



Acute exacerbation of psoriasis after COVID-19 Pfizer vaccination

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ABSTRACT

The novel coronavirus (COVID-19) pandemic has caused many deaths worldwide. Managing and diagnosing dermatological conditions has become difficult during this era, especially with the widespread administration of vaccines. We report a 58-year-old man with a history of psoriasis and multiple comorbidities who presented with a worsening pruritic rash 1 week after receiving the COVID-19 Pfizer vaccine. He was treated with triamcinolone-based wet wraps, triamcinolone ointment, and hydroxyzine, which improved his rash significantly after 6 days of hospitalization.

KEYWORDS COVID-19; erythrodermic psoriasis; flare-up; Pfizer vaccine

COVID-19 has infected over 170 million people worldwide, and approximately 33 million have been from the USA as of June 2021.^{1,2} Although advancements have been made in response to this virus with the development of the COVID-19 vaccines, there are questions about the role of these vaccines and their relationship with management or diagnoses of different comorbidities, especially dermatological conditions such as psoriasis. Psoriasis, a multisystem inflammatory disease, is commonly associated with dermatological manifestations of silvery scales typically present on extensor surfaces.³ Here we describe a case of an acute exacerbation of erythrodermic psoriasis 1 week after COVID-19 Pfizer vaccination.

CASE REPORT

A 58-year-old man with essential hypertension, prior intravenous drug use with heroine, L4-5 methicillin-resistant *Staphylococcus aureus* osteomyelitis, untreated hepatitis C, and tobacco use disorder presented to the emergency department due to a 3-day history of a worsening pruritic rash. He had been diagnosed with psoriasis in 2019 and was self-treating with coal tar and Echinacea lotion. He stated that he had received the second dose of the COVID-19 Pfizer vaccine

4 days prior to his initial symptoms. His skin was warm and dry with large, raised, erythematous areas and silver scaling involving the bilateral lower extremities, abdomen, chest, back, bilateral upper extremities, and face (*Figure 1*), covering over 80% of body surface area. Laboratory tests revealed no leukocytosis, leukopenia, anemia, thrombocytopenia, thrombocytosis, or electrolyte derangements. Topical hydrocortisone was administered. Dermatology recommended further laboratory tests. Hepatitis C vaccine genotype 1a was positive, but HIV, serum protein electrophoresis, and urine protein electrophoresis were negative. A punch biopsy revealed psoriasiform and spongiotic dermatitis with overlying neutrophilic parakeratosis favoring psoriasis exacerbation. A flow Sézary panel was negative for Sézary syndrome. The patient was treated with wet wraps with triamcinolone to lower extremities, triamcinolone 0.1% ointment twice a day over body, and hydroxyzine for itching. He was not treated with acitretin given the concern for hepatotoxicity with his untreated hepatitis C. On day 6 of hospitalization, his rash improved. He was discharged home with close follow-up with dermatology as well as with topical triamcinolone, topical emollients, and hydroxyzine.

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Figure 1. (a) Darkening of skin with ulcers present on bilateral lower extremities. (b) Scaly, dry plaques visible on bilateral feet. (c) Plaques visible on the back. (d) Scaly plaques and dry areas visible on hands. (e) Scaly plaques and dry areas visible on bilateral upper extremities. (f) Dry and flushed skin visible on face.

DISCUSSION

To date, four case reports have been published of patients with psoriatic erythroderma and COVID-19 infection.⁴⁻⁷ The postulated mechanisms include changes in eosinophil counts and T-helper cell dysregulation.⁸ Eosinophilia was noted in animal-based models inoculated with prototypes of the COVID-19 vaccine.⁸ Peripheral blood eosinophilia has been touted as the stimulus for severe forms of psoriasis, including psoriatic flare-ups.⁹

Dermatological conditions often require immunosuppressive treatments that may hamper the protective immune response against COVID-19 and are, therefore, controversial. Although our patient was not using immunologic treatments, the prevalence of SARS-CoV-2 seropositivity in patients with psoriasis is relatively high.^{4,10} Psoriasis flare-ups have been previously reported after influenza vaccination.¹¹ Thus, a similar risk is present with COVID-19 vaccines. The patient's acute exacerbation of erythrodermic psoriasis presented 1 week after the administration of the second dose of the Pfizer COVID-19 vaccination. This is an interesting finding considering how a recent case series of patients on apremilast for psoriasis did not experience any flare-up.¹²

Oral retinoids, including acitretin, are the first-line treatments in erythrodermic psoriasis because of their lack of immunosuppressive qualities and increased safety and efficacy.¹³ However, acitretin was not used considering the patient's positive hepatitis C status. The patient did not have arthritis that would have favored the use of cyclosporine or low-dose prednisolone.⁴ Therefore, topical and antihistamine agents were used. To our knowledge, this is the first case of

severe psoriatic erythroderma after COVID-19 vaccination. The National Psoriasis Foundation's COVID-19 task force guidelines recommend that patients with psoriasis obtain the COVID-19 vaccine.¹⁴

In conclusion, patients with a history of psoriasis should not refrain from the COVID-19 vaccine, as the benefits outweigh the risks. However, caution must be exercised in all cases to ensure that psoriasis flare-ups after vaccination are not missed during evaluation. If patients do experience an acute exacerbation of the psoriasis, they should seek treatment and be closely monitored.

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