“Melanocytic Nests Arising in Lichenoid Inflammation”: Reappraisal of the Terminology “Melanocytic Pseudonests”

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Abstract: Pseudonests or pseudomelanocytic nests represent aggregates of cells and cell fragments, including keratinocytes, macrophages, lymphocytes, and occasional melanocytes. Pseudomelanocytic nests in the setting of lichenoid inflammation can mimic atypical melanocytic proliferations. Several reports documented nonspecific staining of pseudonests with melanoma antigen recognized by T cells-1/Melan-A, which can be detected in the cytoplasm of nonmelanocytic cells. In contrast, nuclear stains, such as MITF and SOX10, avoid this nonmelanocyte cytoplasmic staining. The authors have previously proposed the term melanocytic pseudonests to describe junctional nests with numerous (>2) true melanoma antigen recognized by T cells-1/Melan-A, SOX10, and MITF in a nonmelanocytic lesion with lichenoid inflammation (unilateral lichen planus pigmentosus/erythema dyschromicum perstans). In this

study, the authors report another case of this phenomenon arising in a different lichenoid inflammatory dermatitis (lichen planus). The immunophenotype and number of clustered true melanocytes indicate that these dermoepidermal aggregates represent true melanocytic nests and not pseudonests of any type. Therefore, the authors propose the revised terminology of “melanocytic nests arising in lichenoid inflammation” to describe this novel pattern of benign melanocytic reorganization or proliferation in a subset of lichenoid dermatitides. Because this phenomenon can mimic atypical melanocytic proliferations, clinicopathologic correlation is essential for the correct diagnosis.

Key Words: pseudomelanocytic nests, pseudonests, melanocytic pseudonests, lichenoid inflammation

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FIGURE 1. A, Well-circumscribed, violaceous, polygonal, flat-topped papules coalescing into plaques at the site of a previous lower back surgery. B, Similar lesions were also noted on the medial aspect of the foot and ankle. C, Six weeks after high-potency topical steroid use, only postinflammatory hyperpigmentation remains, and erythema of the scar (unrelated to the rash) is unchanged.

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INTRODUCTION

Pseudonests or pseudomelanocytic nests represent aggregates of cells and cell fragments that include keratinocytes, macrophages, and lymphocytes, as well as occasional melanocytes. Pseudomelanocytic nests in the setting of lichenoid inflammation can mimic atypical melanocytic proliferations. In contrast, we have previously reported junctional nests with numerous melanoma antigen recognized by T cells-1 (MART-1)/Melan-A–positive, SOX10-positive, and MITF-positive melanocytes in a lesion clinically determined to be unilateral lichen planus pigmentosus (LPP)/erythema dyschromicum perstans (EDP).¹ In the previous report, we suggested the terms “melanocyte-rich pseudomelanocytic nests” or “melanocytic pseudonests” for this phenomenon. Here, we report another case of a same phenomenon with melanocytic pseudonests arising in lichen planus.

CASE REPORT

A 40-year-old white man with Fitzpatrick skin type II presented with violaceous, polygonal, flat-topped, mildly pruritic papules overlying and adjacent to a scar from an orthopedic procedure to the back 3 months before onset of the rash (Fig. 1A). Simultaneously, similar papules developed on the medial aspects of his feet and ankles (Fig. 1B). No mucosal lesions were present. His medical and family histories were unremarkable for skin cancer or hepatitis, and there were no changes in medications. The clinical impression was lichen planus. Histological findings from a punch biopsy of a back lesion revealed flattened epidermis, basal layer vacuolization with individual necrotic keratinocytes forming a subepidermal cleft, and a dense band-like lichenoid lymphocytic infiltrate with scattered pigment-laden macrophages (Fig. 2). In addition,

FIGURE 2. Low magnification view shows flattened epidermis, basal layer vacuolization with individual necrotic keratinocytes forming subepidermal cleft and dense, and band-like lichenoid lymphocytic infiltrate with scattered pigment-laden macrophages (hematoxylin and eosin, $\times 100$). Inset, higher magnification of the area highlighted by arrows, showing nests and scattered melanocytes along the dermoepidermal junction (hematoxylin and eosin, $\times 400$).

FIGURE 3. Immunoperoxidase staining showing junctional nest-like structures (highlighted by black arrows) with numerous (A) SOX10-positive and (B) MART-1/Melan-A–positive cells ($\times 200$).

nests were noted at the dermal–epidermal junction containing numerous (at least 3 or more) MART-1/Melan-A–positive and SOX10-positive melanocytes (Fig. 3). Ten days later, punch biopsy from another back lesion revealed histological changes similar to the original, although definitive junctional nests were not identified possibly because this latter specimen was denuded (Fig. 4). Criteria diagnostic for malignant melanoma in situ were not present in either biopsy specimen. Clinically, there was no evidence for an incidental melanocytic nevus associated with the inflammatory papules biopsied. The clinicopathologic correlation in this case was consistent with lichen planus. In support of this diagnosis, after 6 weeks of high-potency topical steroid, the rash was significantly improved with only residual postinflammatory hyperpigmentation (Fig. 1C).

FIGURE 4. Low magnification view from a different back lesion that also exhibits denuded dermis and underlying dense band-like lymphohistiocytic infiltrate (hematoxylin and eosin, $\times 100$) with scattered MART-1/Melan-A–positive cells at the remaining dermoepidermal junction (highlighted by arrows) (inset) ($\times 200$).

