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A 26-year-old man presents with a patterned, pruritic, erythematous plaque on his arm one week after vacationing in California.

What is your diagnosis?

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The Diagnosis: Allergic Contact Dermatitis to Paraphenylenediamine in a Temporary Henna Tattoo



Figure 1. Patterned, pruritic, erythematous plaque on the left deltoid of a 26-year-old man.



Figure 2. 2+ reaction to paraphenylenediamine (number 4, labeled PP) with patch testing.

Henna is derived from the *Lawsonia* tree, which reaches a height of 8 to 15 ft and bears small, pastel-colored, fragrant flowers and dark blue berries. Henna grows in the hot climates of India, the Middle East, and North Africa and has been used for more than 5000 years for its cosmetic appeal and supposed healing properties. Henna paste is made from the plant's powdered leaves and is reddish-brown. It has been used as body decoration to commemorate weddings, births, and other religious holidays for Hindus, Muslims, and Jews. A well-darkened design is considered good luck. Henna also has been used topically to treat cutaneous diseases,

alopecia, and burns and systemically for headaches and gastrointestinal symptoms.¹⁻⁵

The art of henna tattooing (body painting) has enjoyed a resurgence in the West as Eastern culture has increasingly influenced fashion and entertainment. Henna is a safe nonpermanent alternative to tattooing. The active component of henna, hydroxynaphthaquinone, has been associated with only a few cases of contact dermatitis.^{1,3,6} However, additives such as paraphenylenediamine (PPD), a well-recognized contact allergen that is sometimes mixed with henna to impart color to the pure reddish-brown paste, could result in decreased safety.^{2,4,7}

PPD is often found in hair dye, and it is estimated that 6% of the population is sensitive to this additive. In the United States, hair dyes that contain PPD must include a warning of adverse reactions, and instructions for patch testing are often included.⁸

We present the case of a 26-year-old man who received a black “henna” tattoo from a Venice Beach artisan while vacationing in California. One week later, he developed an intense, pruritic, erythematous plaque that reproduced the pattern (a salamander) of his henna tattoo (Figure 1). This exemplifies the type IV delayed hypersensitivity response of allergic contact dermatitis. Patch testing was performed and revealed a 2+ reaction to PPD with vesiculation (Figure 2). The lesion responded to topical application of a class I corticosteroid. PPD was most likely added to the pure henna paste to impart a black color to the tattoo.^{1,4,5,7} Cross-reactivity of PPD with local anesthetics, sulfonamides, and para-aminobenzoic acid sunscreens is also possible.⁸

Consumers should be aware that henna tattoos that are not a pure reddish-brown color could contain allergenic additives such as PPD; consumers should

also be advised that they are at risk for sensitization when applying hair dye and sunscreens or taking commonly used medications.

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