Pseudoepitheliomatous Hyperplasia Arising From Purple Tattoo Pigment

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PRACTICE **POINTS**

- Pseudoepitheliomatous hyperplasia (PEH) is a rare benign condition that can arise in response to multiple underlying triggers such as tattoo pigment.
- Histopathologic evaluation is essential for diagnosis and shows characteristic hyperplasia of the epidermis.
- Clinicians should consider intralesional steroids in the treatment of PEH once atypical mycobacterial and deep fungal infections have been ruled out.

To the Editor:

Pseudoepitheliomatous hyperplasia (PEH) is an uncommon type of reactive epidermal proliferation that can occur from a variety of causes, including an underlying infection, inflammation, neoplastic condition, or trauma induced from tattooing.[1] Diagnosis can be challenging and requires clinicopathologic correlation, as PEH can mimic malignancy on histopathology.[2-4] Histologically, PEH shows irregular hyperplasia of the epidermis and adnexal epithelium, elongation of the rete ridges, and extension of the reactive proliferation into the dermis. Absence of cytologic atypia is key to the diagnosis of PEH, helping to distinguish it from squamous cell carcinoma and keratoacanthoma. Clinically, patients typically present with well-demarcated, erythematous, scaly plaques or nodules in reactive areas, which can be symptomatically pruritic.

A 48-year-old woman presented with scaly and crusted verrucous plaques of 2 months' duration that were isolated to the areas of purple pigment within a tattoo on the right lower leg. The patient reported pruritus in the affected areas that occurred immediately after obtaining the tattoo, which was her first and only tattoo. She denied any pertinent medical history, including an absence of immunosuppression and autoimmune or chronic inflammatory diseases.

Physical examination revealed scaly and crusted plaques isolated to areas of purple tattoo pigment (Figure 1). Areas of red, green, black, and blue pigmentation within the tattoo were uninvolved. With the initial suspicion of allergic contact dermatitis, two 6-mm punch biopsies were taken from adjacent linear plaques on the right leg for histology and tissue culture. Histopathologic evaluation revealed dermal tattoo pigment with overlying PEH and was negative for signs of infection (Figure 2). Infectious stains such as periodic acid–Schiff, Grocott-Gomori methenamine-silver, and Gram stains were performed and found to be negative. In addition, culture for mycobacteria came back negative. Prurigo was on the differential; however, histopathologic changes were more compatible with a PEH reaction to the tattoo.

Upon diagnosis, the patient was treated with clobetasol ointment 0.05% under occlusion for 1 month without reported improvement. The patient subsequently elected to undergo treatment with intralesional triamcinolone 5 mg/mL to all areas of PEH, except the areas immediately surrounding the healing biopsy sites. Twice-daily application of tacrolimus ointment 0.1% to all affected areas also was initiated. At follow-up 1 month later, she reported symptomatic relief of pruritus with a notable reduction in the thickness of the plaques in all treated areas (Figure 3). A second course of intralesional triamcinolone 5 mg/mL was performed. No additional plaques appeared during the treatment course, and the patient reported high satisfaction with the final result that was achieved.

An increase in the popularity of tattooing has led to more reports of various tattoo skin reactions.[4-6] The differential diagnosis is broad for tattoo reactions and

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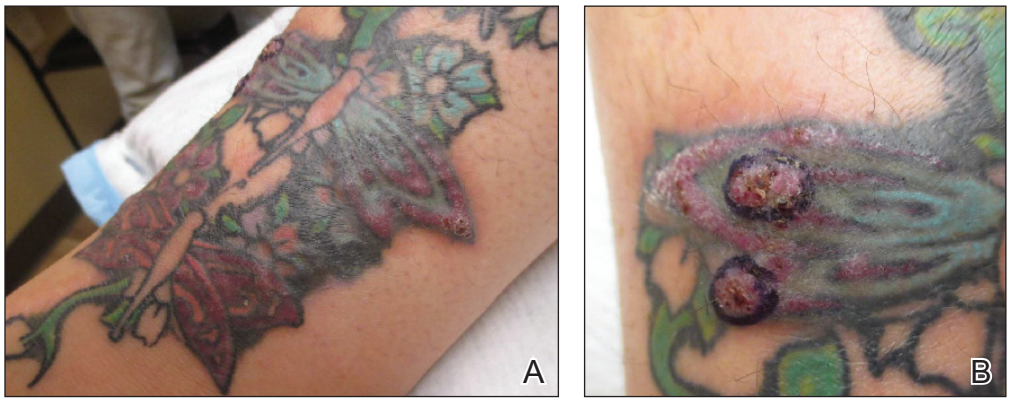

FIGURE 1. A and B, Scaly crusted plaques isolated to areas of purple tattoo pigment.

