Temporary exacerbation of pre-existing psoriasis and eczema in the context of COVID-19 messenger RNA booster vaccination: A case report and review of the literature

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On October 20, 2021, the Food and Drug Administration (FDA) authorized an additional dose of BNT162b2 Pfizer-BioNTech, messenger RNA-1273 Moderna, and Janssen (Johnson & Johnson) COVID-19 vaccination for persons aged ≥65 years, those aged 18-64 years with a high risk of severe COVID-19, or those with frequent institutional or occupational exposure to SARS-CoV-2.¹

In addition, the FDA authorized the use of a heterologous booster dose for these 3 vaccines, at least 6 months after the completion of the Pfizer-BioNTech and Moderna primary series and 2 months after the completion of the single-dose Janssen primary regimen. A critical appraisal of the initial FDA guidelines approving the use of COVID-19 vaccination in immunocompromised persons supported the use of booster doses in immunocompromised dermatology patients, such as those on prednisolone at ≥20 mg daily, biologics, or methotrexate.² For increasing booster dose approvals in many countries worldwide, it is important for dermatologists to be familiar with the possible cutaneous adverse events associated with booster doses. We report 2 cases of exacerbation of an underlying dermatosis after the administration of booster doses.

The first patient was a 71-year-old man with a history of localized eczema who presented with new-onset vesicular and discoid lesions within 24 hours of the third Pfizer-BioNTech vaccination dose. He had a similar but milder reaction after his second vaccination dose. A physical examination revealed eczematous and weepy discoid plaques on the trunk, limbs (Fig 1, A), and chest (Fig 1, B) and multiple deep-seated vesicles on the palms (Fig 1, C). He was treated with topical steroids, antihistamines, oral antibiotics, and prednisolone.

The second case was an 80-year-old woman with stable quiescent psoriasis who was on cyclosporine at 25 mg daily. One week after her third dose of Pfizer-BioNTech vaccination, a guttate flare with an active body surface area of 5% developed in the patient (Fig 1, D). Cyclosporine was increased to 75 mg daily, with the addition of topical steroids.

Booster doses are recommended based on the emerging data that individuals receiving certain medications or those with chronic inflammatory disease are less likely to mount an adequate response to messenger RNA COVID-19 vaccines’ 2-dose series.² A phase 3 clinical trial showed that adverse reactions after the receipt of the third COVID-19 vaccination dose were similar to those reported after the second dose. The common side
Fig 1. A clinical photograph of the first patient with a flare of vesicular and discoid eczema (A to C) and the second patient with guttate psoriasis (D) after a Pfizer booster vaccination dose. A, Extensive eczematous discoid weepy plaques on lower portion of the limbs after the third dose of BNT162b2 Pfizer-BioNTech vaccination. B, Erythematous discoid weepy plaques on the chest and anterior abdomen. C, Multiple deep-seated vesicles on the palm of the right hand, with shallow, clean base erosion over the base of the thumb. D, Flare of guttate psoriasis. Guttate scaly erythematous plaques and papules on lateral aspect of the lower portion of the right limb of the patient with postinflammatory hyperpigmentation in the background.
effect profiles included injection site pain and fatigue, with a low frequency of a severe systemic event.3 Another trial found similar incidences of rashes with both Moderna and Pfizer booster doses, regardless of the completion of the primary vaccine series.4 Despite current FDA approval for heterologous booster doses, the efficacy of a mix-match booster is uncertain. Some have postulated that heterologous boosting could boost waning vaccine-induced immunity, immunity against more virulent variants, and reduce hospitalization, emergency department visits, and urgent clinics visits.2

The limitations of this study include the inability to establish causality. However, our cases show temporal association with other qualifying triggers and satisfy most criteria described in a causality assessment of an adverse event following immunization.5 Physicians are encouraged to monitor for possible cutaneous vaccine-related complications (Table I) and remain updated on national and international guidelines.3

Table I. List of dermatologic manifestations of COVID-19 vaccination3

| Dermatologic manifestations                                      |
|------------------------------------------------------------------|
| Delayed large local reactions                                   |
| Morbilliform rashes                                              |
| Urticaria                                                        |
| Erythema multiforme                                              |
| Delayed inflammatory reactions to dermal hyaluronic acid fillers|
| Pernio and chilblains                                            |
| Early-onset local injection site reactions                       |
| Erythromelalgia                                                  |
| Lichen planus                                                   |
| Varicella zoster and herpes simplex reactivation                 |
| Petechial and purpuric rash                                      |
| Pityriasis rosea-like reactions                                  |

Conflicts of interest

Dr Oon is a speaker, advisory board member, and researcher for Janssen, Novartis, and Galderma. She has also been a clinical investigator for Pfizer and an advisory board member for AbbVie. The other authors declare no financial conflicts of interests. All authors agree with submission of this manuscript.

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