

## Contact Dermatitis to Temporary Tattoo

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**SUMMARY** The development of contact hypersensitivity to temporary tattoos has been on an increase all over the world. Skin painting with henna is a traditional practice in the Moslems and Hindu, and has recently been increasingly used in western countries. Black henna is obtained by adding paraphenylenediamine to the natural occurring henna. The risk of sensitization increases with the length of contact and increase of the concentration. A case is presented of an 11-year-old boy who developed a severe reaction in the form of redness and edema accompanied by pruritus on the day following the application of a temporary tattoo. A year before, the patient had also developed a skin reaction following temporary tattooing, which had not been recognized as a contact dermatitis. Patch testing was positive for paraphenylenediamine and thiuram compounds. The patient was treated with medium-strength corticosteroids.

**KEY WORDS:** temporary tattoo; contact hypersensitivity; allergic contact dermatitis; paraphenylenediamine; thiuram derivatives

### INTRODUCTION

Body painting with temporary tattoos is an increasingly popular alternative to traditional tattoos. In contrast to classic tattooing, the procedure is less painful, as there is no skin penetration as in a classic tattoo or piercing, and there is no risk of infective agent introduction (being one of the major advantages of temporary tattoos) such as hepatitis B and C, and theoretically HIV (1). Classic tattoos may be associated with a number of side effects, such as morphea-like reactions as described by Mahalingam *et al.* (2). Since the beginning of the 1990s, there have been several literature reports on contact dermatitis at the site of temporary tattoos (3-17).

### CASE REPORT

During summer holidays, an 11-year-old boy had a temporary tattoo performed on his right brachium. The very next day, he experienced a burning sensation and marked redness at the site of tattoo application (Fig. 1). The site was treated by cold dressings and neutral creams. On day 10, the patient presented to a dermatologist because of persistent lesions, with pronounced redness and scaling at the site of contact. Mycologic testing was performed to rule out a possible fungal infection, and therapy with a local corticosteroid preparation of medium strength was initiated. Four weeks after tattooing, there was visible residual hypopigmentation. Patch testing was positive for



**Figure 1.** Marked redness at the site of tattoo application.

paraphenylenediamine (PPD) and thiuram (Fig. 2). Thereupon, the patient's mother reported that a year before, the boy had also had a temporary tattoo that had resulted in a "nodule" at the site of application a few days later, and had regressed spontaneously.

## DISCUSSION

Henna has been used for more than 9000 years in some 60 countries in the world. The name has been derived from the Arabic term *hinna* for the plant *Lawsonia inermis (alba)*, naturally found in Asia, west Mediterranean and North Africa. The plant is ground into powder which is then mixed with oil and some other ingredients, and applied onto the skin to perform a tattoo. In spite of its wide usage, reports on contact hypersensitivity to henna are extremely rare. There are several reports on dermatitis with positive patch test upon contact with hair dye, hair spray, nail polish, and tan lotion (10). The longer the skin contact, the darker is the tattoo (7). The use of black henna is considered to be the reason for the ever increasing prevalence of contact dermatitis to temporary tattoos, particularly among adolescents and schoolchildren (11,12). Black henna is obtained by adding artificial dyes, particularly PPD found in many dark hair dyes, to the natural substance.



**Figure 2.** Patch test positive reactions to PPD and thiuram-mix.

The induced allergic reaction should be expected to occur on day 7-10 (13,14). However, our patient developed a severe reaction on the day following tattooing, which could be explained by sensitization to a PPD-containing tattoo a year before. The patch test concentration of PPD is 0.5%, which is ten times lower than the PPD concentration in the tattoo paste.

Allergic reactions to azo dyes in textiles as well as to hair dyes other than PPD, but which do now react with it, may follow temporary tattooing as the primary source of sensitization (15,16). Moreover, residual hypopigmentation persisting for a long period of time at the site of tattoo is frequently encountered (17).

## References

1. Brown KM, Perlmutter P, McDermott RJ. Youth and tattoos: what school health personnel should know. *J Sch Health* 2000;70:355-60.
2. Mahalingam M, Kim E, Bhawan J. Morphealike tattoo reaction. *Am J Dermatopathol* 2002;24:392-5.
3. Wakelin S, Creamer D, Rycroft R, White I, McFadden J. Contact dermatitis from paraphenylenediamine used as a skin paint. *Contact Dermatitis* 1998;39:923.
4. Lestringant G, Bener A, Frossard P. Cutaneous reactions to henna and associated additives. *Br J Dermatol* 1999;141:598-600.
5. Mohamed M, Nixon R. Severe allergic contact dermatitis induced by paraphenylenediamine in paint-on temporary "tattoos". *Australas J Dermatol* 2000;41:168-71.

6. Wolf R, Wolf D, Matz H, Orion E. Cutaneous reactions to temporary tattoos. *Dermatol Online J* 2003;9:3.
7. Pegas JR, Cariado PR, Cariado RF, Vasconcellos C, Pires MC. Allergic contact dermatitis to temporary tattoo by p-phenylenediamine. *J Invest Allergol Clin Immunol* 2002;12:62-4.
8. Chung WH, Wang CM, Hong HS. Allergic contact dermatitis to temporary tattoos with positive para-phenylenediamine reactions: report of four cases. *Int J Dermatol* 2001;40:754-6.
9. Lauch S, Lautenschlager S. Contact dermatitis after temporary henna tattoos – an increasing phenomenon. *Swiss Med Wkly* 2001;131:199-202.
10. Neri I, Gauareschi E, Savoia F, Patrizi A. Childhood allergic contact dermatitis from henna tattoo. *Pediatr Dermatol* 2002;19:503-5.
11. Marcoux D, Couture-Trudel PM, Riboulet-Delmas G, Sasseville D. Sensitization to para-phenylenediamine from a streetside temporary tattoo. *Pediatr Dermatol* 2002;19:498-502.
12. Branaccio RR, Brown LH, Chang YT, Fogelman JP, Mafong EA, Cohen DE. Identification and quantification of para-phenylenediamine in a temporary black henna tattoo. *Am J Contact Dermatol* 2002;13:15-8.
13. Chung WH, Chang YC, Yang LJ, Hung SI, Wong WR, Lin JY, *et al.* Clinicopathologic features of skin reactions to temporary tattoos and analysis of possible causes. *Arch Dermatol* 2002;138:88-92.
14. Nikkels AF, Henry F, Pierard GE. Allergic reactions to decorative skin paintings. *J Eur Acad Dermatol Venereol* 2001;15:140-2.
15. Le Coz CJ, Lefebvre C, Keller F, Grosshans E. Allergic contact dermatitis caused by skin painting (pseudotattooing) with black henna, a mixture of henna and p-phenylenediamine and its derivatives. *Arch Dermatol* 2000;136:1515-7.
16. Saunders H, O'Brien T, Nixon R. Textile dye allergic contact dermatitis following paraphenylenediamine sensitization from a temporary tattoo. *Australas J Dermatol* 2004;45:229-31.
17. Wohrl S, Hemmer W, Focke M, Gotz M, Jarisch R. Hypopigmentation after non-permanent henna tattoo. *J Eur Acad Dermatol Venereol* 2001;15:386-7.



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