

## LETTER TO THE EDITOR

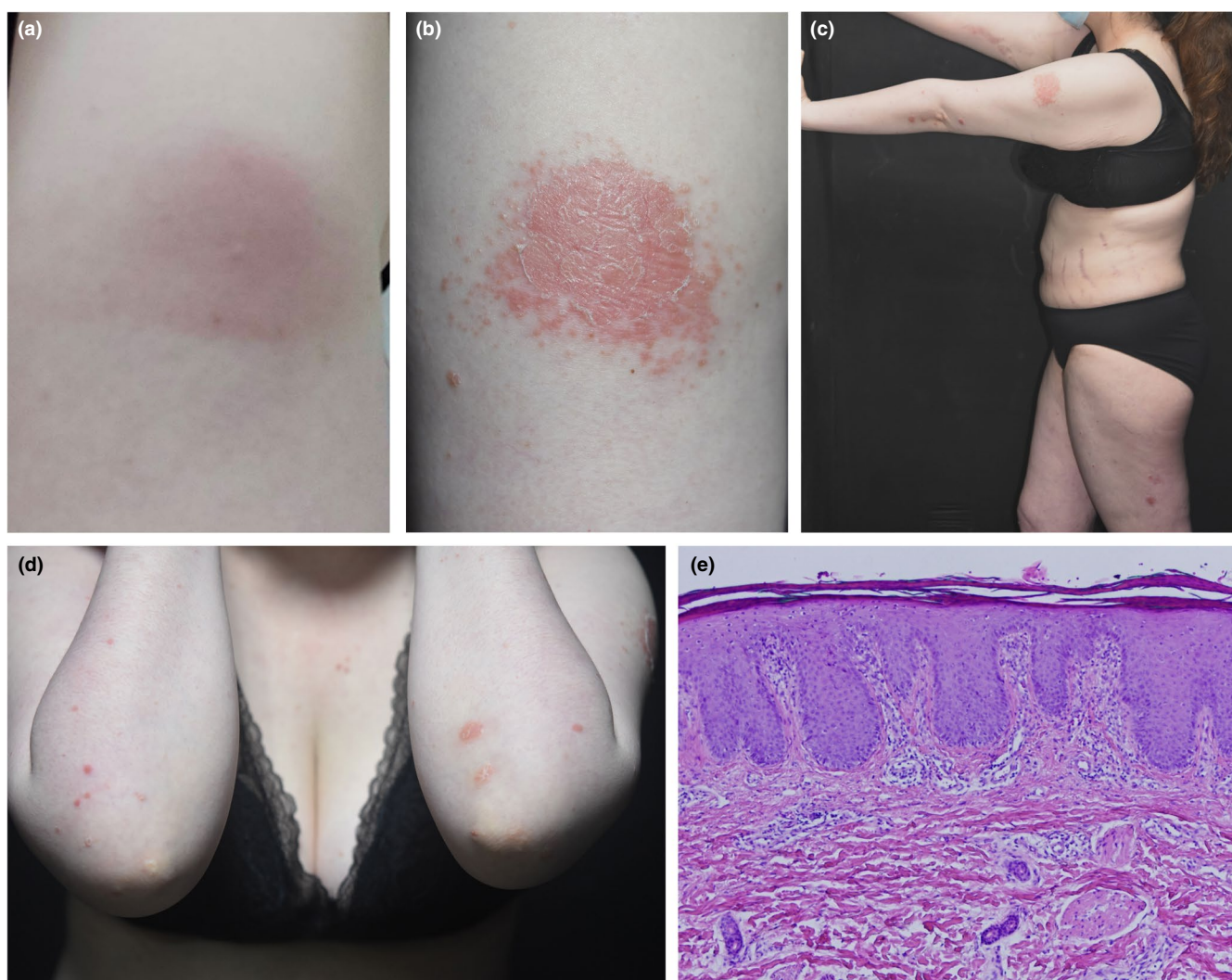
## Psoriasis exacerbation after first dose of AstraZeneca coronavirus disease 2019 vaccine

Dear Editor,

Recently, coronavirus disease 2019 (COVID-19) vaccines have been rapidly delivered worldwide. The most common cutaneous adverse effects associated with COVID-19 vaccination include local injection site reactions, urticaria, and morbilliform eruption.<sup>1,2</sup> We here describe a patient with exacerbation of psoriasis after receiving the

AstraZeneca COVID-19 vaccine, in whom the skin lesions were most prominent at the site of vaccine injection.

