

Correspondence

Flame figures in histology associated with allergic contact dermatitis from a henna tattoo

Editor,

Henna, which is called *mehndi* in India, is a greenish powder made from the leaves of *Lawsonia inermis* and contains lawsone as its active substance.¹ Henna is commonly used as a temporary dyeing agent, either alone or in combination with para-phenylenediamine (PPD), which makes color blacker and speeds up dyeing.² Para-phenylenediamine is a very potent contact sensitizer that is included in the European standard series for allergy patch testing. Henna is applied to the skin using fine brushes or syringes, and the resulting color lasts 2–3 weeks before fading, which is enough time for wearers to become sensitized.

Flame figures are dermal collagen fibers coated with eosinophilic granules in areas in which eosinophils have degranulated; they were first described in the context of eosinophilic cellulitis (Wells syndrome).³ Flame figures are a histologic reaction pattern associated with a variety of diseases, including dermatoses such as bullous pemphigoid, herpes gestationes, cutaneous mastocytoma, eczema, prurigo, chronic urticaria, myeloproliferative diseases, tinea, scabies, arthropod bite reactions, onchocerciasis, Marrara syndrome, and molluscum contagiosum.⁴ We report a patient who presented flame figures in histology associated with allergic contact dermatitis.

A 32-year-old male patient visited our clinic with a 4-day history of vesicular skin lesions on his right upper arm. Approximately five days before the visit, the patient had received a henna tattoo applied by a beach artist. On



Figure 1 Raised geometrical erythematous vesicles and patches on the right upper arm of a 32-year-old man who had received a painted henna tattoo 5 days previously

physical examination, raised and geometrical erythematous vesicles and patches were seen on the patient's right upper arm (Fig. 1). The patient had a history of allergic contact dermatitis after henna tattooing four years prior to the current presentation. Laboratory investigations, including complete blood count, electrolytes, liver function test, and urinalysis, were within normal limits. Histopathologic examination revealed marked papillary dermal edema with spongiotic vesicles in the epidermis. The deep dermis had a perivascular lymphocytic infiltrate with interstitial eosinophils and flame figures (Fig. 2). The skin lesions resolved with slight post-inflammatory

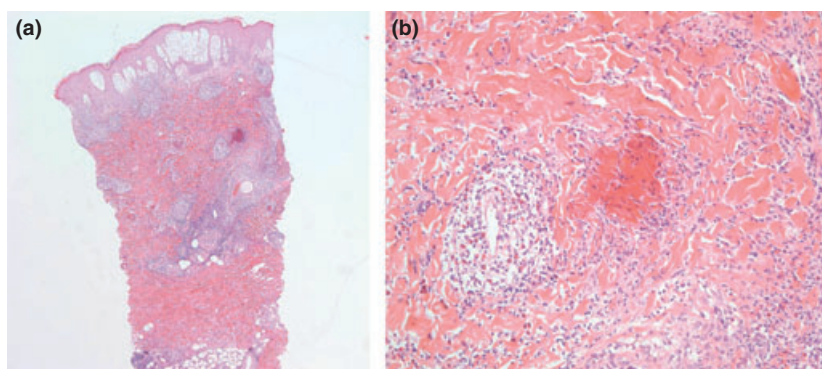


Figure 2 (a) Histopathology shows superficial and deep perivascular and interstitial inflammation composed of eosinophils and lymphocytes, with flame figures throughout the dermis and spongiotic vesicles in the epidermis. (Hematoxylin and eosin stain; original magnification $\times 40$.) (b) High-power view of a flame figure in which collagen bundles are encrusted with eosinophilic granules. (H&E stain; $\times 200$)

hyperpigmentation after treatment with topical corticosteroid ointment, oral corticosteroid, and oral antihistamine. The patient was followed for six months, during which there were no signs of relapse.

The pathogenesis of flame figures is not clear. Isolated occurrence, hypersensitivity to an invading parasite, or simple reaction patterns after eosinophil-mediated tissue injury are possible mechanisms for the formation of flame figures. Peters *et al.*⁵ showed that major basic protein, a toxin important in resistance to parasites and a major constituent of eosinophilic granules, may play a role in the tissue injury associated with flame figures. In addition, the degree of tissue eosinophilia may be relevant to its formation. Watanabe *et al.*⁶ reported that flame figures were found in bullous pemphigoid with marked tissue eosinophilia. We suggest that PPD may act as a trigger to hypersensitivity or tissue injury.

Our patient had a typical eczematous contact allergic reaction associated with a temporary henna tattoo. We detected flame figures in the context of allergic contact dermatitis, an uncommon finding. To our knowledge, this is the first report of flame figures in histology associated with an occurrence of allergic contact dermatitis in response to a henna tattoo. Dermatologists should be familiar with the wide spectrum of histopathologic findings in allergic contact dermatitis in order to make a correct diagnosis of such cases.

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