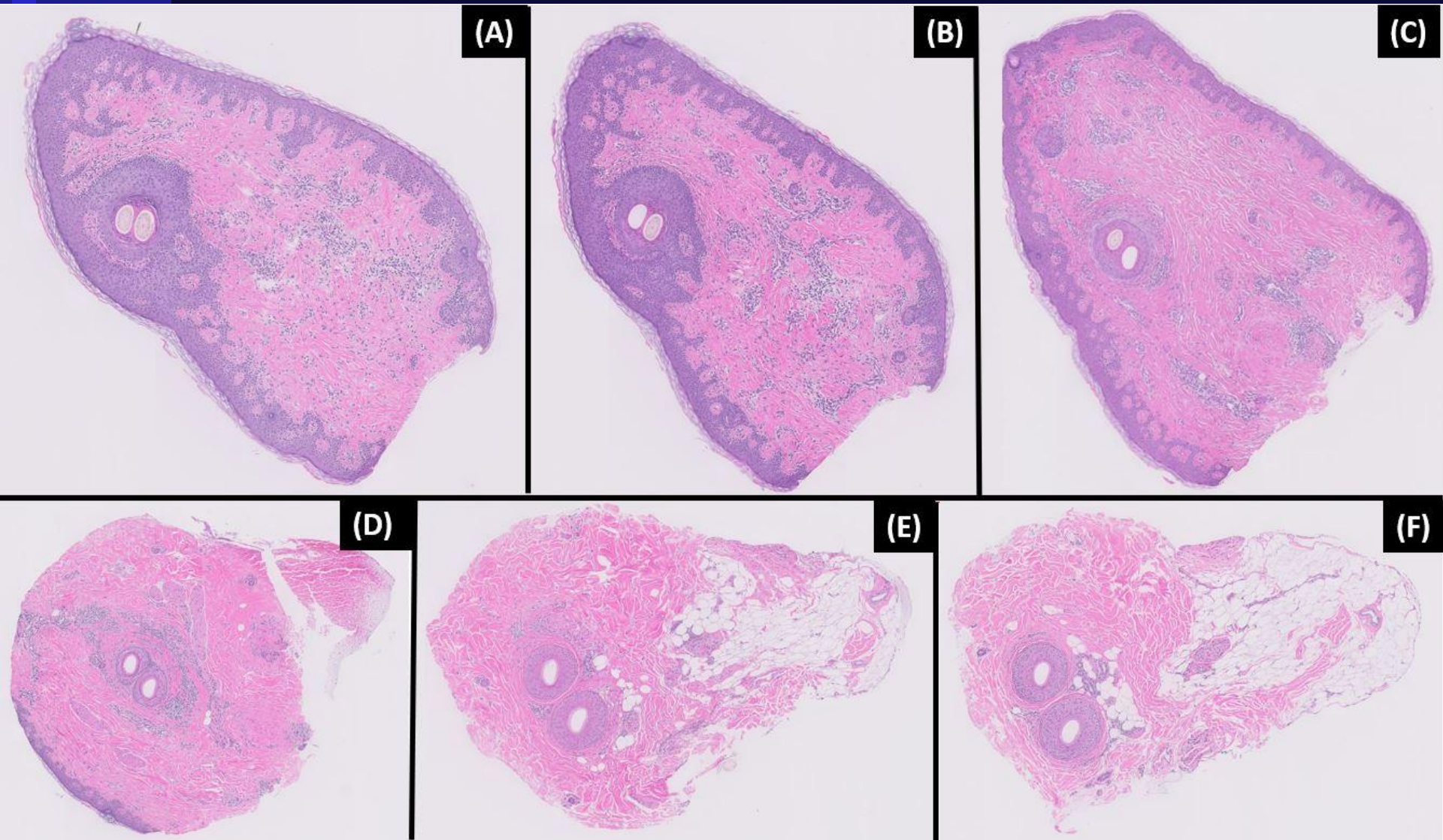
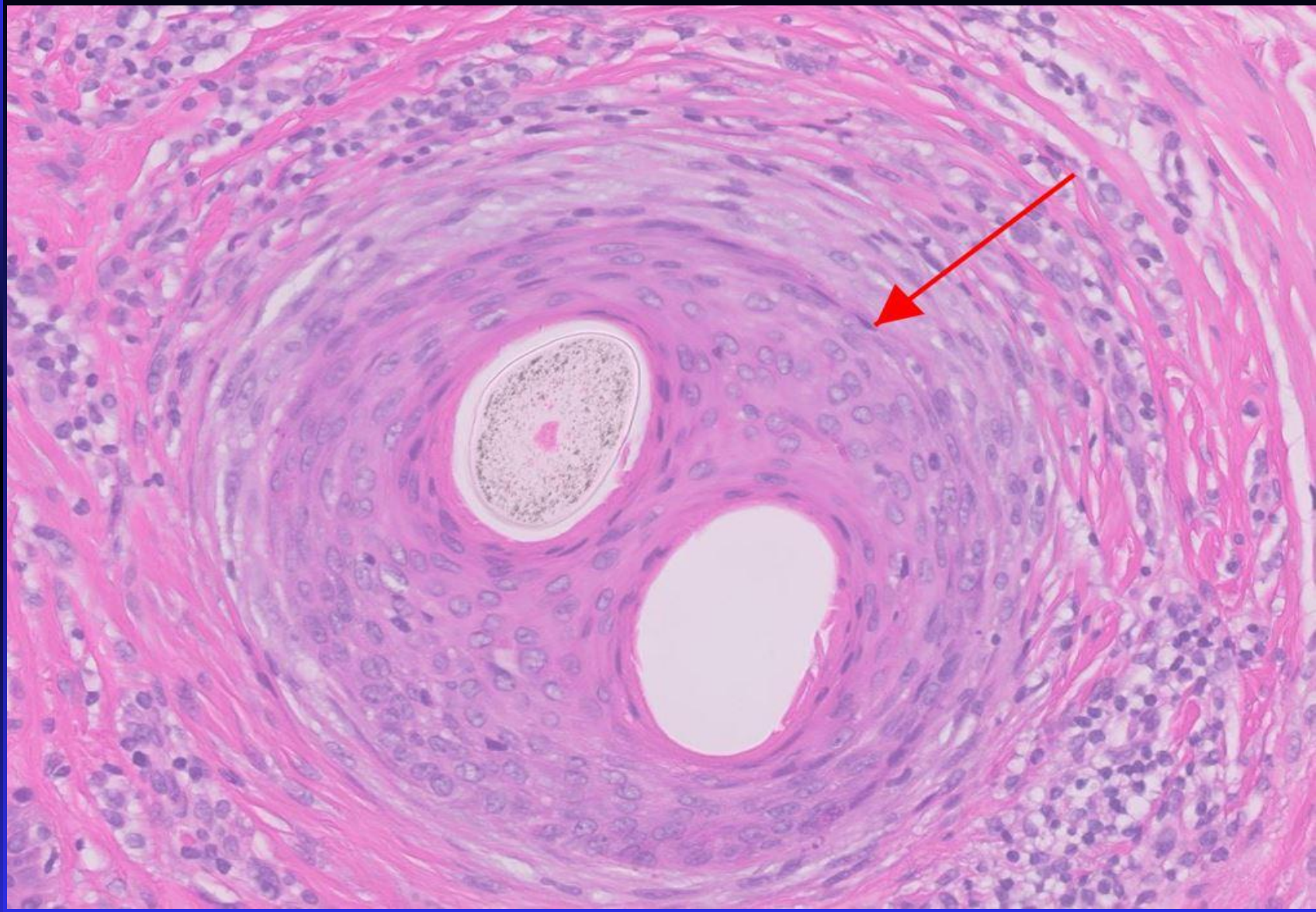
2mm transverse H&E sections





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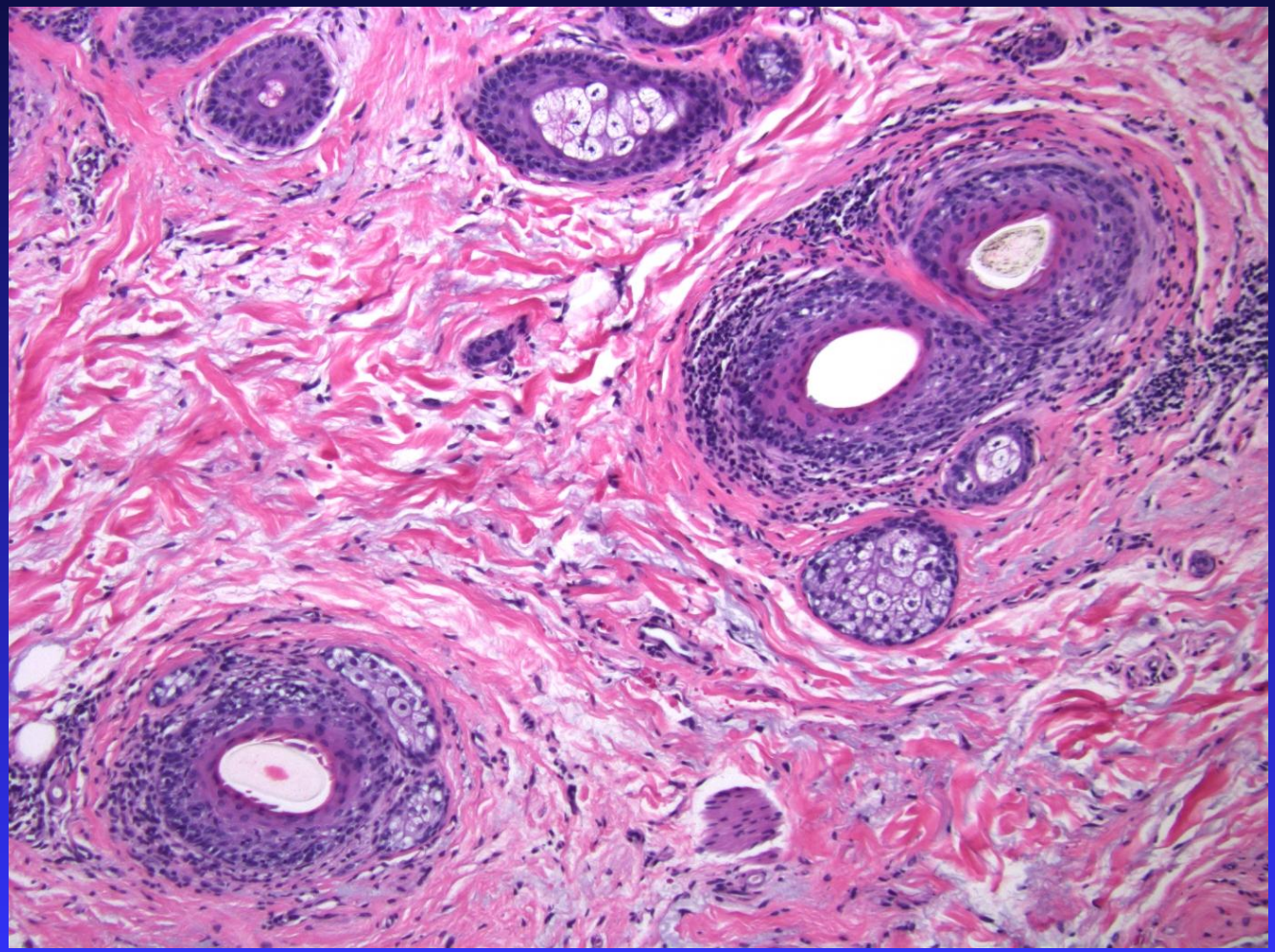
Frontal Fibrosing Alopecia Histology: Minimal scarring



