

# Cutaneous pseudolymphoma occurring after traumatic implantation of a foreign red pigment

Wei Liang Koh<sup>1</sup>, MBBS, Yong Kwang Tay<sup>1</sup>, MBBS, FRCP, Mark Jean An Koh<sup>1</sup>, MBBS, MRCPCH, Chee Seng Sim<sup>2</sup>, MBBS, FRCPA

**ABSTRACT** Cutaneous pseudolymphoma is an uncommon, benign lymphoproliferative disorder of the skin. Although this condition is most commonly idiopathic, its occurrence has been associated with cosmetic tattoos. We report a unique case of cutaneous pseudolymphoma that occurred after accidental, traumatic inoculation of a red pigment in a healthy 33-year-old woman.

**Keywords:** lymphoid hyperplasia, pigment, pseudolymphoma, tattoo, trauma

## INTRODUCTION

Cutaneous pseudolymphoma is most commonly idiopathic and may occur secondary to drugs, infections or cosmetic tattooing.<sup>(1,2)</sup> Mercury-based red pigments in cosmetic tattoos have been implicated as a cause.<sup>(3-5)</sup> We report an interesting case of the development of cutaneous pseudolymphoma after accidental, traumatic implantation of a foreign red pigment.

## CASE REPORT

A healthy 33-year-old Nepalese woman was referred to us for removal of a forehead lump, which appeared after she fell and hit her forehead against a red stone ten months prior to presentation. She had sustained a laceration that was left to heal by secondary intention. On examination, there was a slightly erythematous, non-tender, firm plaque measuring 2 cm × 1 cm on her forehead (Fig. 1). General examination was otherwise normal with no evidence of lymph node enlargement. Differential diagnoses included keloid, sarcoidosis, foreign body granuloma, nodular fasciitis and dermatofibrosarcoma protuberans.

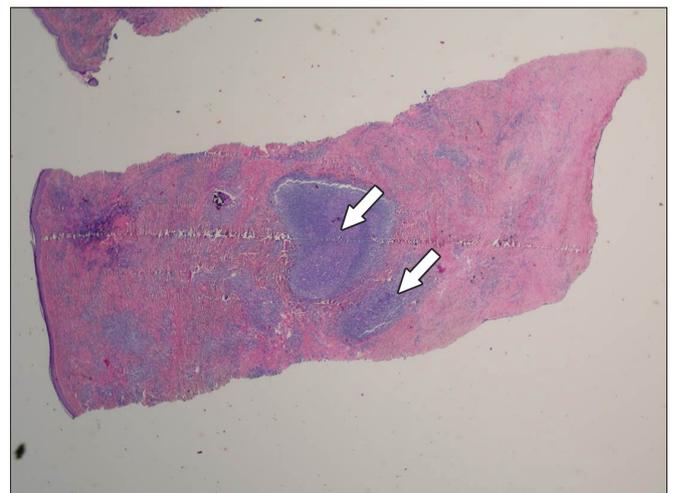
Punch biopsy revealed the presence of marked lymphoid hyperplasia within the dermis, comprising irregular and nodular aggregates of mixed lymphoid cells with germinal centre formation (Fig. 2). The lymphoid follicles comprised small and activated lymphoid cells admixed with plasma cells and histiocytes. Tingible body macrophages were noted in the germinal centres. Two foci of foreign birefringent material surrounded by foreign body multinucleated giant cells were also present (Fig. 3). These findings are consistent with cutaneous pseudolymphoma secondary to traumatic implantation of a foreign red pigment. The patient was treated with intralesional triamcinolone acetonide (10 mg/mL) and topical betamethasone dipropionate 0.05% ointment twice daily. She was referred to a plastic surgeon for excision but defaulted.

## DISCUSSION

Cutaneous pseudolymphoma, also known as cutaneous lymphoid hyperplasia and lymphocytoma cutis, is an uncommon, benign,



