

‘Black henna’ tattoos: an occult source of natural rubber latex allergy?

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Temporary ‘black henna’ tattoos are an increasingly popular body decoration with a growing incidence of associated adverse events. We report the case of a 14 year old girl presenting with an acute allergic contact dermatitis to hair dyes. Some years previously she had a ‘black henna’ tattoo with prior application of a tacky transfer to the skin to outline the design followed some days later by an acute localised blistering reaction. Patch testing to an extended British Contact Dermatitis Society standard series showed relevant positive reactions to paraphenylenediamine (PPD) and thiuram mix, as well as to several of the azo disperse dyes. We went on to perform prick testing to natural rubber latex (NRL), showing a positive reaction to the commercial HEP 100 concentration. We propose that through the initial acute reaction caused by PPD in the ‘black henna’ our patient was not only sensitized to PPD, but also to thiuram and natural rubber latex which may have been present in the tacky transfer applied prior to ‘tattooing.’ We would add that temporary ‘black henna’ tattoos may have more important consequences than previously thought on patients’ future health by sensitization to NRL.

Key words: allergic contact dermatitis; henna tattoo; natural rubber latex; PPD; thiuram.
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Temporary ‘black henna’ tattoos are well known to carry risks of long-term complications as a result of inducing sensitization to paraphenylenediamine (PPD). We speculate that more serious long-term effects may also include sensitization to natural rubber latex (NRL).

Case Report

A 14-year-old girl presented with an acutely inflamed, exudative, eczematous eruption involving the entire scalp, posterior neck, ears and forehead associated with erythema and oedema of the left side of the face and peri-orbital region. Symptoms had started 2 days previously within hours of applying 2 permanent hair dyes at home: 1 light brown and 1 dark red-brown. This was the first occasion that she had dyed her hair.

3 years previously, the patient had a temporary ‘black henna’ tattoo applied to the right upper arm whilst on holiday in Spain. Prior to the application of the dye itself, a tacky transfer was adhered onto the skin in order to outline the design. Several days later, she developed an

acute eruption at the site of the tattoo. This had since healed without scarring.

Given the prior history of the black henna tattoo reaction, the acute scalp dermatitis was thought to be an allergic contact dermatitis reaction to PPD in the hair dyes.

Several weeks later patch testing to an extended British Contact Dermatitis Society standard series gave a positive (+++) necrotic reaction to PPD 1% and a positive (++) reaction to thiuram mix at D2 and D4. There were also positive reactions to disperse orange 3 1% (+++), disperse yellow 3 1% (++) and disperse red 1 1% (+) at D2 and D4, and at D4 there were further positive (+) reactions to disperse blue 106 and 124 1%, nickel sulfate 5% and cobalt chloride 1%.

There was no history of type 1 NRL allergy symptoms. However, due to the positive reaction to thiuram and with the knowledge that a tacky transfer had been applied prior to the black henna tattooing, we went on to perform prick testing to NRL. This showed a positive reaction to the commercial HEP 100 concentration (Soluprick SQ; Alk-Abello, Hungerford, UK) at 15 min.

Discussion

The trend for body painting with temporary henna tattoos has increased considerably over recent years. Natural henna has been used for centuries for dying the skin and hair and is considered a rare sensitizer. However, in order to speed up the dying process, darken the colour and improve definition, a variety of different agents are added. In 'black henna', PPD is used and this has proven to be the cause of the majority of cases of contact dermatitis due to such tattooing (1).

Our patient not only had a severe reaction when patch tested to PPD, but also tested positive to other dyes. This has been reported in several other case reports as a consequence of PPD sensitization following 'black henna' tattooing due to cross-reactions with other azo-dyes (2).

Our patient also had a positive reaction to thiurams. These are additives present in some rubber products, including adhesives, which sometimes employ NRL as the tackifying agent (3). It is therefore possible that our patient was not only sensitized to PPD by her temporary 'black henna' tattoo but, by the prior application of a tacky transfer to the skin, she may also have been sensitized to thiuram (type 4 hypersensitivity) and NRL (type 1 hypersensitivity) at the same time. Our department has previously reported the possibility of sensitization to thiuram in this manner (4). Skin inflammation is a risk factor for both the induction and elicitation of allergic contact dermatitis. The severe eruption caused by the PPD in the 'black henna' tattoo would likely predispose to the induction of both the thiuram and NRL allergies.

The risk of long-term consequences as a result of temporary 'black henna' tattoos has been extensively reported. Patients have suffered postinflammatory hypo- and hyper-pigmentation at the tattoo site, local scarring and permanent sensitization to PPD (5). This can cause problems with allergic contact dermatitis from hair dyes, such as occurred in our patient, and also cross-reactions with other chemicals such as azo-dyes, also as seen in our patient. We add that temporary 'black henna' tattoos may have even more important consequences in terms of the future health care of patients by sensitization to NRL.

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