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Actinomyces Infection Leading to Pseudoepitheliomatous Hyperplasia Within a Tattoo

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History

- A 47-year-old Caucasian woman presented to dermatology with a 1-year history of elevated papules on a tattoo on the left leg.
- She noted occasional purulent drainage from the papules.
- She tried triamcinolone 0.1% ointment, mupirocin 2% ointment, and minocycline 100 mg BID for 2 weeks without improvement.
- She is otherwise healthy and denied history of sarcoidosis or pain of the left leg.
- She received the tattoo 1.5 years ago.

Examination

- On the leg, limited to the red portions of the tattoo, there were multiple open comedones and pustules coalescing into an edematous plaque.
- There was scant purulent drainage from the tattoo.
- There was no palpable lymphadenopathy.

Histopathology

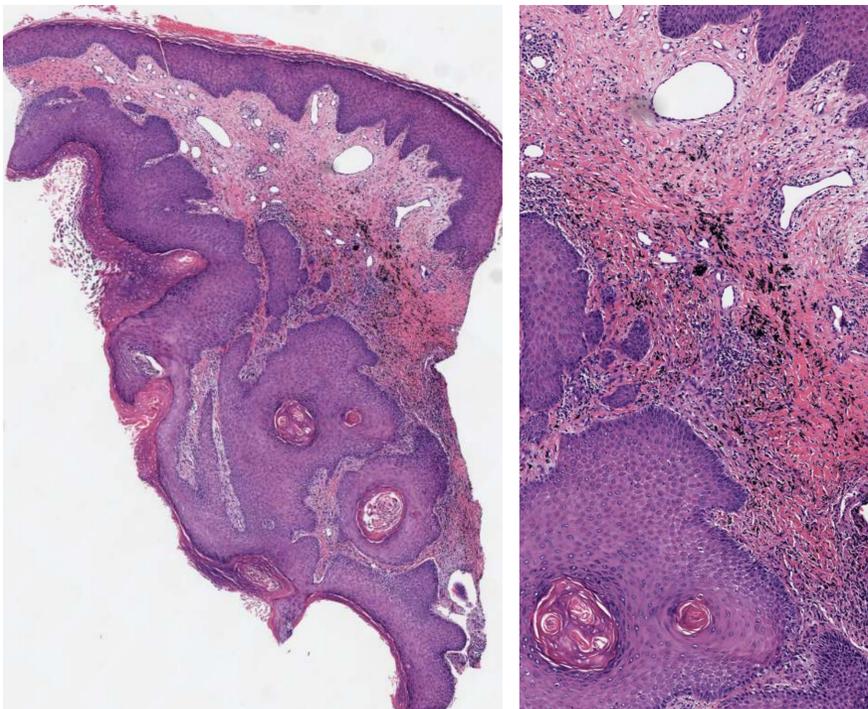


Figure 1: Punch biopsy of the left lower leg. Hematoxylin and eosin staining revealed marked irregular epidermal hyperplasia with hypergranulosis and hyperkeratosis. Within the dermis, there was black tattoo pigment with surrounding dermal fibrosis and brisk lymphohistiocytic inflammation. PAS, AFB, and GMS stains were negative.

Clinical Photos



Figure 2: Multiple open comedones and pustules coalescing into an edematous plaque, limited to the red tattoo pigment.



Figure 3: At the two- and five-month follow up visits with flattening of the tattoo and resolution of the papules and comedones

Course and Therapy

- The wound culture grew *Actinomyces neuii*.
- Given the positive wound culture for *Actinomyces neuii*, the patient was started on amoxicillin 500 mg TID for 6 months.
- Mupirocin ointment was applied topically once a day.

Discussion

- Red pigment within tattoos is the most common cause of cutaneous reactions to tattoos.
- Red tattoo reactions most commonly include allergic dermatitis, photosensitivity, granulomatous, lichenoid, and pseudolymphomatous reactions.
- Almost all case reports of PEH within tattoos have been associated with red or purple ink, but no clear cause of PEH was identified.
- This case demonstrates PEH secondary to *Actinomyces neuii* infection limited to the red portions of a tattoo.
- The pathogenesis of PEH within tattoos remains unknown. It may be stimulated by early inflammation from newly introduced pigment, or it may represent an autoimmune reaction with lymphocyte-derived chemokines inducing keratinocyte proliferation.
- PEH is typically treated with topical steroids, and recalcitrant cases can be treated with intralesional corticosteroids, surgery, or laser therapy.
- *Actinomyces* species rarely cause infections in humans, and even less commonly cause cutaneous infections. They often manifest as abscesses, requiring treatment with antibiotics and incision and drainage.
- Potential niduses for infection in this case could include the use of dirtied instruments, contaminated pigments, or lack of sterility.
- While reactions within red tattoos are common, biopsy and evaluation for bacterial infections should be considered.

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