Tattoo-associated Pseudolymphomatous Reaction and its Successful Treatment with Hydroxychloroquine

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Sir,

Tattooing has become increasingly popular in today's society, although it has been practiced for over 8000 years (1). Following this new fashion trend, physicians have documented an increasing number of tattoo-associated skin disorders.

The most common dermatological tattoo complications concern hypersensitivity reactions to tattoo pigments, for example, irritant and allergic contact dermatitis (2), development of lichenoid areas (1, 3–5), and granulomatous responses such as sarcoid granulomas or foreign body granulomas (1). Less frequently patients developing discoid lupus erythematosus have been reported (2).

Pseudolymphoma confined to the tattoo area is an unusual tattoo reaction that, to the best of our knowledge, has been described in only seven cases in the literature (6–10). We report here a new case of pseudolymphoma developing in the green portion of a multicoloured tattoo, which was treated with a systemic anti-malarial drug.

CASE REPORT

A 35-year-old white woman was referred to us in September 2007 with a 2-year history of asymptomatic erythematous papules confined to the green portion of a tattoo on her right mammary region. This tattoo was made in 2002, representing two half-moons crossed face to face, and comprised three colours: red, black and green. In 2005, the patient observed some papules a few millimetres in diameter on the green area. During the following 22 months the diameter and the number of the papules remained stable, until the patient noticed an increase in the number of lesions, again confined to the green portion of the tattoo. She was not able to relate such changes to any stressful event or sun exposure and, as a consequence, the increase in number of lesions was classified as of unknown origin. There were no other symptoms such as itching, and the patient had no personal or family history of allergic diseases or contact dermatitis. Physical examination revealed the presence of multiple dome-shaped papules. Sometimes the papules were grouped together and coalescence into plaques was observed closely associated with the green areas of her tattoos, while the other colours were uninvolved (Fig. 1). There was no involvement of the regional lymph nodes.

No patch tests of the relevant chemicals and tattoos dyes were performed, since the history and the aspects of the lesions allowed an allergic reaction to be ruled out; the composition of the green dye was in any case unknown.

A punch biopsy 4 mm in diameter was taken and histopathology revealed an infiltrate mostly located in the reticular dermis. Epithelial structures and adnexa were spared. Low power magnification showed a dense nodular lymphoid infiltrate in the reticular dermis with intermingled pigment deposits, whereas higher magnification showed a dense infiltrate of small lymphocytes.

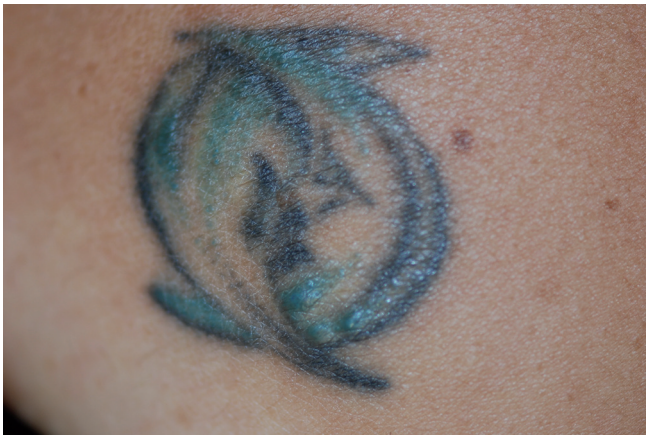

Fig. 1. Dome-shaped papules on the green portion of the patient's tattoo.

The small lymphocytes were mixed with scattered plasma cells, lymphoblasts and histiocytes containing dark or green-blue non-refractile foreign material.

On immunohistochemical analysis the lymphoid infiltrate consisted mainly of CD3+ T lymphocytes (Fig. 2) with a CD4/CD8 ratio of 2–3:1 and CD20 detected small clusters of B lymphocytes. Molecular genetic analysis was not requested.

The histological architectural pattern suggested the diagnosis of a predominant T-cell pseudolymphoma.