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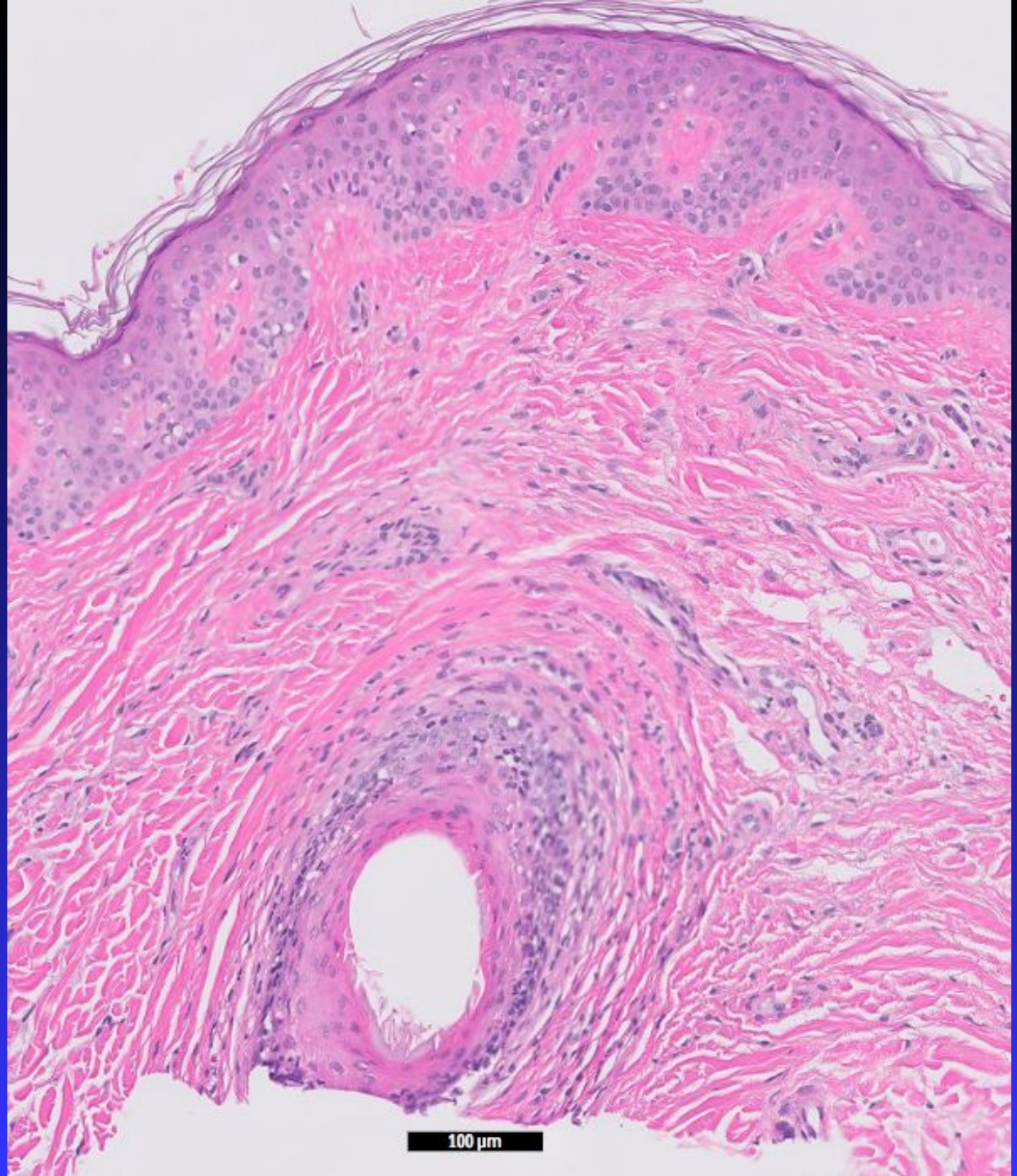

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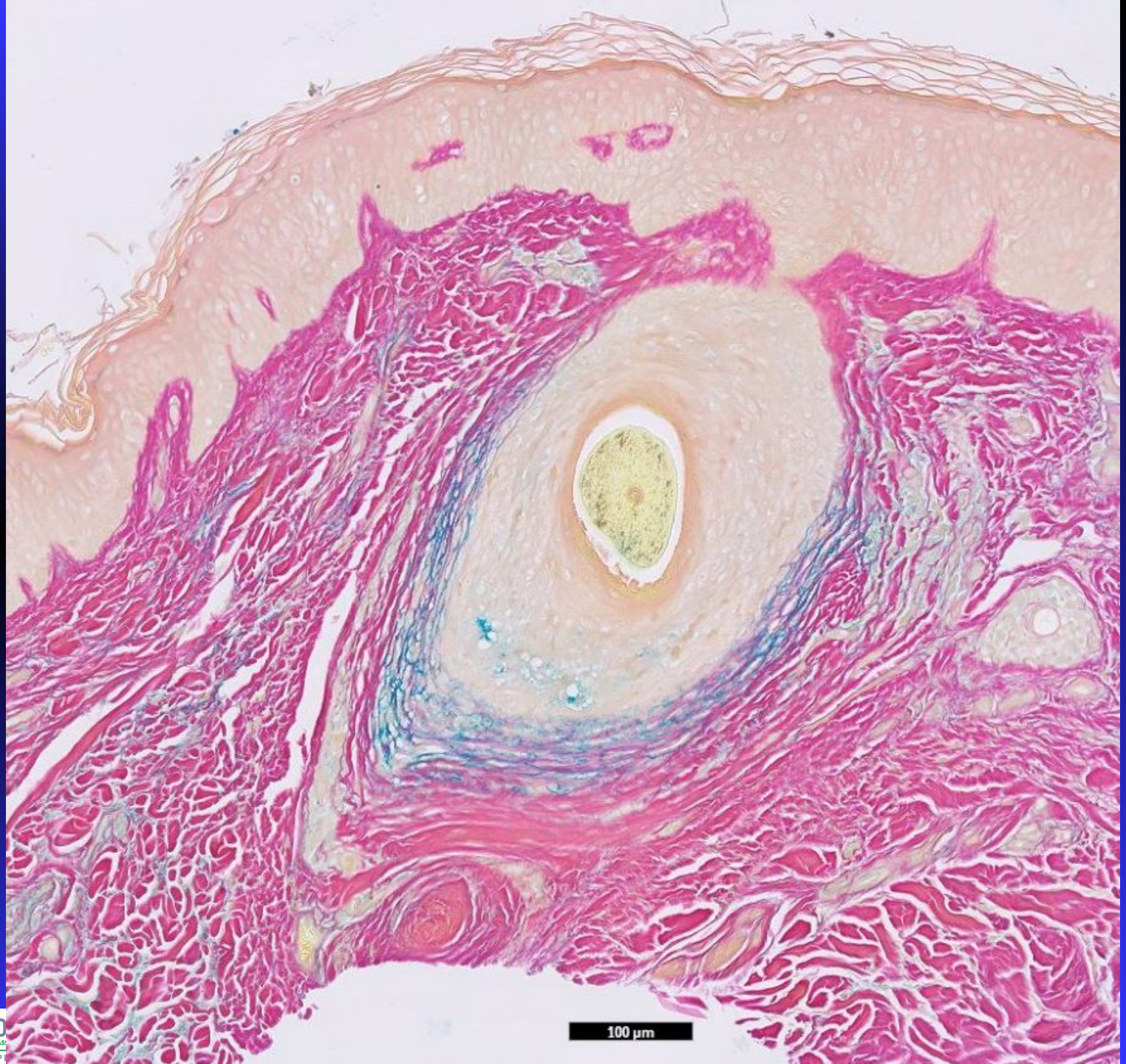

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Rosacea?

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Rosacea?

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Skin Appendage Disorders

What Is Your Diagnosis?

Skin Appendage Disord 2020;6:190–193
DOI: 10.1159/000506749

Received: January 31, 2020
Accepted: February 21, 2020
Published online: April 1, 2020

Erythematous Papules Involving the Eyebrows in a Patient with a History of Rosacea and Hair Loss

Agata Kłosowicz[a] Curtis Thompson[b] Antonella Tosti[c]

[a]Department of Dermatology, University Hospital in Kraków, Kraków, Poland; [b]CTA Lab, Portland, OR, USA; [c]Dr. Phillip Frost Department of Dermatology and Cutaneous Surgery, University of Miami Miller School of Medicine, Miami, FL, USA

