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Epidermal thickness is useful in distinguishing lichen planopilaris from neutrophil-poor/lymphocyte-predominant folliculitis decalvans

Lichen planopilaris (LPP) and folliculitis decalvans (FD) can, at times, be difficult to distinguish clinically as well as histopathologically from each other.[1] There are a small number of reported cases of FD-LPP overlap[2]; however, these cases are limited in number, and the most commonly used working classification of primary cicatricial alopecia remains the North American Hair Research Society (NAHRS) in which FD is categorized as a "neutrophilic" primary cicatricial alopecia along with dissecting folliculitis/cellulitis. Likewise, LPP is classified as "lymphocytic." However, advanced lesions of FD may be neutrophil-poor, featuring mostly lymphocytes and plasma cells.[3] Neutrophil-poor FD may also be termed "lymphocyte-predominant." In cases of neutrophil-poor FD, a distinction from LPP may be challenging if not impossible.[1,4,5] One useful clue in distinguishing FD from LPP is the number of fused follicular infundibula in a compound follicle. FD may have six or more fused follicles, colloquially referred to as "six-packs," while LPP never has more than two or three fused follicular infundibula in a compound follicle.[6] Still, this clue may be absent, and there is a need for additional tools to help make a diagnostic distinction between LPP and neutrophil-poor FD. Recently, previously unrecognized epidermal hyperplasia in FD was described and measured, thereby providing a new histopathologic criterion to diagnose FD.[1] In that report, however, no comparison of the epidermal thickness in FD was made to LPP. Here, we report a distinct difference in epidermal thickness between FD and LPP, thereby confirming the utility of an assessment of epidermal thickness in distinguishing neutrophil-poor FD from LPP (Figure 1).

We performed a retrospective descriptive study using 30 FD and 26 LPP cases. Included cases had a single diagnosis of either LPP or FD, without qualifiers, made by a board-certified dermatopathologist with expertise in alopecic diseases, using histopathologic features and clinical information. Only cases of classic-type LPP with high histopathologic architectural integrity (no torn specimens), that had been initially reviewed within the previous five years, were selected. All cases had at least one 4-mm punch biopsy. The specimens were processed through the horizontal & vertical (HoVert) technique.[7] The slides were scanned into the Philips IntelliSite digital pathology

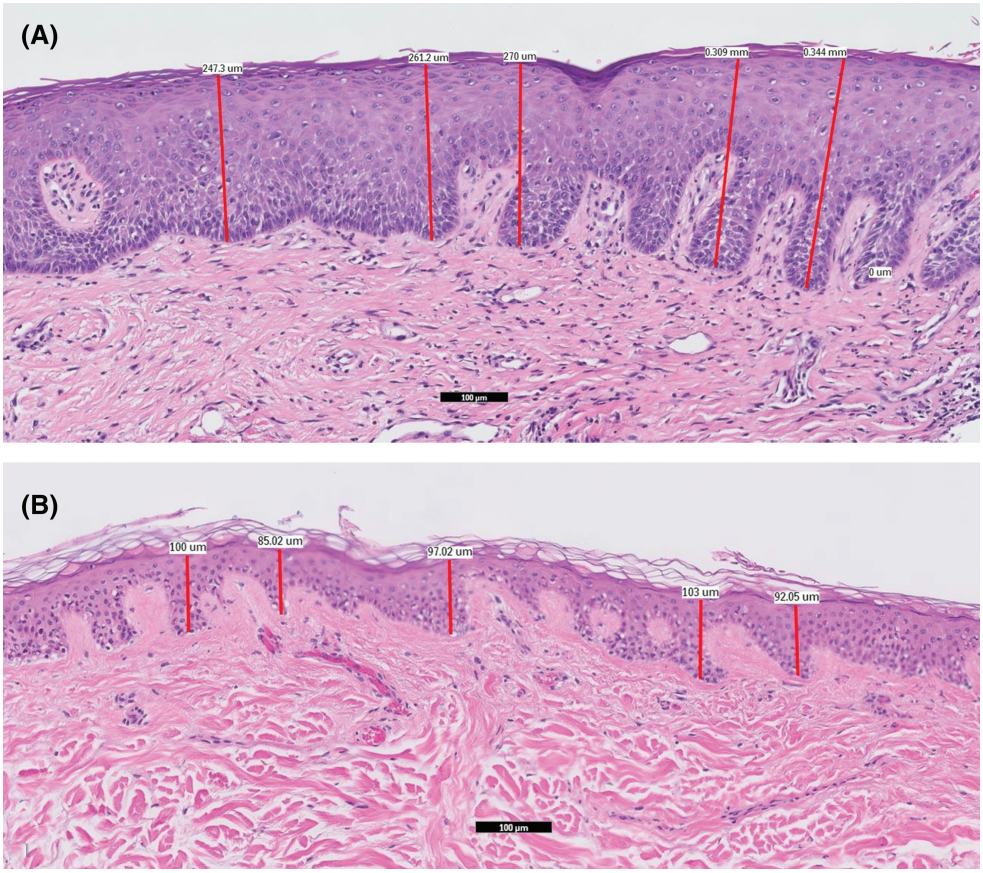

FIGURE 1 Comparison of epidermal thickness measurements in folliculitis decalvans (top), lichen planopilaris (bottom). The FD sample shows markedly acanthotic and thickened epithelium compared to the thin epithelium of LPP. The measurements (red lines and digital boxes) are made using a Philips IntelliSite digital pathology system. FD, folliculitis decalvans; LPP, lichen planopilaris