A 34-year-old Taiwanese woman with psoriasis vulgaris had been previously treated with intermittent doses of ustekinumab and cyclosporine. Over the past 5 months, her psoriasis had been completely clear (Psoriasis Area and Severity Index, 0) without systemic therapy.



**FIGURE 1** (a) Erythema and swelling on left upper arm (injection site) at 4 days after coronavirus disease 2019 (COVID-19) vaccination. (b) Erythematous scaly plaque on left upper arm (injection site) at 2 weeks after COVID-19 vaccination. (c,d) Scattered psoriatic papules and plaques on trunk and extremities. (e) Skin biopsy performed on the patient's left upper arm showed regular psoriasiform hyperplasia, diminished granular layer, suprapapillary thinning, and tortuous blood vessels within the dermal papilla.

The patient received her first injection of AstraZeneca COVID-19 vaccine 2 weeks prior at her left upper arm. Erythema with swelling, pain, and local heat emerged at the injection site 2 days later (Figure 1a). One week after vaccination, the patient developed an erythematous scaly plaque over the injection site (Figure 1b). In addition, she developed scattered psoriatic papules and plaques on her trunk and extremities (Figure 1c,d). A skin biopsy showed regular psoriasiform hyperplasia, confluent parakeratosis, diminished granular layer, and suprapapillary thinning (Figure 1e). These features were consistent with the diagnosis of psoriasis. She was treated with topical 0.05% betamethasone for 4 weeks, after which the psoriasis lesions resolved.

Psoriasis flare-up following COVID-19 vaccination has rarely been reported. Recently, there were a few case reports of psoriasis exacerbation in patients receiving the Sinovac-CoronaVac vaccine<sup>3</sup> and Pfizer-BioNTech vaccine.<sup>4</sup> In our patient, although we cannot completely exclude the possibility that development of psoriatic lesions at the injection site may be due to the Koebner phenomenon, the size of the psoriatic plaque greatly extended beyond the area of needle puncture, and the patient had not experienced any local flare-up of psoriasis after previous venipuncture, biologic injection, or influenza vaccination. In addition, although it is possible that development of generalized psoriasis lesions may be due to natural disease course following cessation of systemic treatment, there is a close temporal relationship between vaccination and psoriasis exacerbation, and psoriatic lesions initially developed and were most prominent at the site of vaccine injection on the left upper arm. Therefore, COVID-19 vaccination may have played an important role in inducing psoriasis exacerbation in this patient.

The AstraZeneca COVID-19 vaccine has been demonstrated to induce neutralizing antibodies and T-cell responses against the severe acute respiratory syndrome coronavirus 2 spike protein. In particular, it can promote a T-helper 1-biased response with production of tumor necrosis factor- $\alpha$  and interferon- $\gamma$  by CD4<sup>+</sup> T lymphocytes.<sup>5</sup> Therefore, it is conceivable that this vaccine may induce psoriasis exacerbation in predisposed individuals.

We here report an unusual case of psoriasis flare-up after the initial dose of AstraZeneca COVID-19 vaccine. This appears to be a rare cutaneous adverse event, and the severity of psoriasis was mild in our patient. Therefore, we would still recommend this patient receive her second dose of COVID-19 vaccination in the future. Due to the immense number of individuals who will be receiving the COVID-19 vaccine worldwide, physicians should be aware of the possibility of psoriasis exacerbation after vaccination, and these patients should be closely monitored.

## CONFLICT OF INTEREST


None declared.

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