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Facial papules in FFA

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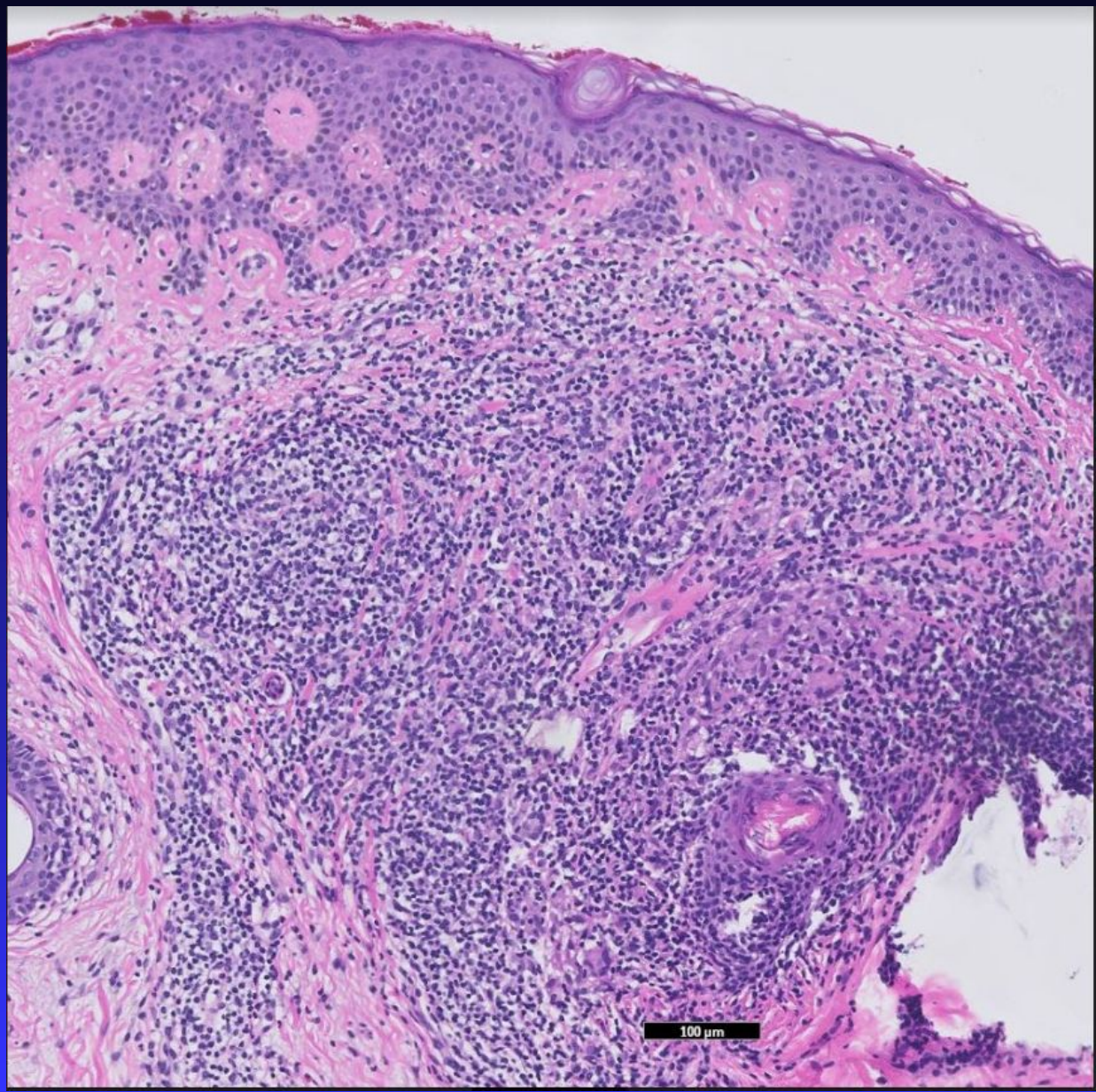
Facial papules in FFA



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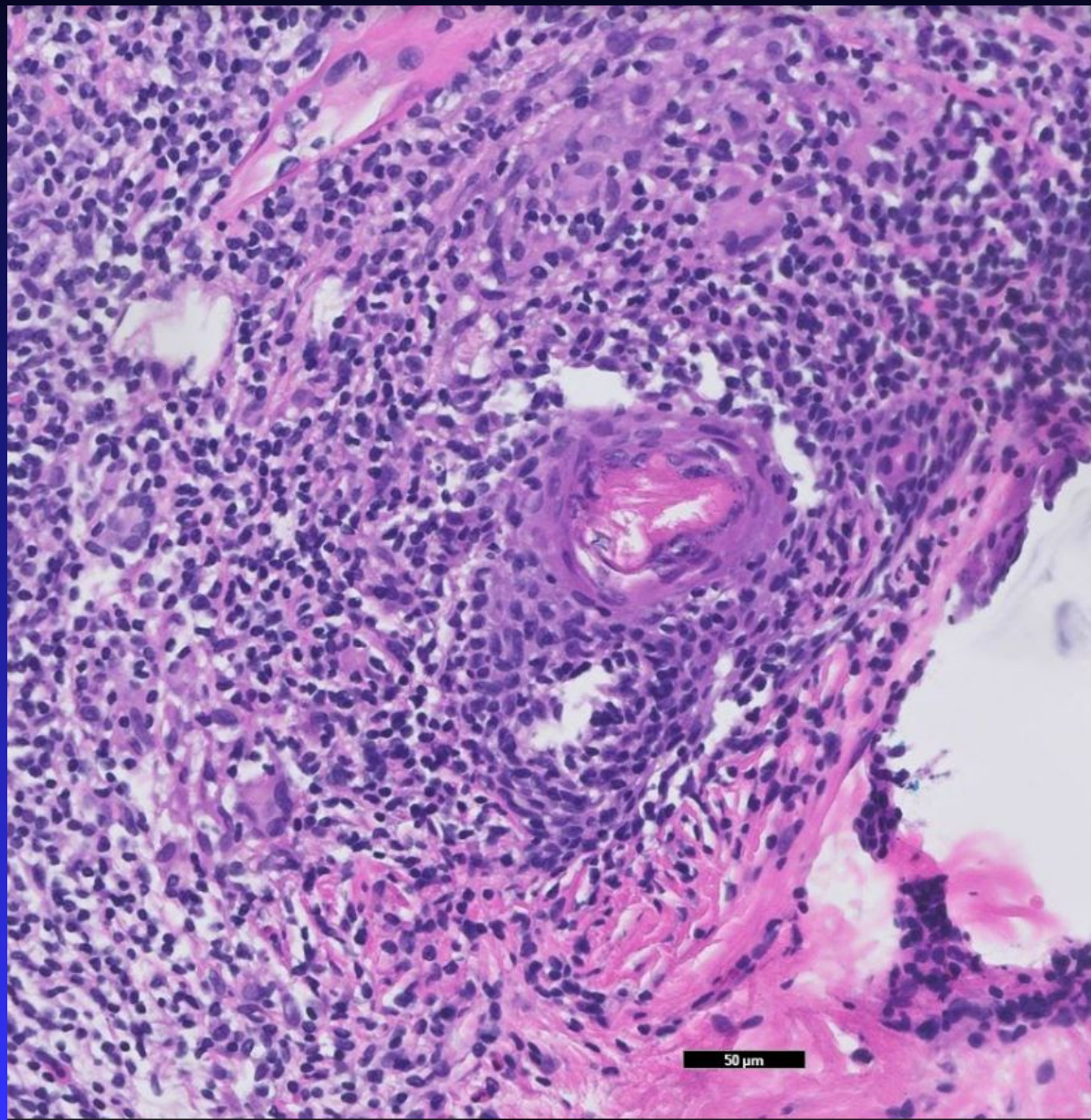
Facial papules in FFA



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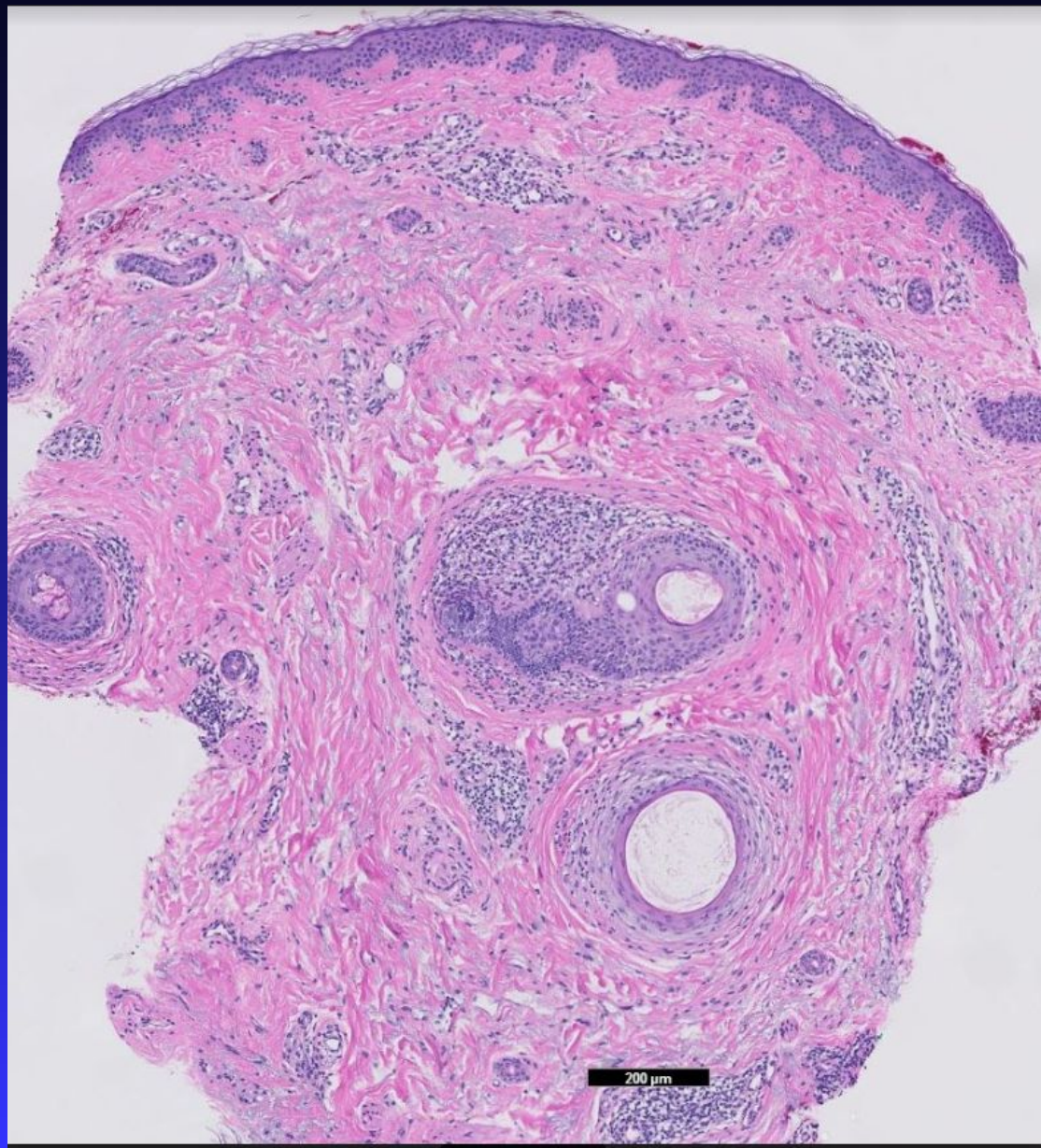
Facial papules in FFA



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Alopecia away from the head

Frontal Fibrosing Alopecia Involving the Limbs Shows Inflammatory Pattern on Histology: A Review of 13 Cases

Miteva, Mariya MD **Author Information**

The American Journal of Dermatopathology: March 2020 - Volume 42 - Issue 3 - p 226-229
doi: 10.1097/DAD.0000000000001500

