

# Red Scaly Rash Following Tattoo Application

Candace M. Broussard-Steinberg, MD; James Lagrew, MD



A 26-year-old man presented with a mildly pruritic red scaly rash on the right arm of 3 weeks' duration. He reported having a tattoo placed on previously normal skin on the right lateral arm prior to the development of the rash. Two weeks after receiving the tattoo, he developed scaling and redness of the skin involved in the tattoo. He also had similar papules and plaques over the rest of his body. Physical examination showed well-demarcated, erythematous, scaly papules and plaques following the design of a black-pigmented tattoo on the lateral aspect of the right arm. There also were similar erythematous scaly plaques scattered over both arms and the trunk. He denied any pain or blister formation of the involved areas.

## WHAT'S THE DIAGNOSIS?

- allergic contact dermatitis
- irritant contact dermatitis
- isomorphic lichen planus
- isomorphic psoriasis
- tattoo granuloma

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Dr. Broussard-Steinberg was from the University of South Carolina School of Medicine, Columbia, and currently is from the Department of Dermatology, Indiana University School of Medicine, Indianapolis. Dr. Lagrew was from the Department of Dermatology, Medical University of South Carolina, Charleston, and currently is in private practice, Lexington, Kentucky.

The authors report no conflict of interest.

Correspondence: Candace M. Broussard-Steinberg, MD, Indiana University School of Medicine, Department of Dermatology, 545 Barnhill Dr, Indianapolis, IN 46202 (cmbrouss@iupui.edu).

## THE DIAGNOSIS: Isomorphic Psoriasis

Tattooing has become an increasingly popular trend among young people. Currently, there are no guidelines in the United States regulating the production of tattoo ink and pigments.<sup>1</sup> Henna tattooing, a form of temporary skin painting, also has risks of allergic contact dermatitis from paraphenylenediamine dye.<sup>2</sup> Complications following tattoo application include an allergic contact dermatitis to tattoo pigments, infection, granulomatous and lichenoid reactions, and skin disease localized to the tattooed area.<sup>3</sup>

Localized dermatosis arising in a traumatized area, or the Koebner phenomenon, was first described by Heinrich Koebner in 1877.<sup>4</sup> He described the formation of psoriasiform lesions at the site of cutaneous trauma.<sup>5</sup> These isomorphic lesions can occur in 25% of patients with psoriasis after trauma to the skin such as tattooing.<sup>6</sup> Other dermatologic diseases that can present as an isomorphic response to tattooing include lichen planus, Darier disease, vitiligo, and autoimmune bullous disease.<sup>3,5,6</sup>

Various causes of trauma such as burns, insect bites, physical trauma, and needle trauma have been shown to produce new psoriatic lesions.<sup>6</sup> The time period from trauma to formation of psoriasiform lesions usually ranges from 10 to 20 days; however, an initial reaction can occur as early as 3 days or as long as 2 years after trauma.<sup>4</sup> Although the pathophysiology of the isomorphic response is not well known, it has been shown that nerve growth factor has a role. Raychaudhuri et al<sup>7</sup> demonstrated the upregulation of nerve growth factor in the development of a psoriatic lesion, influencing keratinocyte proliferation, angiogenesis, and T-cell activation.

Physical trauma such as tattooing has been shown to cause an isomorphic response in psoriasis. We describe a case of isomorphic psoriasis in a patient after tattoo application. Our patient had a several-month history of well-controlled psoriasis prior to obtaining the new tattoo. Several days after receiving the tattoo, the patient reported an increase in psoriatic lesions, including at the site of the tattoo. The trauma causing the isomorphic response could have been either a response to the tattoo pigment or needle injury to the skin.<sup>6</sup>

Psoriasis and isomorphic lesions can be treated with topical corticosteroids as well as systemic and biologic agents. Our patient was treated with triamcinolone cream with good response.<sup>8</sup>

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