

Successful Treatment of a Lichenoid-Like Granulomatous Reaction to Purple Tattoo Pigment With Intralesional Kenalog

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ABSTRACT

Tattoo reactions can be clinically challenging to diagnose and treat. We present a case of a biopsy-proven granulomatous reaction to purple tattoo ink that clinically mimicked lichen planus. This reaction was successfully treated with one course of intralesional kenalog (ILK), with no recurrence six months after treatment. To our knowledge, this is the first report of a granulomatous tattoo reaction appearing clinically like lichen planus, and one of the few reports of a reaction to purple tattoo pigment. It highlights the importance of biopsying tattoo-related dermatoses prior to treatment in order to confirm the diagnosis. It also illustrates how a minimally invasive technique utilizing ILK to treat a granulomatous tattoo reaction can result in excellent dermatologic, cosmetic, and symptomatic outcomes. Based on this therapeutic success, we believe treatment with ILK injections should be attempted before more invasive modalities such as excision or laser therapy.

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CASE REPORT

A 62-year-old man presented to dermatology for a pruritic rash confined to the purple pigment in his tattoo that had started three years previously. Aside from being Hepatitis C positive, he was otherwise in excellent health. His only medication was sildenafil citrate, which he used occasionally. He also endorsed a penicillin allergy. On physical exam, there were several flat-topped, violaceous, polygonal papules coalescing into plaques in the purple areas of his tattoo (Figure 1), clinically resembling lichen planus. A biopsy was taken which showed granulomatous dermatitis with tattoo pigment deposition. He had previously been prescribed fluocinonide 0.05% ointment, which had no effect on the lesions. After discussion of the risks, benefits, and alternatives to therapy, the patient was treated with 0.6 mL of 2.5 mg/mL intralesional kenalog (ILK) to all lichenoid-like areas except those overlying the nerves, blood vessels, and tendons on the ventral forearm. Six weeks later, the reaction had resolved entirely in the treated areas with good cosmetic outcome, with no areas of atrophy, no hypopigmentation or depigmentation, and no structural changes to the aesthetic integrity of the tattoo (Figure 2). At six-month follow up, no recurrence of these lesions was seen.

DISCUSSION

A variety of different types of tattoo reactions have been described, including infectious, allergic, lichenoid, photoallergic, granulomatous, and pseudolymphomatous.[1] Lichenoid reactions are the most commonly reported non-hypersensitivity inflammatory tattoo reactions.[2] These reactions are thought to be due to a T-cell-mediated delayed hypersensitivity that stimulates a graft-versus-host response.[3,4] They can occur any time from weeks to years after the tattoo is placed.[5] Clinically, flat-topped violaceous polygonal papules and plaques characteristic of lichen planus are seen. Lesions may be verrucous, characteristic of hypertrophic lichen planus.[6] There have also been reports of lichenoid tattoo reactions secondarily generalizing to other parts of the body over a period of months to years.[2]

Granulomatous tattoo reactions appear clinically as scaly erythematous papules and plaques in areas limited to tattoo ink.[7] Histopathologically, they can be divided into foreign body and hypersensitivity reactions. Foreign body reactions are characterized by pigment-containing giant cells, and hypersensitivity reactions by a deficiency of these cells.[8] Granulomatous reactions have been reported to occur anytime from weeks to years after tattoo placement, and can be the first clinical sign of sarcoidosis.[9] To our knowledge, this is the first report a granulomatous tattoo reaction appearing clinically like lichen planus.

Both lichenoid and granulomatous tattoo reactions are most commonly found in areas of red pigment.[3] This predilection has been attributed to mercury sensitivity from red mercuric sulfide (cinnabar).[10] However, these reactions can also occur in red pigment not containing cinnabar,[4] and may represent a reaction to sienna/red ochre, cadmium red, and organic vegetable dyes.[3] Lichenoid and granulomatous reactions have also been reported in black and blue-black tattoo ink.[11-12] While our

FIGURE 1. There are several polygonal purple papules coalescing into plaques in the areas of purple tattoo pigment only.

FIGURE 2. After one set of intralesional kenalog injections, the lichenoid-like granulomatous reaction had resolved entirely in the treated areas.

patient's reaction appeared to occur in areas of purple tattoo pigment, it is possible that red ink components were mixed into the purple ink and were the causative agent for his reaction.

In contrast to red tattoo reactions, reactions to purple tattoo pigment are extremely rare and have been reported in less than a handful of cases. Purple tattoo ink is comprised of manganese ammonium pyrophosphate, diaxoazine/carbazole, and various aluminum salts.[6] Of these components, manganese is thought to be the inciting agent in purple tattoo reactions.[2] Similarly to our case, Schwartz et al described a granulomatous reaction occurring in purple tattoo pigment three weeks after tattoo application.[7] Litak et al described a generalized lichenoid reaction to purple tattoo ink, which occurred at sites not involving the tattoo.[2] Balfour et al and Cruz et al both independently described delayed onset of pseudoepitheliomatous hyperplasia occurring in the purple pigment of tattoos within a year of their application.[13,14]

To our knowledge, no consistently effective treatment for lichenoid or granulomatous tattoo reactions has been described in the medical literature. Topical steroids have been reported to have a variable response; while some cases cite improvement after topical steroid use,[3,15,16] most report these agents as having little-to-no effect.[3,17-19] We also found that topical fluocinonide 0.05% ointment was unable to effectively resolve our patient's skin lesions. When topical therapies fail, Q-switched Nd:Yag and Er:Yag lasers[18-19] and surgical excision[2,20] have been used to treat tattoo reactions, resulting in partial or complete tattoo destruction.

"For our patient, one treatment with ILK injections led to resolution of his lesions."

Only four reports document the use of ILK for lichenoid tattoo reactions. In three cases, the lesions failed to resolve,[2-3,18] and in one case, ILK injections were successful in treating the lichenoid reaction.[14] ILK injections have successfully induced resolution of a granulomatous tattoo reaction in a previous case report.[21] For our patient, one treatment with ILK injections led to resolution of his lesions.

We present this case to demonstrate how ILK injections can be an effective, non-destructive method of treating tattoo reactions that do not resolve with topical corticosteroids. Based on the success of our patient, we believe treatment with ILK injections should be attempted before more invasive therapies such as excision or laser treatment.

This case also represents an interesting presentation of a rare reaction to purple tattoo pigment. Though clinically consistent with a lichenoid tattoo reaction, pathology showed the etiology to be granulomatous, leading us to label it as a lichenoid-like granulomatous tattoo reaction. It is unclear whether this presentation is unique to purple tattoo pigment only, or if it may be seen with other tattoo colors as well.

DISCLOSURE

The authors have no financial conflicts of interest to declare.

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