CORRESPONDENCE

Generalized lichenoid tattoo reaction with spontaneous resolution after skin biopsy

Introduction

Tattooing has been practiced for thousands of years in many parts of the world and it is increasingly popular in today’s society, particularly among the young people. Decorative tattooing involves the introduction of tattoo pigments into the dermis. Cutaneous reactions to tattoos are common and are generally due to the salts or metals in the pigments and may occur from weeks to years after the procedure. Welander first described reactions to tattoos in 1893.1 Different reactions to the different pigments in tattoos have been described, among which a reaction to mercury in red tattoo ink is the most well known. Various types of histopathologic patterns have been reported, including lichenoid, granulomatous, eczematous, and pseudolymphomatous reactions, most of which are confined to the areas of the tattoo. Generalized tissue reactions are infrequent, and only one case of spontaneous resolution of a granulomatous reaction to a cosmetic lip tattoo has been recorded.2 Herein, we present the case of a generalized lichenoid reaction to black tattoos that resolved spontaneously. Based on a review of the literature, we believe that this is the first case of such a finding.

Case report

A 33-year-old man had two black tattoos applied to his skin. The one on his left upper arm had been made by a professional tattooist 10 years previously. The other on his left wrist was drawn by a different artist 3 months before this presentation. He visited our dermatologic outpatient department because of a generalized pruritic cutaneous eruption for 4 days. He was otherwise healthy without any drug history or allergies. On examination there were multiple flat-topped erythematous papules on both tattoos. In addition, similar lesions were also found on his face and right arm (Figure 1), even though these areas had not been tattooed.

A biopsy of a representative lesion from the tattoo on his left upper arm revealed focal basal cell liquefactive degeneration, exocytosis and apoptotic keratinocytes in the epidermis and a band-like dense lymphocytic infiltration in the superficial dermis. Numerous macrophages containing small pigment granules were found in the infiltrate (Figure 2). These histologic findings were consistent with a lichenoid tattoo reaction. However, within 2 weeks of the biopsy, all of the lesions began to resolve spontaneously without any specific treatment (Figure 3).

Discussion

In this report, we first describe a delayed generalized lichenoid reaction to black tattoos with spontaneous resolution. The T-cell mediated immune response to tattoo ink gives rise to lichenoid reactions.3 Each color of tattoo ink contains different substances, such as mercury (red), cobalt (blue), chrome (green), cadmium (yellow), manganese (purple), and hydrated iron oxide (brown). Black tattoo pigment can be prepared with carbon, logwood, iron oxide and titanium oxide. Reactions to black areas in tattoos, however, seem to be extremely rare. Generalized tattoo reactions have been reported in four cases3–6; however, the exact pathophysiology remains unclear. The “id reaction,” also known as autosensitization may explain why the tattoo reactions become generalized, due to a localized hypersensitivity reaction that stimulates the immune system causing distant skin eruptions with the absence of a distant inciting agent.3 Lichenoid tattoo reactions may respond to topical steroids, intralesional steroids3,6,7 or topical tacrolimus ointment.8 In refractory cases, it may be necessary to remove the offending tattoo.3,7 The most interesting finding of our case was that the cutaneous lesions resolved spontaneously following the biopsy. Spontaneous resolution of a granulomatous reaction to tattoos has been reported in one case.2 However, in that case, the tissue reaction was localized to a cosmetic lip tattoo. Our patient developed a generalized lichenoid tattoo reaction, which resolved spontaneously after a skin biopsy. A possible explanation for the resolution of the cutaneous reaction may be due to the inflammatory process and wound healing mechanism following the biopsy.2 This change of the cellular and cytokine environment with the subsequent remodeling of the extracellular matrix may have lead to the ultimate resolution of the lesions.2 To the best of our knowledge, this is the first report of a lichenoid reaction to black tattoos with generalized distribution and spontaneous resolution.
Figure 1 Multiple flat-topped erythematous papules on (A) the left upper arm and (B) the left wrist; similar lesions on (C) his face (D) and right arm.

Figure 2 The histopathologic findings from the tattoo on his left upper arm showed: (A) a bandlike dense lymphocytic infiltrate in the superficial dermis and focal liquefaction degeneration in the basal layer (H&E, 40×); (B) exocytosis and occasional colloid bodies in the epidermis (H&E, 200×); (C) numerous macrophages containing small pigment granules in the infiltrate (H&E, 400×). H&E = hematoxylin and eosin.
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References


Figure 3 (A,B,C) All of the lesions began to resolve spontaneously without any pigmentation; (D) the lesions resolved on the biopsy area.