

## Contact Dermatitis After Henna Skin Tattooing

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### Abstract:

A case of contact dermatitis resulting from temporary tattooing with henna is described. The skin was stained using a dye described as 'black' henna. This is produced by the addition of para-phenylenediamine (PPD) to traditional henna dye in order to make temporary skin tattoos appear darker. Sensitisation to PPD may also cause sensitivity to printers' inks, clothing dyes, hair dyes, local anaesthetics, sulphonamides, and para-aminosalicylic acid. The case of contact dermatitis described responded to application of topical steroid with no sequelae; however patients may be left with hypo- or hyper-pigmentation of the skin or even permanent scarring.

### Introduction

The increasing popularity of temporary skin tattooing has led to the increased availability of 'black' or 'super' henna dye in many holiday resorts. This type of henna contains the natural henna dye, 2-hydroxy-1, 4 naphthoquinone, and an added synthetic dye, para-phenylenediamine (PPD) that shortens the time the henna mixture has to be left on the skin. This application technique leaves a black rather than brown skin marking. Unfortunately, as the use of black henna tattoos has increased, so have the number of post application allergic skin reactions(1-3).

### Case Report

A male medical officer presented with a raised, erythematous and itchy skin lesion following temporary skin tattooing with black henna while on holiday in Morocco. The tattoo was applied at a street vendors stall. Immediately following application, a burning sensation was noted. After twenty minutes, the crust of the henna dye was flicked off. Within two hours, some blistering to the skin was noted. Washing the area with soap and water did not remove the pigmentation from the skin nor did it alleviate the itchiness. Within a week the area of the tattoo had become raised, erythematous and itchy in the exact location of the pigmented pattern (Fig 1). Topical 1% hydrocortisone was used with little effect. After referral to a consultant dermatologist, Betamethasone Valerate 0.1% cream was prescribed and applied twice daily to the affected area. After three weeks the lesion had resolved with no residual change in pigmentation or scarring. The patient was



Figure 1. Serpiginous scaly rash seven days after pigment fading.

advised to avoid further temporary tattooing with black henna as well as black hair dyes containing PPD.

### Discussion

Temporary skin tattooing with Henna is becoming more and more popular, especially as tourism to the Asian subcontinent increases. The vast majority of such tattoos come from street vendors who make their own dye mixes. Black henna gives a more darkly pigmented and quicker skin marking than traditional henna, and is made by the addition of the commercial dye – PPD. This diamine dye has in the past been used for black hair dye, printers' inks, photographic inks and the manufacture of clothing.

There have been few reports of skin reactions to the more traditional henna preparations. In contrast the number of reports of contact dermatitis in relation to henna with PPD is increasing. Many of these show that it is not the henna component of the dye which is causing the reaction, but the PPD component(2,4,5). The contact dermatitis has been described as immediate-type hypersensitivity(3,6), but has also been demonstrated as a delayed-type hypersensitivity in some patients(2). Histological examination of the affected skin commonly shows acute dermatitis with epidermal intravascular oedema.

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It is important to note that the common use of PPD in other products means that patients who have developed sensitivity to the dye through temporary skin tattooing also have a risk of sensitivity to these other products. It has been suggested that these patients also have an increased risk of sensitivity to local anaesthetics, sulphonamides, and para-aminosalicylic acid(7). Moreover, there is a risk of hyper- or hypo-pigmentation of the affected skin after treatment(1,7). The resolution of these lesions has also been shown to be prolonged despite topical steroid therapy(2). PPD has also been shown to be mutagenic(8). It is difficult to estimate the amount of PPD any one individual may have been exposed to after application of a black henna tattoo as the dye mix is in no way either standardized or regulated. The concentrations of its components are totally dependant on the vendor offering the tattoo.

### Conclusion

Temporary tattooing with black henna may have more permanent and unwanted effects. Care should be taken before having such a tattoo applied, especially in sensitive individuals.

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