Tattoo reactions in an HIV patient: Autoeczematization and progressive allergic reaction to red ink after antiretroviral therapy initiation

Christina S. Gamba, MD,[a] Franki Lambert Smith, MD,[b] Josh Wisell, MD,[c] and Mariah Brown, MD[b]
Stanford, California and Aurora, Colorado

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INTRODUCTION

Complications of tattoos are a growing concern, especially because more than 21% of American adults now have at least 1 tattoo.[1] Overall, few tattoo reactions have been described in HIV patients, and all of the cases reported occurred after antiretroviral therapy (ART) initiation, attributed either to immune reconstitution syndrome (IRS) or leishmaniasis infiltration.[2-7] To our knowledge, there are no reported cases of tattoo reaction in HIV patients not on ART. We describe an HIV patient with an allergic tattoo reaction at baseline that dramatically worsened after ART initiation, which was further complicated by a severe id reaction.

Abbreviations used:

ART: antiretroviral therapy
HIV: human immunodeficiency virus
IRS: immune reconstitution syndrome

CASE REPORT

A 40-year-old woman with a 7-year history of HIV infection underwent tattooing of 2 red ink "bleeding hearts" on her chest in December 2012. In the days following, erythema and swelling developed at the tattoo sites. She had received multiple prior tattoos without complications, including one on the lower back with red ink. The tattoo eruptions on the chest remained stable over the next 6 months, isolated to the areas of red ink, and did not respond to treatments from urgent care including topical silver sulfadiazine ointment, empiric oral itraconazole, and topical betamethasone dipropionate 0.05% ointment.

In June 2013, the patient presented to the Infectious Disease Clinic for a consultation regarding starting ART, given the tattoo eruption as well as her increasing viral load count and low CD4 cell count. Their examination noted erythema and swelling isolated to the tattoos on her chest. At that visit, her CD4 count was 384 cells per microliter and viral load was 5,940 copies per milliliter. The patient was started on elvitegravir-cobicistat-emtricitabine-tenofovir 150-150-200-300 mg (Stribild; Gilead Sciences, Foster City, CA) tablet once daily, and was referred to dermatology.

The patient was seen in the Dermatology Clinic in August 2013. Her tattoo reactions had worsened after starting ART and were not improving despite application of topical betamethasone dipropionate 0.05% ointment twice daily for more than 4 months. On examination, eroded plaques weeping clear-yellow fluid were isolated to the red portions of her chest tattoos. An allergic reaction to red ink was suspected, and intralesional triamcinolone was injected into both tattoos (a total of 2 mL triamcinolone solution, 10 mg/mL, across both tattoos). Two weeks later, the patient returned with a new generalized pruritic rash and no improvement in her localized tattoo reactions. On examination, she was found to have erythematous papules on her face, trunk, and extremities (Fig 1, *B* and *C*). Her chest tattoos remained eroded with clear-yellow

From the Department of Dermatology, Stanford University School of Medicine[a] and the Departments of Dermatology[b] and Pathology,[c] University of Colorado School of Medicine.
Dr Lambert Smith is currently affiliated with Mayo Clinic Health System, Franciscan Healthcare, La Crosse, Wisconsin.
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Correspondence to: Mariah Brown, MD, Department of Dermatology, University of Colorado, 1665 North Aurora Court, Mail Stop F703, Aurora, CO 80045. E-mail: mariah.brown@ucdenver.edu.