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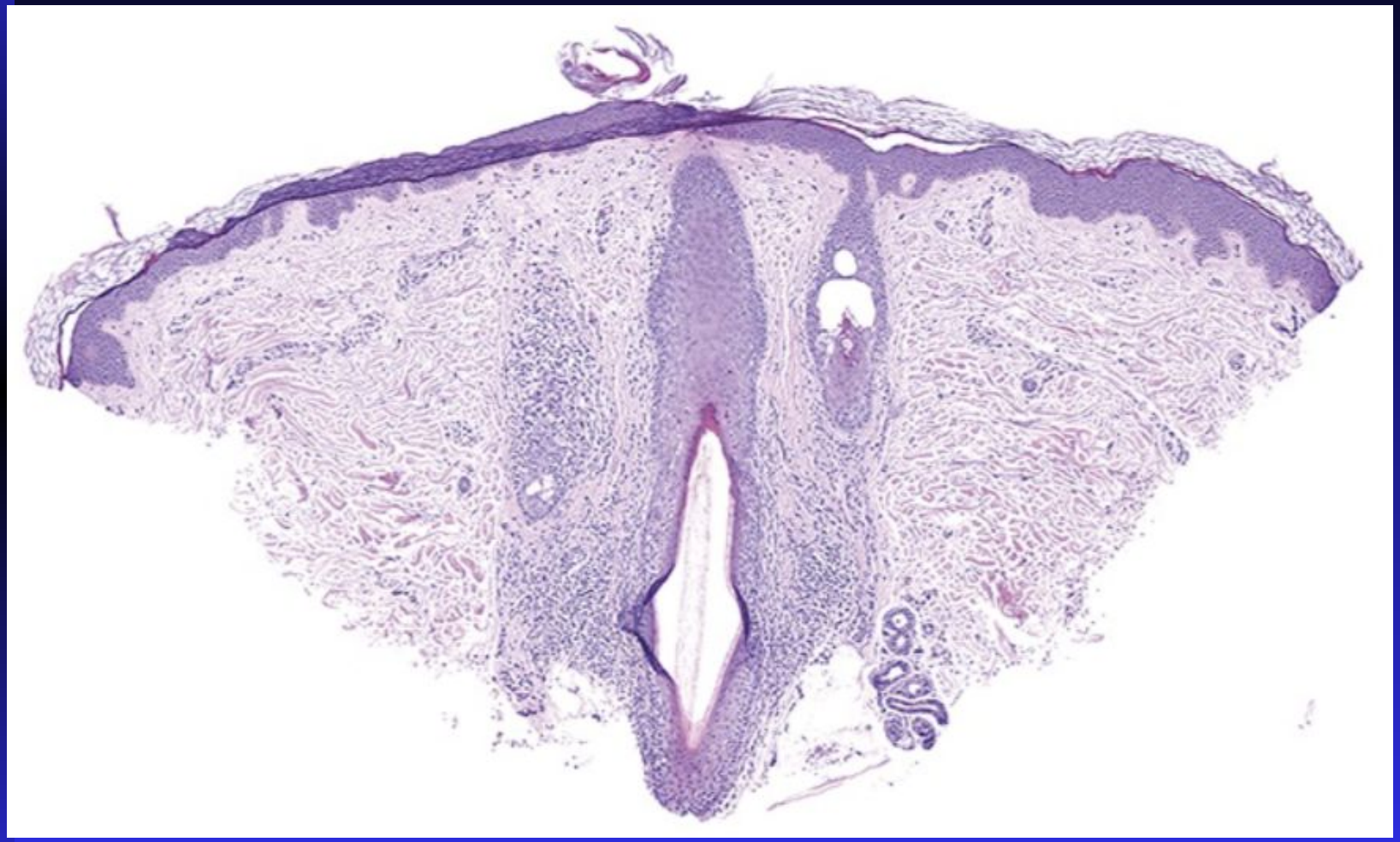
FFA Limbs



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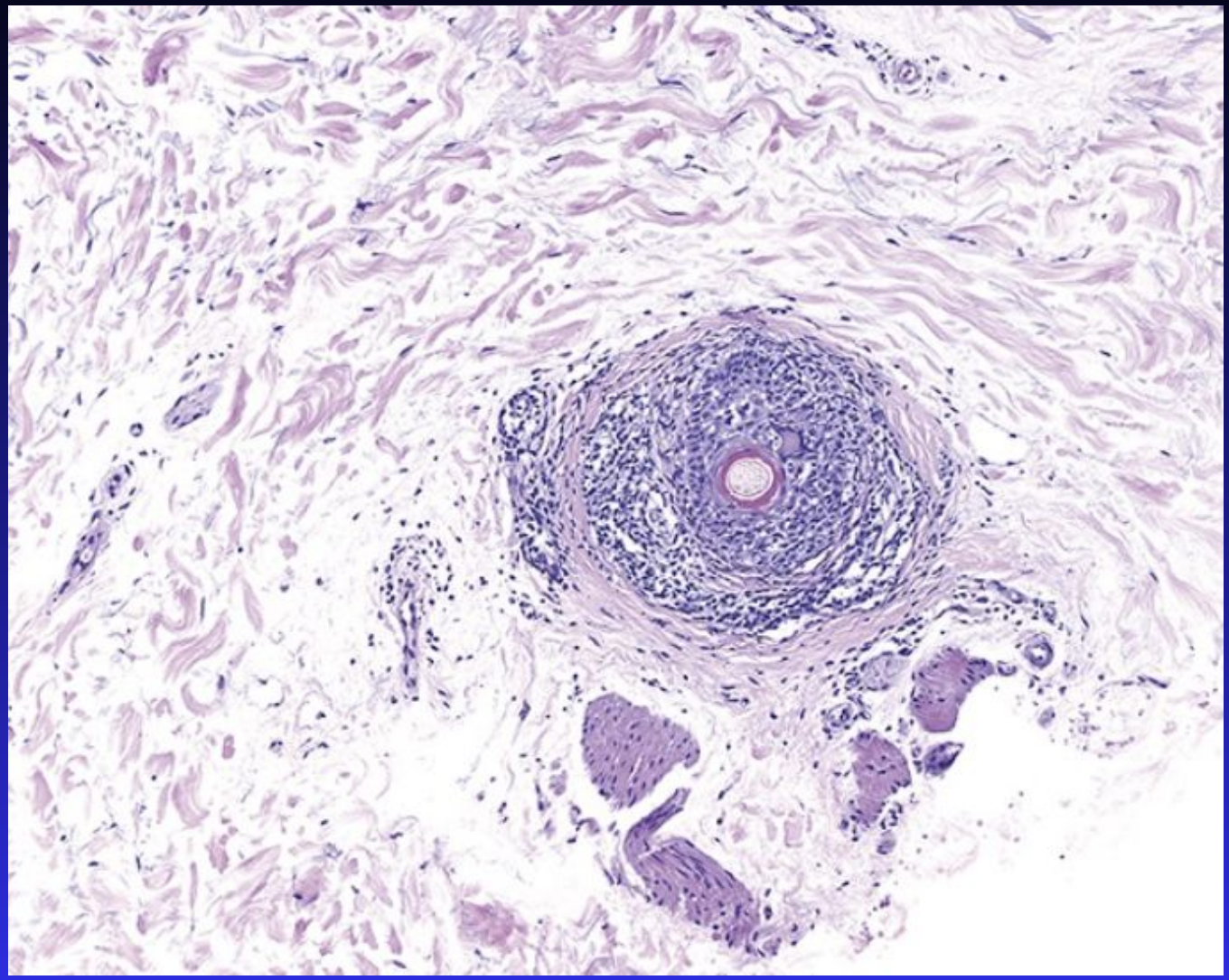
FFA Limbs



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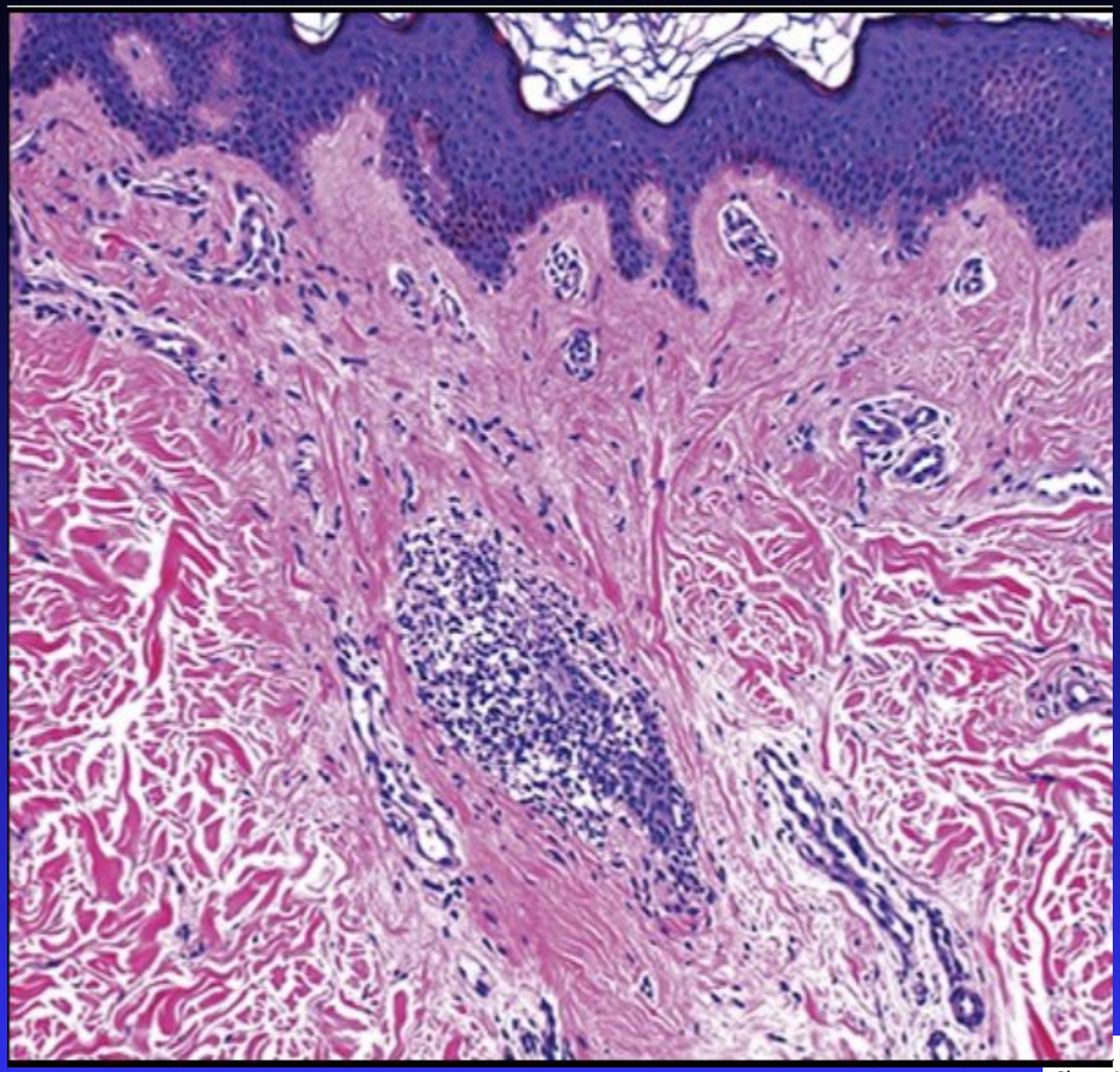
FFA Limbs



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Summary of FFA Update

- 30% of cases can be credited to a chemical, possible avo/oxybenzone or $Ti0_2$
  - Other ingredients should not yet be excluded
- 40% of cases are associated with certain genetic predisposition—HLA-B*07:02
- A 2mm punch with a mucin stain is the best tool for an accurate histopathologic diagnosis.

