



Henna tattoo: infection or allergy?

Natasha Ip, Jane Hoddes

Lancet 2014; 383: 1436

Department of Paediatrics,
Lister Hospital, Stevenage, UK
(N Ip PhD, J Hoddes MRCPCH)

Correspondence to:
Dr Natasha Ip, Department of
Paediatrics, L65, Lister Hospital,
Stevenage SG1 4AQ, UK
natasha.ip@nhs.net

An 11-year-old boy had his first black henna tattoo while on holiday in Portugal in August, 2013. A week later his tattoo became hot, red, raised, and itchy. His family doctor prescribed oral co-amoxiclav for presumed infection. No culture was done at this time.

The patient presented at our institute 6 days later, when the lesion deteriorated. Bullae with clear yellow-orange discharge and golden crusting were present on a background of erythematous plaque well-circumscribed within the tattoo pattern on his upper arm (figure). We made a provisional diagnosis of probable *Staphylococcus aureus* impetigo secondary to allergic contact dermatitis. We gave the patient intravenous benzylpenicillin and flucloxacillin after taking a wound swab. Topical steroid was deferred until the presumed infection was treated. Wound culture showed heavy mixed growth of skin flora with no *S aureus* isolated, and we made a diagnosis of allergic contact dermatitis to black henna; treatment with topical steroid was started. When last seen in February, 2014, the lesion had completely healed without scarring; our patient is still on the waiting list for patch testing.

Traditional henna tattoos are temporary needle-free tattoos of dye extracts of low allogenicity from the plant *Lawsonia inermis*. The dye is painted on and fixates to skin proteins in several hours. Black henna tattoos with additives, particularly para-phenylenediamine (PPD), have become increasingly popular because of the darker and increased permanency of colouring. PPD concentrations of up to 64% have been reported,¹ compared to less than 6% in other colouring products such as hair dye. At high concentrations with prolonged exposure, PPD can cause allergic contact dermatitis, a type 4 hypersensitivity reaction, which can appear as a mildly eczematous or severe blistering lesion.^{2,3} Patients typically present 1–2 weeks after first exposure. In previously sensitised individuals, a reaction usually appears within 12–48 h. Long-term effects can include hyperpigmentation, hypopigmentation, hypertrichosis, or keloid scarring.⁴ Because of cross-reactivity to PPD and other additives, there are case reports of additional sensitivities to azo dyes

in textiles, black rubber, latex, fragrances, local anaesthetics, and sulphonamides.^{2,4} Allergic contact dermatitis caused by black henna is a clinical diagnosis.³ Any previous use of henna or dyes, atopy, or occupational exposure should be noted. Wound swab is useful in differentiating allergy from an infective cause. Treatment involves oral antihistamine and topical emollient with potent topical steroid for the first 5 days, followed by milder topical steroids.³ If the patient is systemically unwell, but not septic, oral steroids may be used.³ Post-inflammatory hyperpigmentation or hypopigmentation can be managed by cosmetic camouflage, or by sun avoidance or exposure, respectively, although care should be taken not to enhance the contrast with surrounding skin.⁵ Hyperpigmentation might also improve with sunscreens or topical hydroquinone (although unlicensed for this use in the UK).⁵ Silicone dressings might reduce keloid scarring. Although not crucial to establishing the diagnosis, follow-up should include patch testing for all potential allergens.³ We are unaware of any previous reports of an impetigo-mimicking allergic contact dermatitis from black henna, although for our patient initially, without culture results, it would have been imprudent to ignore the possibility of a refractory infection, especially in a child. Following the negative culture result, we were prompted to question whether the lesion was ever infected at all. Establishing the diagnosis of allergic contact dermatitis from black henna was important, because the child would have remained at risk of harm from future exposure to PPD and related compounds. Although allergic contact dermatitis caused by black henna tattoo is well-recognised in the fields of dermatology and allergy, general clinicians are often the first to see and treat these patients; as with our patient, cases may not always be straightforward to diagnose. With the growing popularity of such tattoos in holiday destinations, this case calls for an increased awareness of the hazard of these temporary tattoos, and the potentially serious long-term implications.

Contributors

NI and JH treated the patient and wrote the report. Written consent to publish was obtained.

References

- 1 Almeida P, Borrego L, Pulido-Melián E, González-Díaz O. Quantification of p-phenylenediamine and 2-hydroxy-1,4-naphthoquinone in henna tattoos. *Contact Dermatitis* 2012; 66: 33–37.
- 2 Jacob S, Zapolanski T, Chayavichitsilp P, Connelly E, Eichenfield L. p-phenylenediamine in black henna tattoos: a practice in need of policy in children. *Arch Pediatr Adolesc Med* 2008; 162: 790–92.
- 3 Worsnop F, Craythorne E, du Vivier A. A blistering eruption after a holiday in India. *BMJ* 2011; 343: d7474.
- 4 Kind F, Hofmeier K, Bircher A. Irritant contact dermatitis from a black henna tattoo without sensitization to para-phenylenediamine. *Pediatrics* 2013; 131: e1974–76.
- 5 Ruiz-Maldonado R, de la Luz Orozco-Covarrubias M. Postinflammatory hypopigmentation and hyperpigmentation. *Semin Cutan Med Surg* 1997; 116: 36–43.



Figure: An impetigo-like lesion from allergic contact dermatitis caused by black henna tattoo