DISCUSSION

Pseudonests in the setting of lichenoid inflammation can lead to the misdiagnosis of an atypical melanocytic proliferation. Previous several reports documented nonspecific staining of pseudonests with MART-1/Melan-A, which may detect a combination of few residual melanocytes or melanocytic debris engulfed by macrophages Table 1.^{2,3} Given that MART-1/Melan-A can be detected in the cytoplasm of non-melanocytic cells including keratinocytes or macrophages, we used nuclear stains, such as MITF and SOX10, to detect melanocytes in nests in a lesion of unilateral LPP/EDP.¹ Nicholson and Gerami⁴ also used MITF and MART-1 to present 2 cases initially misdiagnosed as melanoma in situ as MART-1

positivity in pseudomelanocytic nests but finally diagnosed as fixed drug eruption as a result of failing of positive staining of MITF in pseudomelanocytic nests.

As described in previous case report from our group,¹ we again identify junctional nests with aggregates of MART-1/Melan-A-positive and SOX10-positive melanocytes too numerous to be considered pseudomelanocytic nests in a lesion of lichen planus. Recently, Gavino et al⁵ identified nested aggregates of true melanocytes at the dermoepidermal junction in 4 cases of previously diagnosed as lichen planus-like keratoses. In 70 cases of lichen planus-like keratoses, 4 cases demonstrated an occasional MART-1-positive junctional nest that also revealed MITF positivity,

TABLE 1. Reported Cases of Pseudomelanocytic Nests or Melanocytic Nests in Lichenoid Inflammation

Reference	Age/Sex	Location	Clinical Presentation	Mel-A	MITF	SOX10	HMB 45	S100
Maize et al ²	35/M	Left temple	Recent onset of blue-gray macules	+	NP	NP	—	—
Beltraminelli et al ³	60/M	Cheeks	Ill-defined brown grayish pigmentation	+	NP	NP	—	—
Beltraminelli et al ³	59/M	Forehead	Irregular, partly confluent, reticulated pigmentation	+	NP	NP	—	—
Beltraminelli et al ³	52/F	Infraorbital area	Small scaly plaque of the infraorbital region	+	NP	NP	—	—
Nicholson and Gerami ⁴	39/F	Along the hair line	New asymptomatic brown macules	+	A rare cell	NP	A rare cell	A rare cell
Nicholson and Gerami ⁴	76/F	Periocular area	Well demarcated hyperpigmented patch	+	—	NP	—	—
Silva et al ¹	48/M	Neck	Discrete, reticulate, hyperpigmented patch	+	Numerous cells (≥3)	Numerous cells (≥3)	NP	Focal positive
Gavino et al ⁵	4 cases but U	U	U	+	+	NP	NP	NP
Boros et al ⁶	66/M	Interdental papilla	Solitary slightly elevated pigmented lesion	—	—	—	NP	NP
Boros et al ⁶	61/F	Hard plate	Solitary pigmented lesion	—	NP	NP	NP	NP
Present case	40/M	Back, ankles, and feet	Violaceous, polygonal, flat-topped, mildly pruritic papules	+	NP	+	NP	NP

Reference	CK	CD68	CD3	Tyr	BCL2	Final Interpretation	Interpretation of Nests
Maize et al ²	NP	NP	NP	—	—	Favored discoid lupus erythematosus	Pseudomelanocytic nests
Beltraminelli et al ³	(+) some cells in nests	NP	NP	NP	NP	Lichenoid phototoxic reaction	Pseudomelanocytic nests
Beltraminelli et al ³	(+) some cells in nests	NP	NP	NP	NP	LPP	Pseudomelanocytic nests
Beltraminelli et al ³	(+) some cells in nests	NP	NP	NP	NP	Pigmented lichenoid keratosis	Pseudomelanocytic nests
Nicholson and Gerami ⁴	Occasional cells	Occasional cells	Occasional cells	NP	NP	Fixed drug eruption	Pseudomelanocytic nests
Nicholson and Gerami ⁴	Occasional cells	—	Occasional cells	NP	NP	Fixed drug eruption	Pseudomelanocytic nests
Silva et al ¹	Occasional cells	NP	NP	NP	NP	LPP/EDP	Melanocytic proliferation in a lichenoid dermatitis
Gavino et al ⁵	—	NP	—	NP	NP	Melanocytic nevi with lichenoid inflammation	Melanocytic nests with lichenoid inflammation
Boros et al ⁶	NP	+	NP	NP	NP	Chronic mucositis	Pseudomelanocytic nests
Boros et al ⁶	NP	+	NP	NP	NP	Melanophages	Pseudomelanocytic nests
Present case	NP	NP	NP	NP	NP	Lichen planus	Melanocytic nests arising in lichenoid inflammation

+, present; —, absent; CK, cytokeratin; Mel-A, Melan-A/MART-1; NP, not performed; Tyr, tyrosinase; U, unspecified.

confirming a true melanocytic origin (Table 1). The authors felt that these melanocytic aggregates represented true melanocytic nests and so reclassified the 4 lesions as “benign melanocytic nevi with lichenoid inflammation.” Unlike Gavino et al, our clinical settings of EDP/LPP and lichen planus do not afford a reclassification of these inflammatory lesions to any known melanocytic proliferation. Nevertheless, we feel that these aggregates represent true melanocytic nests and not pseudonests of any type. Therefore, we propose the revised terminology of “melanocytic nests arising in lichenoid inflammation” to describe this novel pattern of benign melanocytic reorganization or proliferation in a subset of lichenoid dermatitides. Because this phenomenon can mimic atypical melanocytic proliferations, clinicopathologic correlation is essential for the correct diagnosis.

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