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Thanks to:

- Miami and Bologna--Antonella Tosti
- Brussels--Athanassios Kolivras
- Mexico City--Maria Abril Martinez Velasco
- Portland--Janet Roberts and Nisha Desai
- UCSF—Vera Price and Tim McCalmont

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Thanks!

curtisinportland@gmail.com

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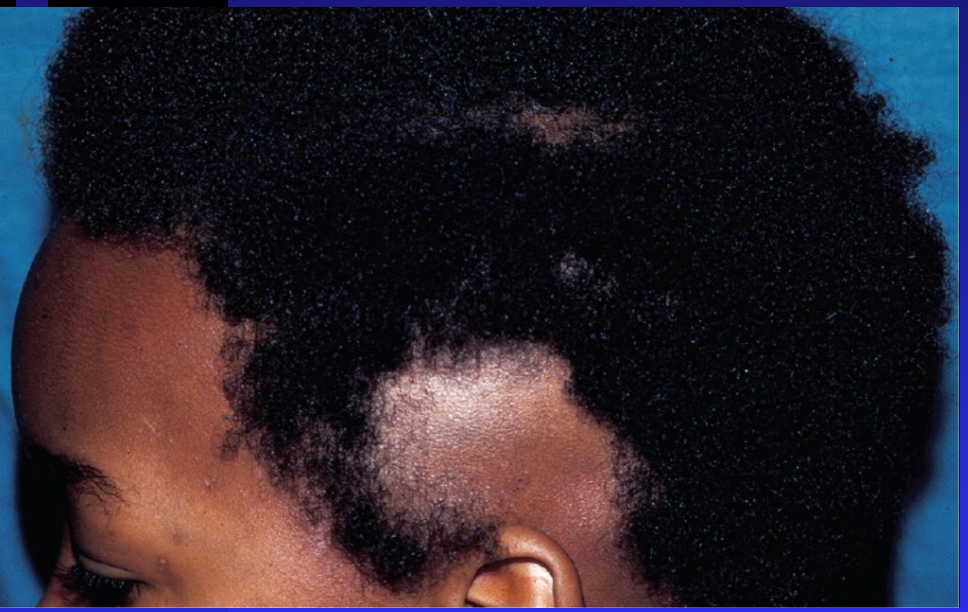
Communication

- Pertinent clinical information
  - Patchy vs Diffuse



Phillips TG et al. Am Fam Physician 96(6):371-8, 2017.

Communication

- Pertinent clinical information
  - +Hair Pull Test or complaint of shedding

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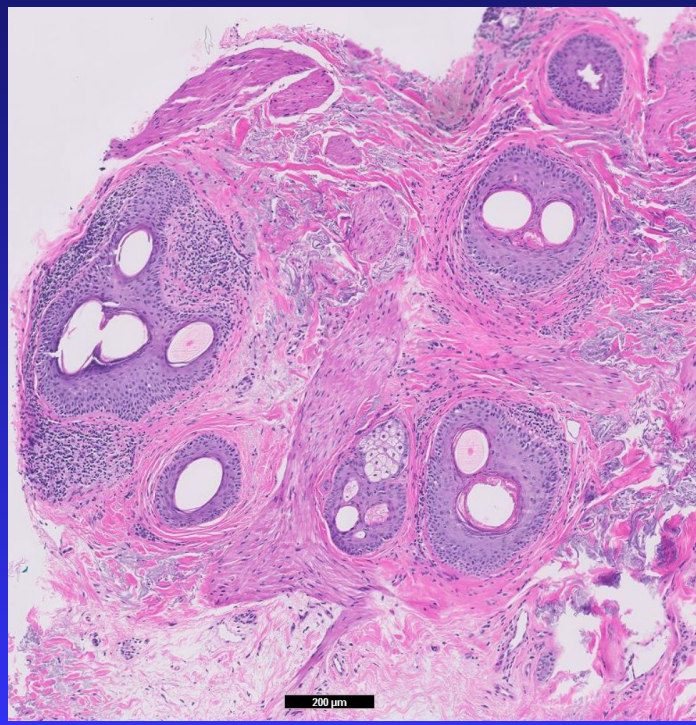
Communication

- Pertinent clinical information
  - Seborrheic dermatitis? Treated?



https://my.clevelandclinic.org/health/diseases/14403-seborrheic-dermatitis

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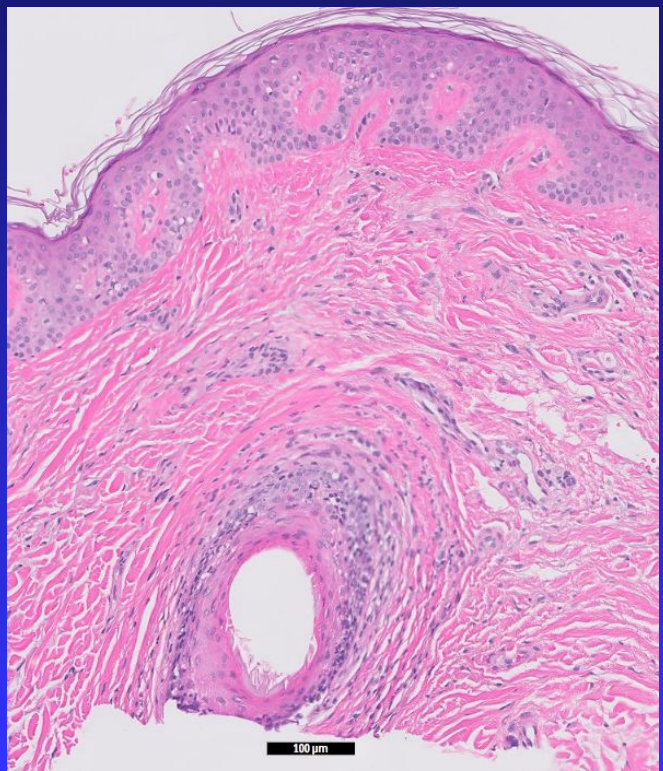
Communication

- Pertinent clinical information
  - Evidence of subtle scarring



al. Mayo Clin Proc 93(11):1581-8, 2018

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Communication

- If the diagnosis doesn't match your clinical assessment, pick up the phone and call the pathologist.

om/this-day-in-history/7-745-video

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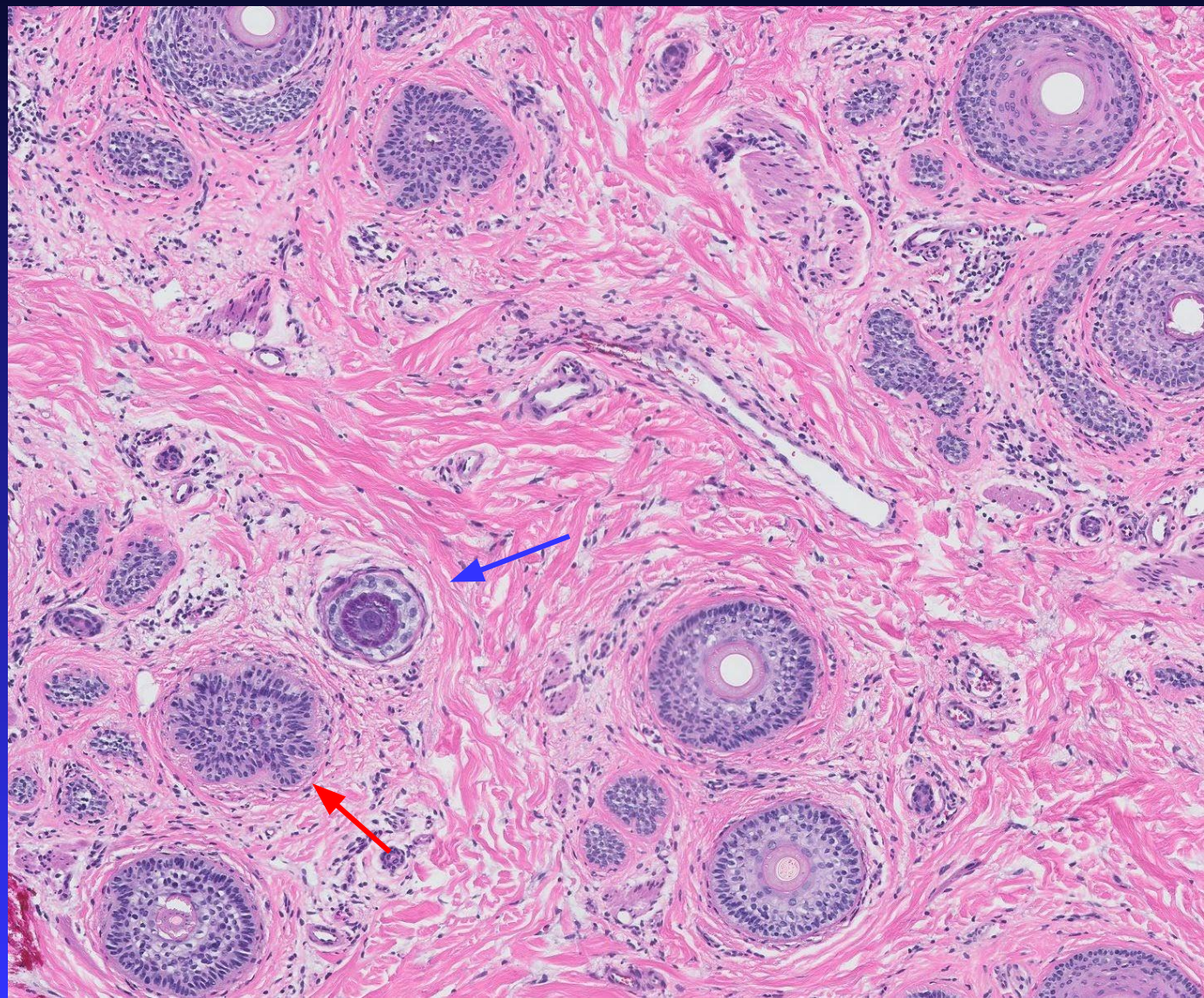
Alopecia areata?