**Fig. 1** Photograph shows a solitary, slightly erythematous, indurated plaque on the forehead.

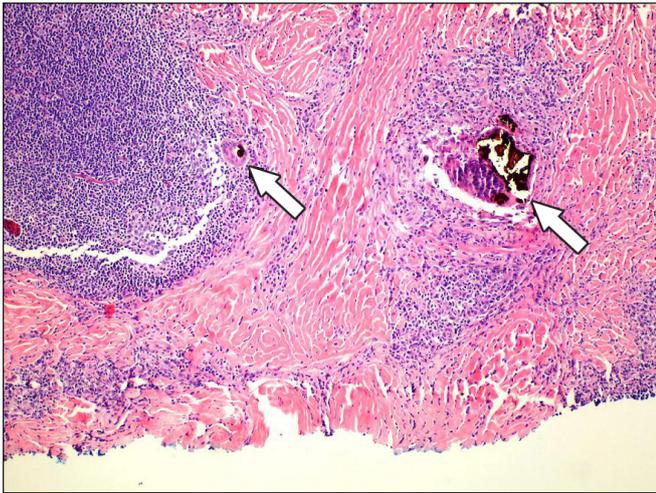


**Fig. 2** Photomicrograph of punch biopsy shows marked lymphoid hyperplasia with irregular and nodular aggregates of mixed lymphoid cells and germinal centre formation in the dermis (arrows) (Haematoxylin & eosin, × 20).

lymphoproliferative disorder, with rare case reports of malignant transformation.<sup>(1,5)</sup> Although most cases are idiopathic, reported triggering factors include *Borrelia burgdorferi* infection, insect bites, drugs, acupuncture, trauma and vaccinations.<sup>(1,2)</sup> Common

<sup>1</sup>Department of Dermatology, Changi General Hospital, <sup>2</sup>Mount Elizabeth Hospital, Singapore

**Correspondence:** Dr Wei Liang Koh, Medical Officer, Department of Dermatology, Changi General Hospital, 2 Simei Street 3, Singapore 529889. koh\_wei\_liang@hotmail.com



**Fig. 3** Photomicrograph shows two foci (arrows) of birefringent material surrounded by foreign body multinucleated giant cells with dense lymphocytic infiltration (Haematoxylin & eosin,  $\times 200$ ).

causative drugs include antiepileptics (phenytoin, carbamazepine, phenobarbitone), antihypertensives (beta-blockers, calcium channel blockers, angiotensin-converting-enzyme inhibitors), allopurinol, D-penicillamine and penicillins. There exists rare reports of cutaneous pseudolymphoma occurring after cosmetic tattooing, most commonly after cosmetic implantation of mercury-based red pigments. This is also reported with the usage of chrome or cobalt salts for blue or blue-green tattoos.<sup>(3-5)</sup> However, its occurrence after accidental inoculation of pigment has not been previously reported. Spectrophotometric analysis would have been helpful in confirming the identity of the foreign red material in our patient, but this was not available in our centre. Although the pathogenesis of tattoo-induced pseudolymphoma remains unresolved, a delayed allergic reaction to the metal compounds has been speculated.

While most commonly seen in women below 40 years of age, cutaneous pseudolymphoma can also occur in men, and in younger and older patients. The condition usually presents with a solitary, red to purple nodule or plaque. Less commonly, more generalised or multifocal lesions may be seen. Lesions are most common on the face, followed by the chest and upper extremities.<sup>(1)</sup> Cases caused by *Borrelia burgdorferi* infection tend to involve areas with lower skin temperatures, e.g. earlobes,

nose and scrotum. Although most commonly asymptomatic, lesions may be pruritic or painful. Diagnosis of cutaneous pseudolymphoma requires clinicohistopathologic correlation.<sup>(1)</sup> Histopathological features that may help to differentiate pseudolymphomas from true cutaneous lymphomas include a top-heavy polymorphous infiltrate, presence of germinal centres and tingible body macrophages. Unlike cutaneous lymphomas, kappa and lambda light chain restrictions are not seen in cutaneous pseudolymphomas, and immunoglobulin gene rearrangement analysis tends to demonstrate polyclonality. Despite these differences, a handful of cases may still cause diagnostic confusion. Thus, close follow-up of patients accompanied by serial biopsies is recommended. In our patient, her history of prior trauma, the finding of an exogenous pigment within the lymphoid infiltrate, and the polymorphic nature of the infiltrate were indicative of reactive lymphoid hyperplasia, rather than a true cutaneous lymphoma.

Treatment of cutaneous pseudolymphoma includes removal of any identifiable inciting cause. Other reported treatment options also include the use of potent topical corticosteroids and calcineurin inhibitors, intralesional steroid injections, local radiation therapy, cryotherapy and surgical excision. Spontaneous resolution has, however, also been observed.<sup>(1,6,7)</sup> In view of reports of cutaneous pseudolymphomas progressing to true lymphomas,<sup>(1,5)</sup> close follow-up is recommended.

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