On the basis of the benign nature of the dermatitis, the patient was treated with a mid-potency corticosteroid adhesive plaster (betamethasone valerate 2.25 mg adhesive plaster) every night for 10 days a month for 3 months. The lesions improved after local treatment, but did not completely resolve and hydroxychloroquine sulphate 200 mg once a day was administered for 2 months (11). The results were excellent and after one month the skin lesions improved, with complete clearing after 2 months of treatment. No side-effects were reported and both the ophthalmological consultation and blood tests for haematology and biochemistry were normal. A follow-up consultation was performed every 3 months and after one year no relapses were recorded and no progression to a B-cell malignant lymphoma occurred.

DISCUSSION

Pseudolymphoma is a benign lymphoproliferative disorder of the skin, which it is mandatory to distinguish from malignant lymphoma. The pathogenic mechanism of development of pseudolymphoma is still unclear (8, 9), but according to the most favoured hypothesis it consists of an abnormal persistent reactive immune reaction. In the pseudolymphoma induced by tattoo, the

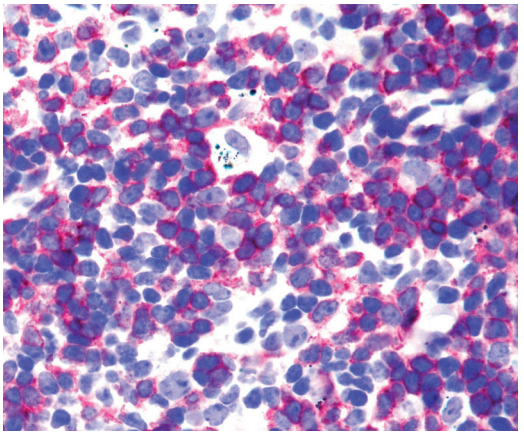

Fig. 2. Staining with CD3 antibody detects a diffuse T-cell infiltrate in a dense nodular lymphoid infiltrate in the reticular dermis (×20).

dye pigments in the dermis act as an antigen stimulus determining a proliferation of lymphoid cells (8). Case reports in the literature generally show a remarkable predominance of pseudolymphoma tattoo reactions involving the red portion of the tattoo (8–10). The widely used red pigment containing mercury (cinnabar) may in fact present a higher immunological potential. The involvement of other dyes, such as blue (mainly cobalt salts) or green (mainly chrome salts), is not frequent (9). In our case this reaction was localized only in the green area of a multicoloured tattoo and only one similar case has been published in the literature (5). However, inflammation of previously quiescent green-coloured portions of tattoos has been reported in three patients after patch-testing. The patients had chronic dermatitis and were test-positive to potassium dichromate 0.25% in petrolatum (12).

Our patient developed nodular lymphoid infiltrate 3 years after tattooing, which is in accordance with the latency interval described in the literature, ranging from 6 months (8) to 6 years (9). The highly variable latency period may be explained by the fact that the pseudolymphoma can be considered the terminal result of a delayed immunological reaction. In our case physical examination revealed the presence of multiple dome-shaped papules without lichenification and, as in the cases reported in the literature, our patient did not complain of any symptoms, such as itching, and was completely in good health. Therefore, a diagnosis of contact dermatitis was excluded and thus patch testing, aimed to evaluate the presence of a delayed hypersensitivity reaction to mercury products, was not performed. A study conducted by Sowden et al. (1) shows that this is not a useful investigation as the tattooist did not provide the components of the dyes used. Moreover, the Langerhans' cells are killed by the exogenous pigments localized in the dermis and this may explain why allergic tests are negative in such cases (2).

Treatment options for tattoo-induced pseudolymphoma mainly include the administration of topical or intralesional steroids (8–10) and surgical excision. Munoz et al. (10) advocate surgery as the management of choice, although it is not recommended by Gutermuth et al. (8) due to the risk of side-effects such as scarring and wound-healing complications. Laser treatment is not suggested due to the incomplete pigment removal (9) and the risk of side-effects (8).

In our case, topical steroids did not bring about a complete improvement in the skin lesions, whereas hydroxychloroquine sulphate (200 mg once a day for 2 months) caused a complete regression of the lesions.

A spontaneous remission of pseudolymphoma has, however, also been documented (8). On the other hand, Sangueza et al. (13) described the evolution of a histological benign and immunological polyclonal tattoo-associated T-pseudolymphoma, with 10–20% of B cells, into a malignant monoclonal B-cell large lymphoma.

In order to control evolution towards a malignant lymphoma, we believe that a regular follow-up should be mandatory, even after clinical regression.

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