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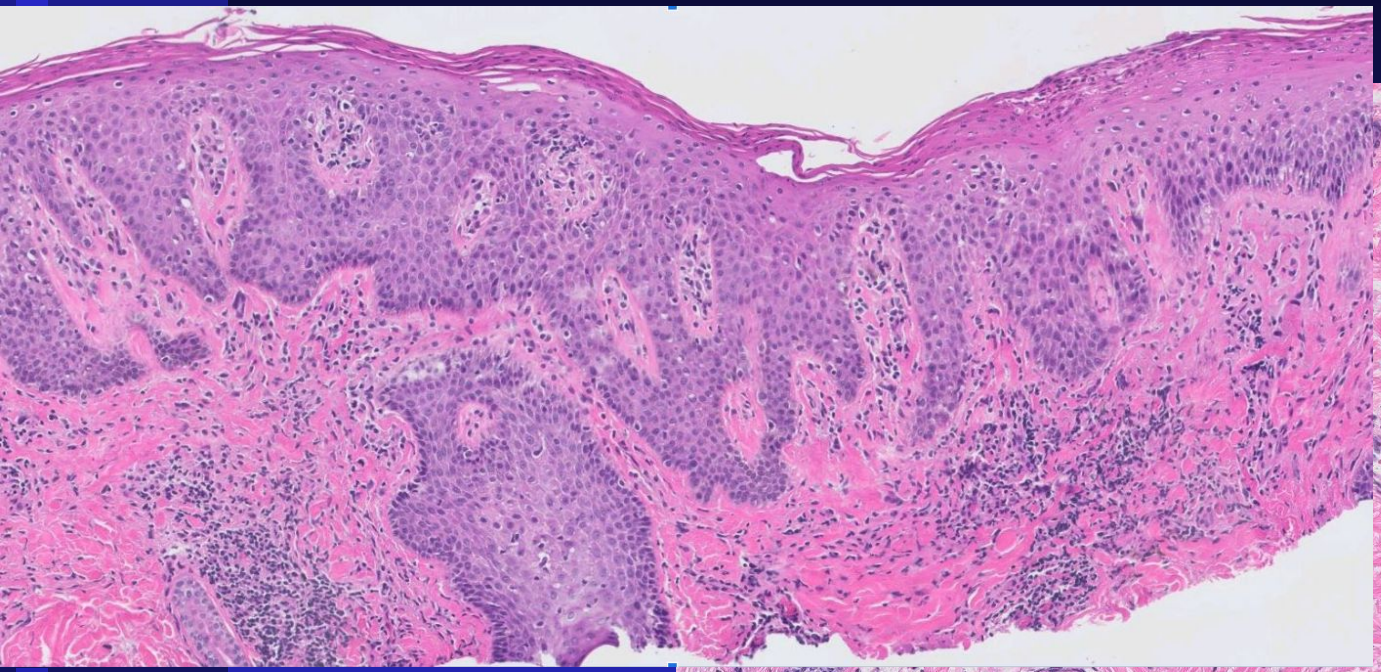
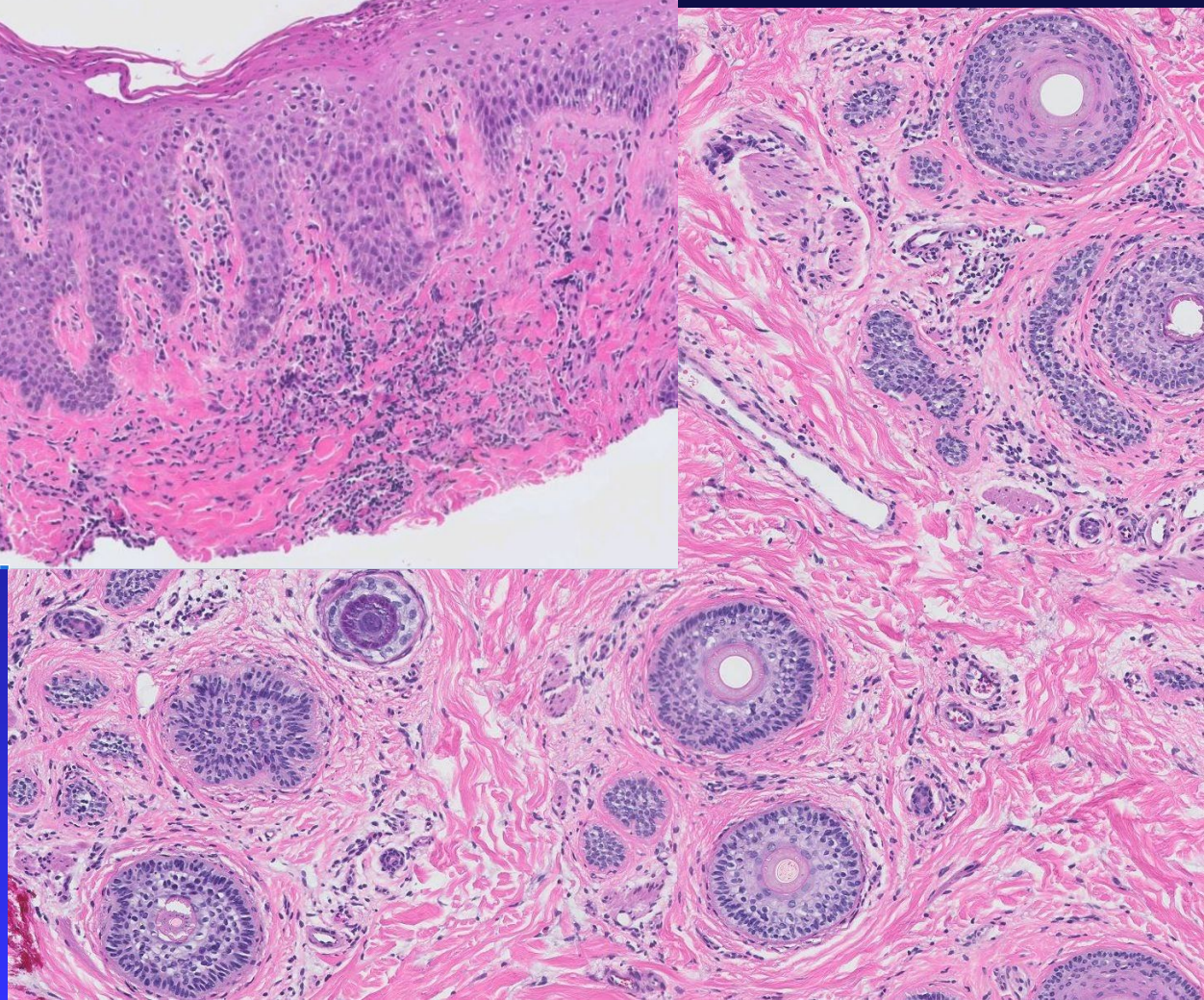
Psoriatic alopecia





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PERSPECTIVES IN DERMATOPATHOLOGY

JOURNAL OF CUTANEOUS PATHOLOGY WILEY

Alopecia areata-like pattern: A new unifying concept

Curtis T. Thompson MD[1,2,3] | Athanassios Kolivras MD, PhD[4]

[1]CTA Pathology, Portland, Oregon

[2]Department of Dermatology, Oregon Health and Sciences University, Portland, Oregon

[3]Department of Pathology, Oregon Health and Sciences University, Portland, Oregon

[4]Département inter-hospitalier de Dermatologie, Saint-Pierre, Brugmann and HUDERF University Hospitals, Université Libre de Bruxelles, Brussels, Belgium

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Alopecia Areata-like Pattern

- Psoriasis
- Lupus erythematosus
- Syphilis
- Permanent chemotherapy induced alopecia (pCIA)
- Systemic amyloidosis
- Linear morphea (en coup de sabre)

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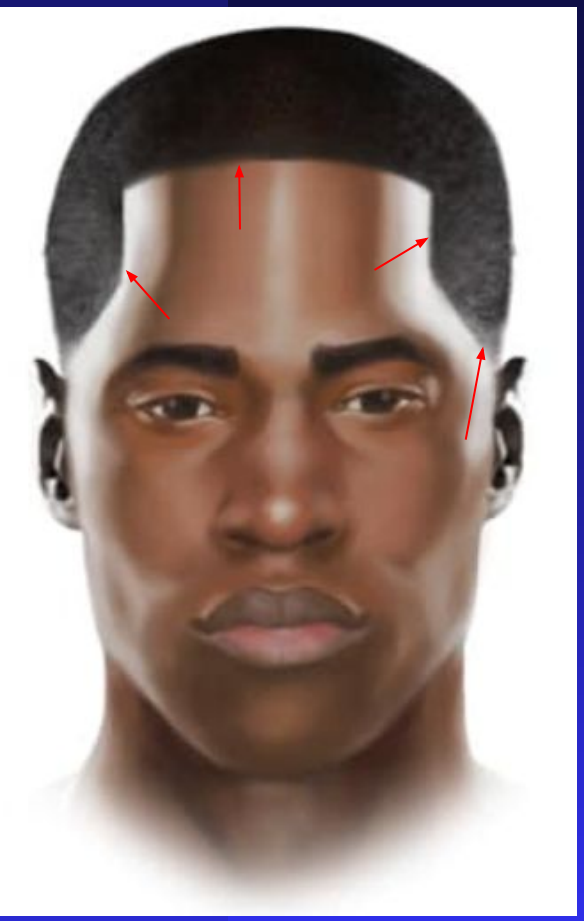
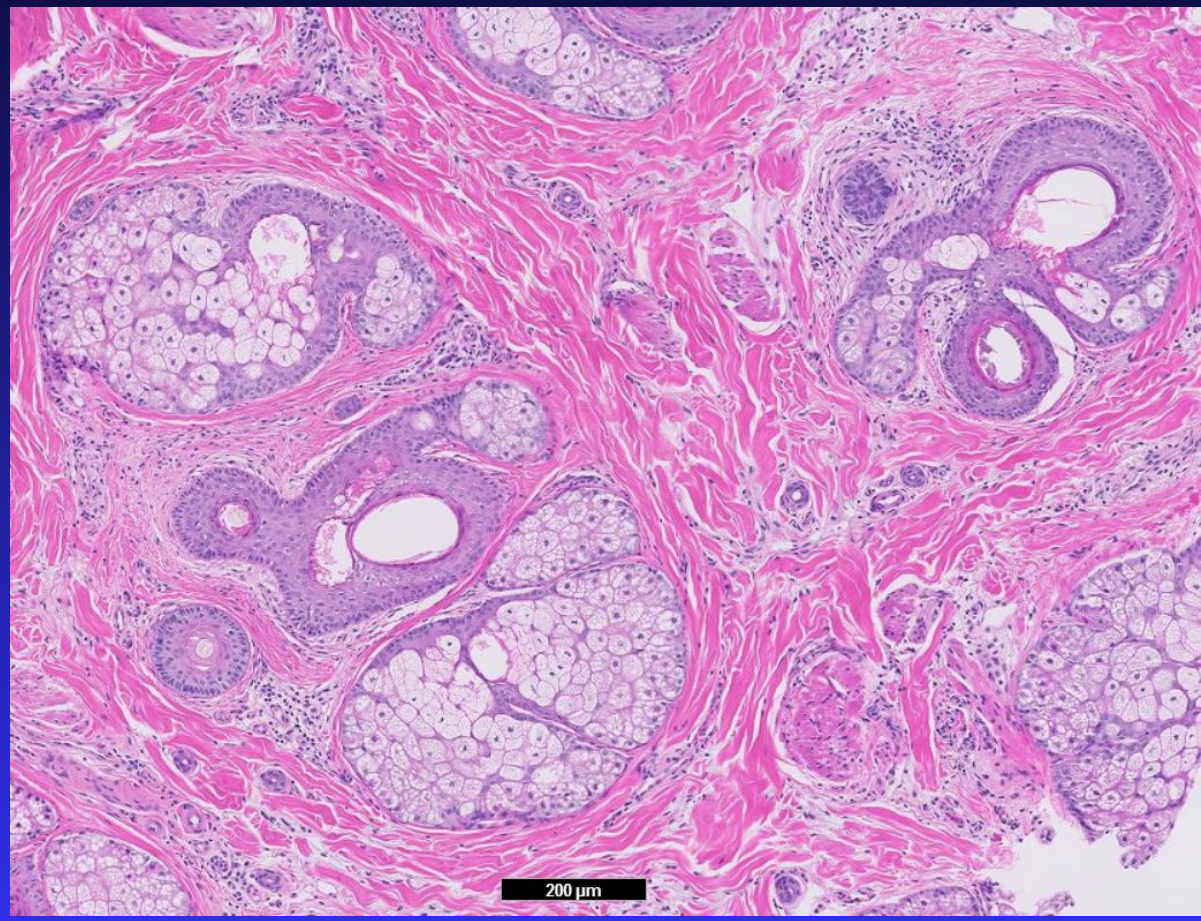
Avoid biopsies from the hairline