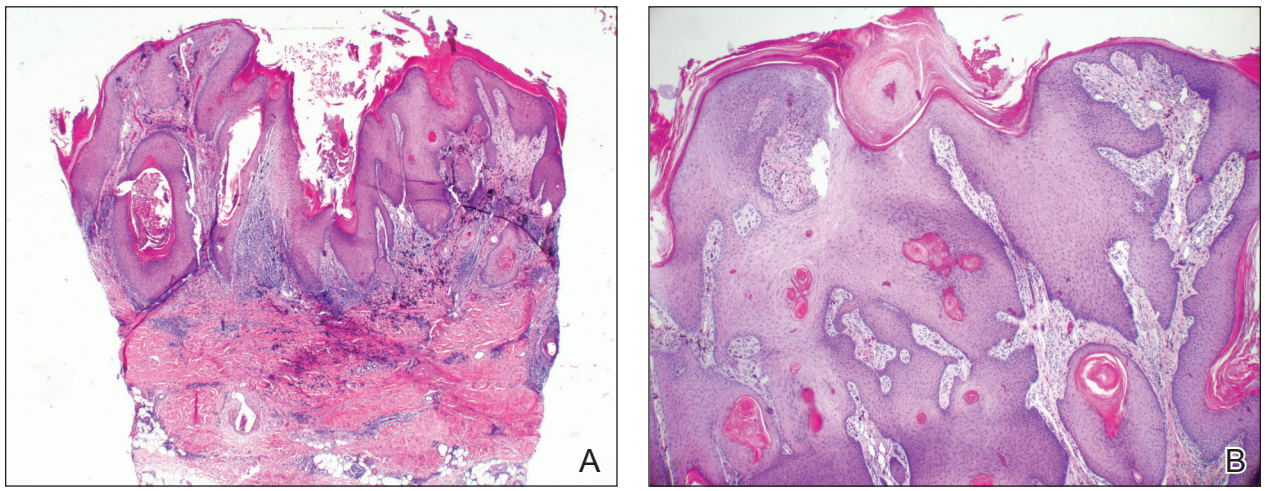

FIGURE 2. A and B, Histopathologic evaluation showed pseudoepitheliomatous hyperplasia overlying the dermal tattoo pigmentation (H&E, original magnifications ×2 and ×4).

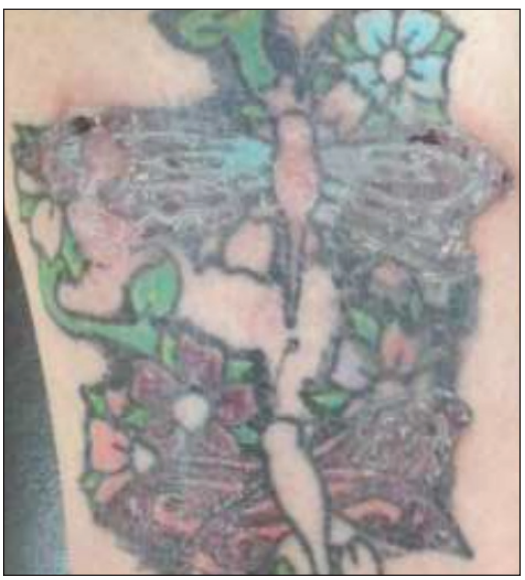

FIGURE 3. A substantial decrease in inflammation was noted after the first set of intralesional triamcinolone injections at 1-month follow-up.

includes granulomatous inflammation, sarcoidosis, psoriasis (Köbner phenomenon), allergic contact dermatitis, lichen planus, morphealike reactions, squamous cell carcinoma, and keratoacanthoma,[5] which makes clinicopathologic correlation essential for accurate diagnosis. Our case demonstrated the characteristic epithelial hyperplasia in the absence of cytologic atypia. In addition, the presence of mixed dermal inflammation histologically was noted in our patient.

Pseudoepitheliomatous hyperplasia development from a tattoo in areas of both mercury-based and non–mercury-based red pigment is a known association.[7-9] Balfour et al[10] also reported a case of PEH occurring secondary to manganese-based purple pigment. Because few cases have been reported, the epidemiology for PEH currently is unknown. Treatment of this condition primarily is anecdotal, with prior cases showing success with topical or intralesional steroids.[5,7] As with any steroid-based treatment, we recommend less aggressive treatments initially with close follow-up and adaptation as needed to minimize adverse effects such as unwanted atrophy. Some success has been reported with the use of the Q-switched Nd:YAG laser in the setting of a PEH

tattoo reaction.[5] Similar to other tattoo reactions, surgical removal can be considered with failure of more conservative treatment methods and focal involvement.

We report an unusual case of PEH occurring secondary to purple tattoo pigment. Our report also demonstrates the clinical and symptomatic improvement of PEH that can be achieved through the use of intralesional corticosteroid therapy. Our patient represents a case of PEH reactive to tattooing with purple ink. Further research to elucidate the precise pathogenesis of PEH tattoo reactions would be helpful in identifying high-risk patients and determining the most efficacious treatments.

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