system, and the epidermis thickness of each specimen was measured precisely using the internal digital micrometer. Five points were selected across the entire interfollicular epidermis, measuring from the base of the rete ridge to the stratum granulosum using the measurement tool contained within the digital pathology system. Measurements were taken at a distance from adnexal structures. Data were analyzed using a single-tailed Welch test. Confidence intervals (CIs) were calculated at 95%. Appropriate variance analyses were performed to confirm significant difference between the LPP and FD groups of cases, with $P < 0.05$ considered statistically significant.

TABLE 1 Mean epidermal thickness of folliculitis decalvans (FD) vs lichen planopilaris (LPP) showing that the epidermis in FD is significantly thicker than in LPP

	Folliculitis decalvans	Lichen planopilaris
Number of cases reviewed (N)	30	26
Mean epidermal thickness (µm)	264.2	133.3
95% confidence interval	246.0-282.4	126.9-139.7
SD	±17.7	±6.6
SD of variance (σ)	105.1	39.4
P value	$P < 0.0001$	

Our results show a marked, statistically significant difference in the average interfollicular epidermal thickness between FD and LPP. The mean interfollicular epidermal thickness was significantly greater for FD (264.2 µm, 95% CI = 246.0-282.4) than for LPP (133.3 µm, 95% CI = 126.9-139.7), with $P < 0.0001$ (Table 1). Subsequent to this study, we have appreciated the utility of assessing epidermal thickness in cases of possible FD and LPP. The study also shows the limitation of the current classification of primary cicatricial alopecia, as cases of advanced FD may indeed be neutrophil-poor/lymphocyte-predominant.

CONFLICT OF INTEREST

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or nonfinancial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Metastatic human papillomavirus-positive oropharyngeal carcinoma mimicking primary cutaneous sweat-gland carcinoma

1 | REPORT OF A CASE

Our routine practice is to evaluate all received specimens histopathologically without prior knowledge of clinical history. In this way, an excisional skin biopsy specimen from the neck was initially reviewed. On histopathologic exam, the specimen showed a 1-cm well-demarcated, noninfiltrative dermal nodule with demarcated but asymmetric borders. No contiguous epidermal connection was observed. The lesion was composed of densely cellular cords and sheets of basophilic, hyperchromatic cells with enlarged pale nuclei, indistinct cytoplasmic borders, and numerous mitotic figures. Some cells were smaller and more hyperchromatic and the background stroma, although a minor component was highly vascularized with hyalinized collagen (Figure 1). Based on this histopathology, a diagnosis of sweat gland carcinoma, specifically including cylindroadenocarcinoma was favored. An expanded differential of neuroendocrine neoplasm and metastatic carcinoma, particularly salivary gland neoplasms, was formed.

After this initial histopathological evaluation, the clinical history was accessed. The specimen was from the neck of an 81-year-old woman with a previous history of human papillomavirus (HPV)-associated oropharyngeal squamous cell carcinoma. The patient initially presented one year prior with cervical lymphadenopathy and a base of tongue mass identified during carotid Doppler imaging. Fine-needle aspiration of the neck revealed p16-positive (p16+) squamous cell carcinoma, originally diagnosed as "basaloid squamous cell carcinoma." Sampling of the base of tongue mass also revealed p16+ carcinoma, consistent with HPV-associated squamous cell carcinoma. The patient subsequently received chemoradiation therapy, and posttreatment positron emission tomography - computed tomography scan revealed complete resolution of her base of tongue tumor but showed persistent cervical lymph nodal disease. Neck dissection was performed and pathology showed metastatic p16+ squamous cell carcinoma with extensive extracapsular extension, morphologically consistent with the primary base of tongue tumor. During a follow-up appointment, 2.5 months following the neck dissection, a subcutaneous nodule was identified just superior to the patient's incision. An excisional biopsy of the skin lesion was performed and sent to dermatopathology.

After reviewing this history, the prior specimens were accessed. On review of the prior pathology specimens, both the original base of tongue biopsy and lymph node resection specimens showed similar histopathologic features. The lymph node specimen showed a well-demarcated but irregularly shaped nodule with no apparent residual lymph node tissue. The tumor cells were arranged in densely cellular basaloid lobules with a "jigsaw pattern" configuration and were small and hyperchromatic, with high nuclear to cytoplasmic ratios. In the background stroma, eosinophilic droplets