Another Alopecia Areata Simulant

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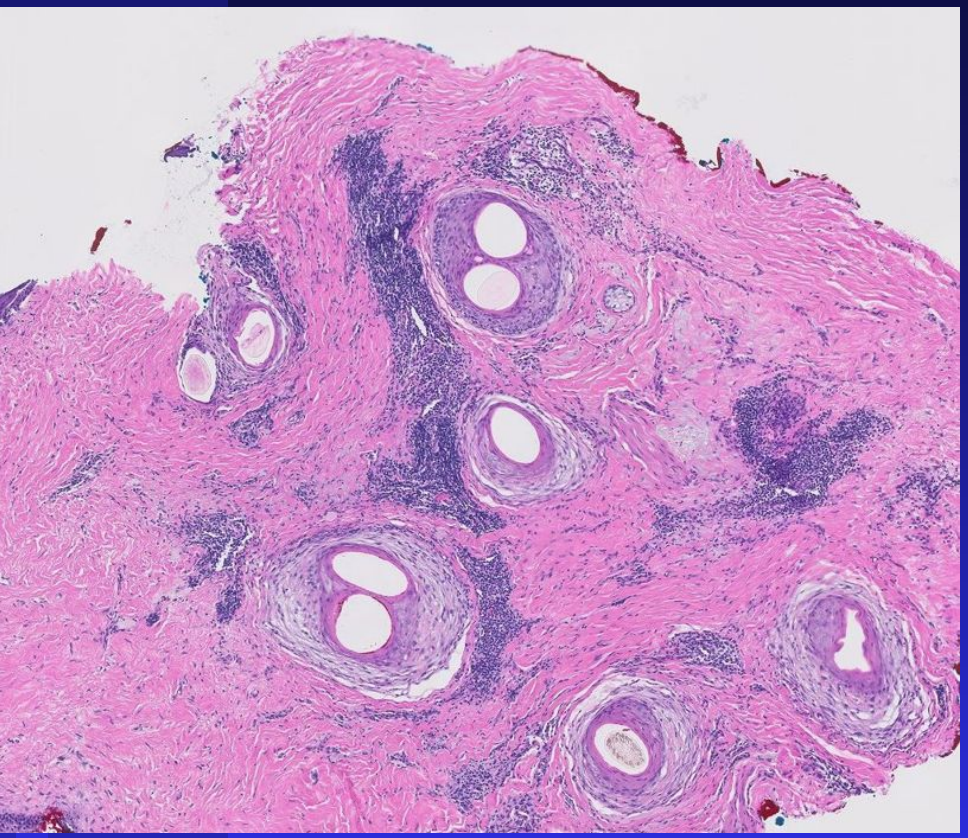

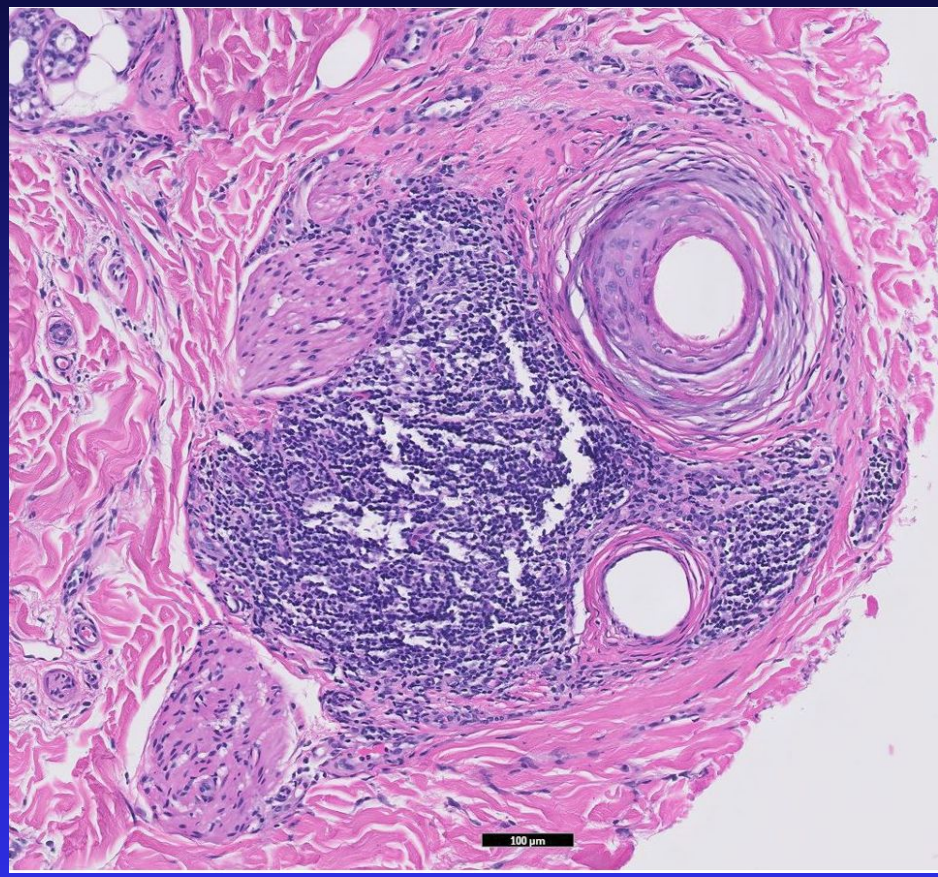

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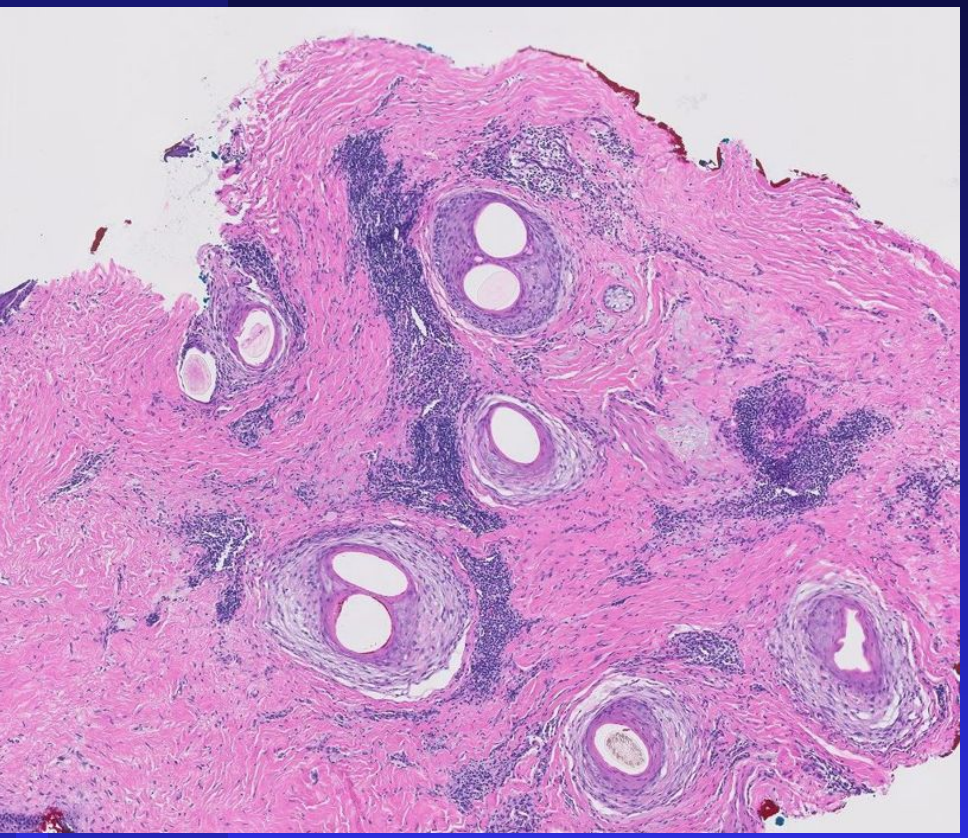
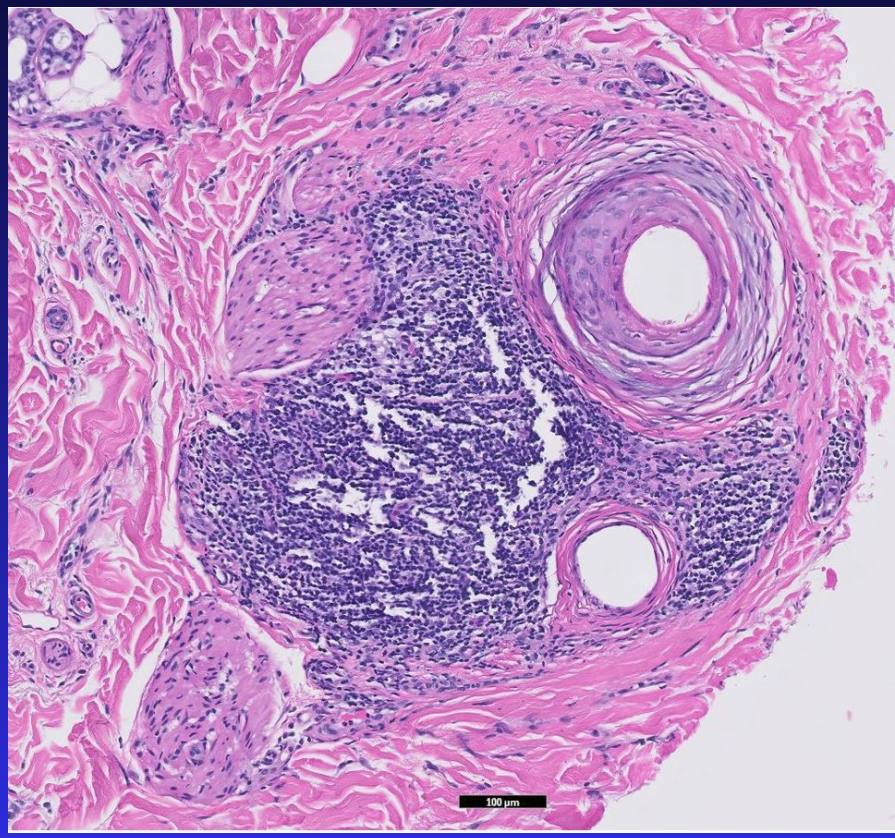
LPP versus Folliculitis decalvans