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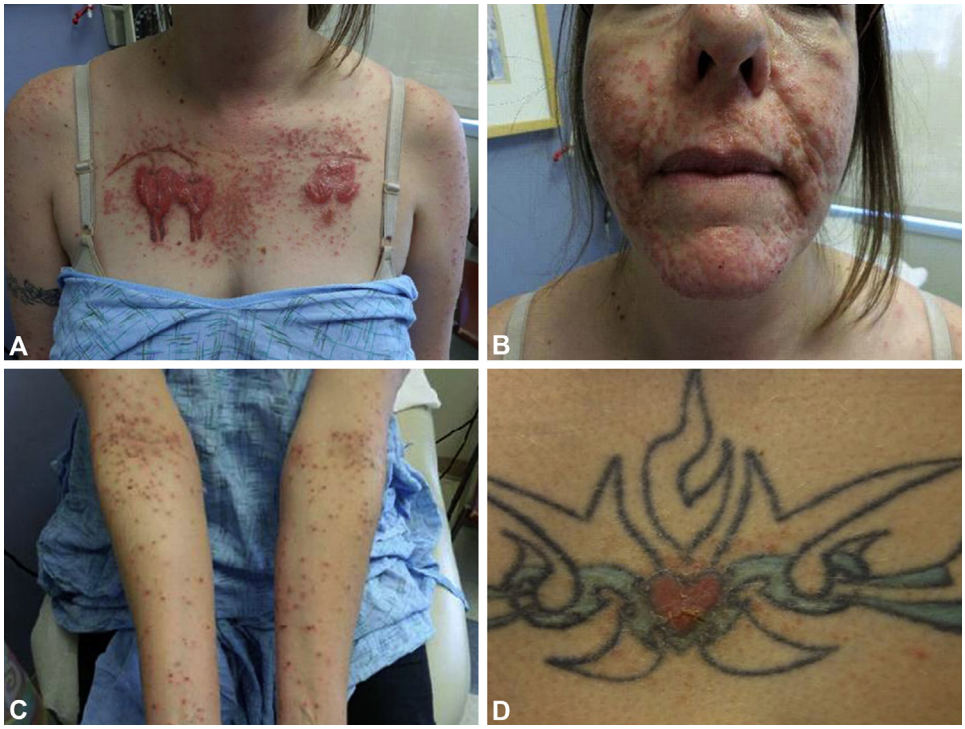

Fig 1. Allergic reaction to red tattoo ink and autoeczematization. **A**, Edematous, weeping plaques isolated to the red portions of recently acquired "bleeding heart" tattoos on the chest. **B** and **C**, Erythematous, edematous papules on the face and ventral forearms. **D**, New erythematous, crusted plaque within the red portion of a tattoo acquired 17 years prior at a different tattoo parlor.

discharge (Fig 1, *A*). Her CD4 cell count was 400 and viral load was undetectable, indicating an excellent initial response to ART. She was started on an oral prednisone taper (60 mg by mouth for 4 days, tapered by 10 mg every 4 days, for a total course of 24 days) for presumed allergic tattoo reaction with autoeczematization (id reaction).

The tattoo reactions and generalized papular eruption resolved completely on oral prednisone, but recurred 3 days after the taper was completed in October 2013. In addition, at the time of steroid discontinuation, the patient then had a new allergic reaction within the red portion of her lower back tattoo, whereas the blue, green, and black portions were spared (Fig 1, *D*). This tattoo had been present for 17 years and had been completed at a different tattoo parlor than her more recent tattoos. At this time, 2 biopsies were performed from the left chest tattoo and sent for histopathology and tissue culture. Histopathology findings showed dermal red tattoo pigment deposition and an extensive associated inflammatory infiltrate consisting primarily of lymphocytes and occasional eosinophils with varying degrees of lichenoid and spongiotic tissue reaction. Bacterial, fungal, and mycobacterial tissue cultures were negative. A second prednisone taper was commenced, with prednisone 30 mg daily for 2 weeks, followed by 20 mg daily for 8 weeks, while staged surgical excision of the 3 tattoos was completed over 8 weeks beginning in November 2013. Histopathology results from each tattoo excision confirmed the same pathologic findings as in the previous left chest tattoo biopsy (Fig 2, *A* and *B*). Tissue cultures from each specimen (bacterial, fungal, and mycobacterial) were also negative. Upon discontinuation of the prednisone after tattoo excision, the generalized papular eruption of her id reaction had not recurred at 2-year follow-up.

DISCUSSION

Red ink reactions are the most frequently described among allergic tattoo reactions. In the past, the proposed culprit in red ink was cinnabar (mercury sulfide), but reactions to red ink continued even as mercury-free inks replaced older mercury-containing inks beginning in the 1970s.[8,9] Modern red tattoo inks are primarily composed of organic azo pigments.[10,11] Efforts to identify the specific culprit allergen within these new red inks have been disappointing and suggest that either metabolism or haptenization with host proteins within the dermis is likely required for an allergic