LPP



Folliculitis decalvans

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VOLUME 48, NO. 6, JUNE 2021

EDITOR-IN-CHIEF:
CHRISTOPHER R. SHEA
CHICAGO, IL, USA

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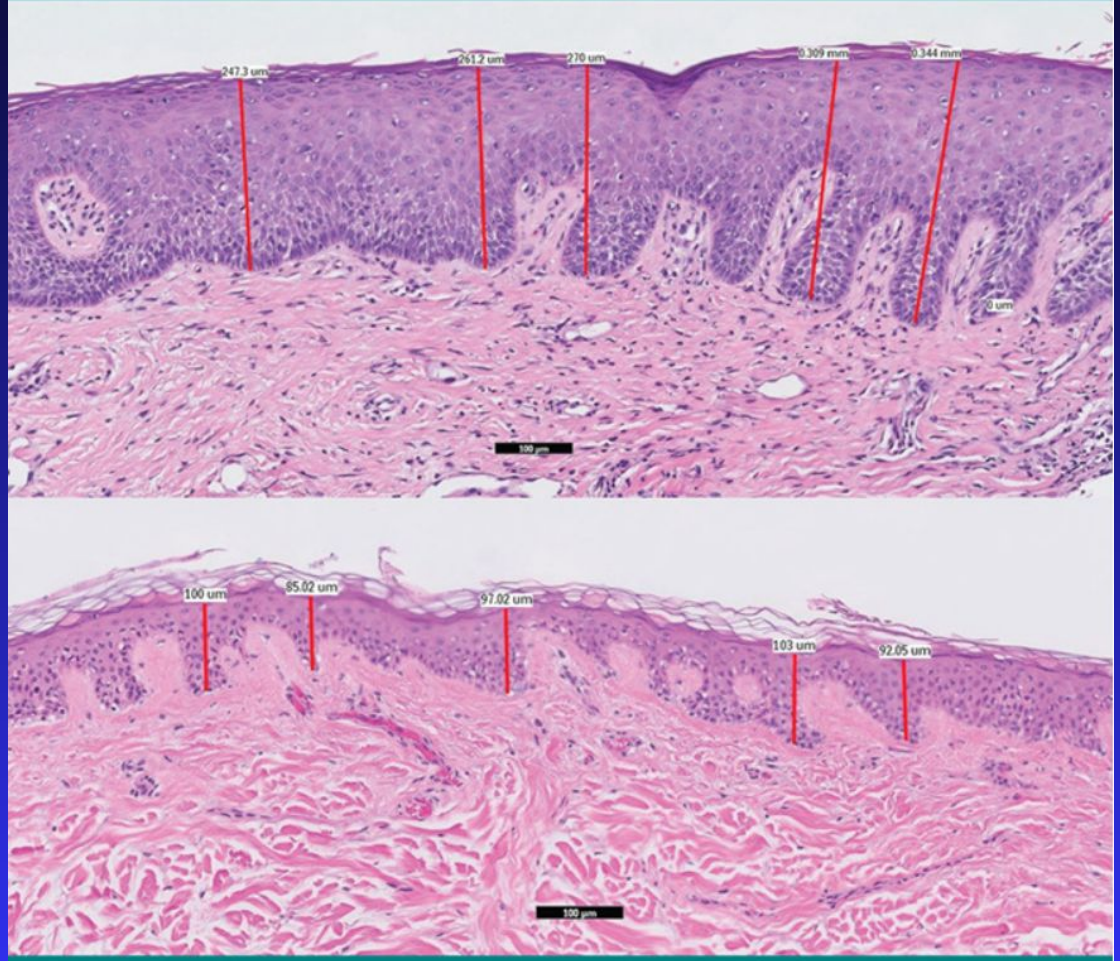

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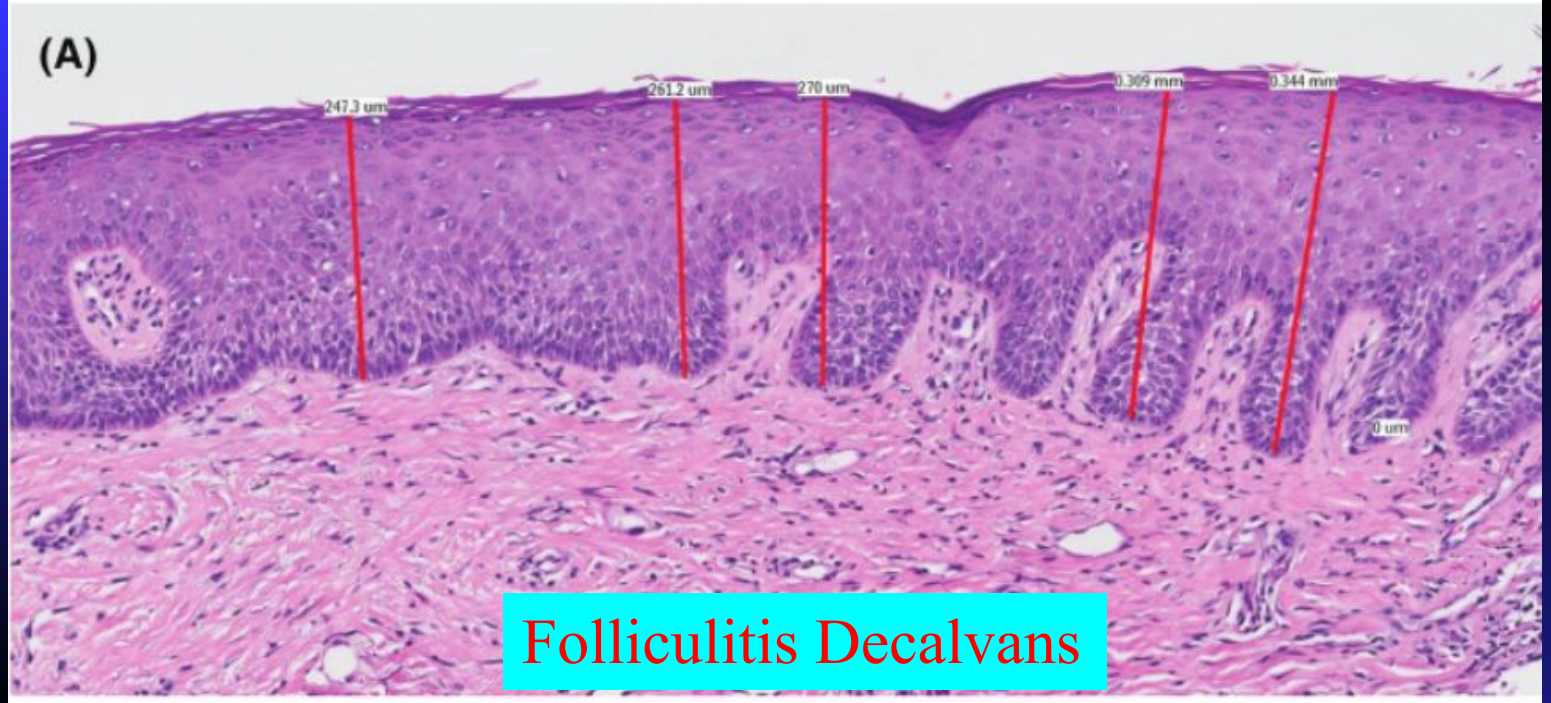

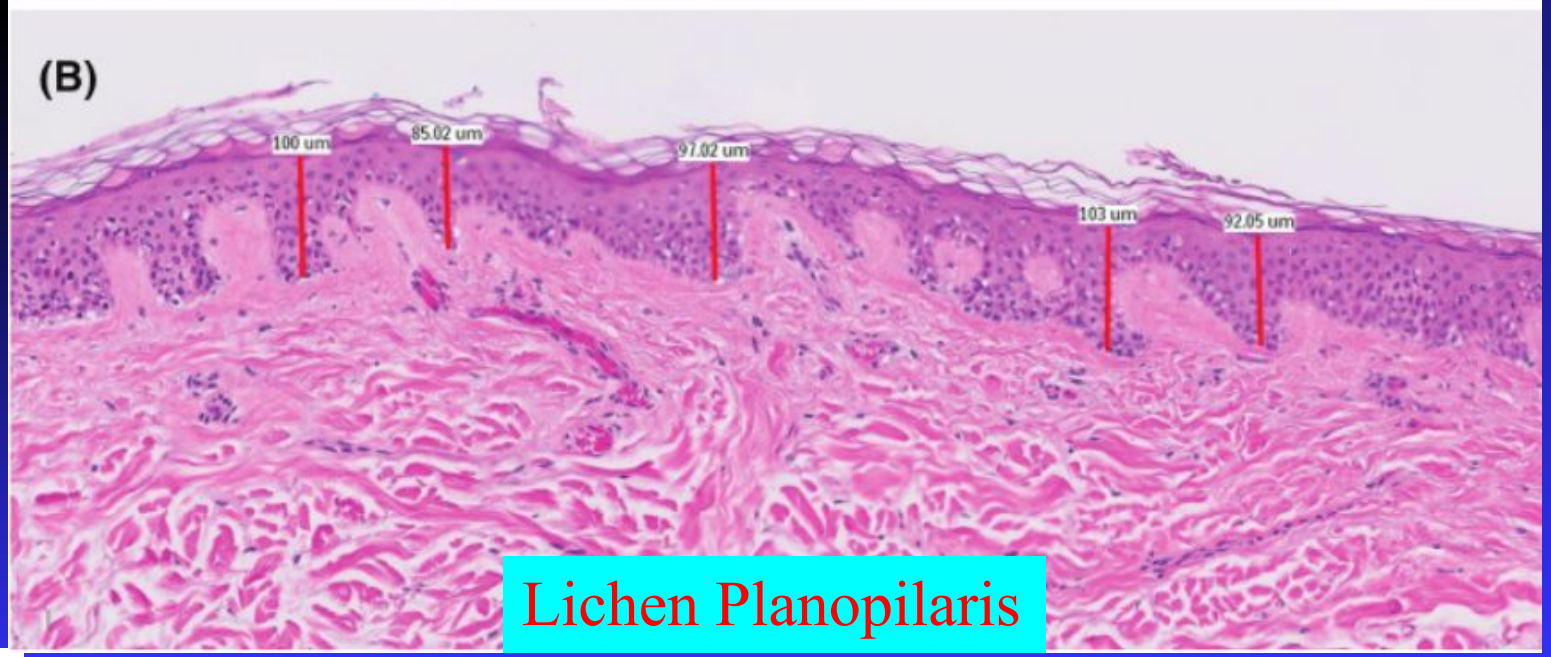

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Bohnett MC, Kolivras, A, Thompson AA and Thompson CT, JCP 48(6):816-8, 2021.

Thanks!

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