



Severe rash after COVID-19 vaccination

The patient's recent vaccine was the most remarkable thing about his medical history.

A 41-YEAR-OLD MAN presented for evaluation of an extensive skin rash that had erupted more than a month earlier. The patient had received 2 doses of the Pfizer COVID-19 vaccine 3 weeks apart. Ten days after his second dose, the patient developed a rash all over his body. He described the rash as burning, itchy, and uncomfortable. The patient denied any triggers such as recent or previous infections, stressors, or drugs. The patient had no personal or family history of dermatologic disorders; his general medical history was unremarkable. The patient smoked and drank alcohol occasionally.

On physical exam, the patient had a diffuse rash, which initially had manifested on both of his hands, including the palms, and then spread to 60% to 70% of his total body surface area, including his face, ears, anterior and posterior chest, upper and lower extremities, and buttocks. The rash consisted of 10- to 15-mm white scaly plaques that did not bleed.

- WHAT IS YOUR DIAGNOSIS?
- HOW WOULD YOU TREAT THIS PATIENT?

FIGURE

Rash covered up to 70% of the patient's total body surface area



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➤ One study found that the average time of new onset of psoriasis or flare-up can be between 5 to 14 days after the COVID-19 vaccination.

Diagnosis: Guttate psoriasis

Punch biopsies were obtained, and histopathology revealed diffuse compact hyperkeratosis with broad zones of parakeratosis. There was attenuation of the granular layer and regular elongation of the rete ridges associated with thinning of the suprapapillary epidermis and mild spongiosis. These pathologic findings were consistent with a diagnosis of psoriasis. There were no drug-related skin eruption features, such as apoptotic keratinocytes, eosinophils, or interface dermatitis. Periodic acid-Schiff stains for fungal organisms were negative. The combined clinical presentation (itchy, teardrop-shaped, scaly lesions) and histologic impression were consistent with guttate psoriasis.

■ Psoriasis can be seen in various forms.

Subtypes of psoriasis include guttate psoriasis, inverse psoriasis, erythrodermic psoriasis, nail psoriasis, and pustular psoriasis.¹ Guttate psoriasis accounts for about 2% of psoriasis cases and usually is seen in patients younger than 30 years.² Guttate psoriasis is characterized by 1- to 10-mm teardrop-shaped pink papules with fine scaling.³

■ **Triggers for psoriasis.** Vaccinations, medications, and infections (eg, group A beta-hemolytic streptococcal upper respiratory infections) can trigger guttate psoriasis.³ mRNA vaccines (eg, Moderna and Pfizer/BioNTech COVID-19 vaccines) have been associated with psoriasis episodes.¹ Other vaccines such as influenza, rubella, bacillus Calmette-Guerin, tetanus-diphtheria, and pneumococcal polysaccharide also have been known to trigger psoriasis.⁴ Medications that can trigger psoriasis include beta-blockers, lithium, antimalarial drugs, and (in some cases) nonsteroidal anti-inflammatory drugs.⁵

■ **The impact of COVID-19 vaccine.** We are still learning about the incidence and prevalence of adverse effects (such as psoriasis) that can follow COVID-19 vaccination. One study found that the average time of new onset of psoriasis or flare-up can be between 5 to 14 days after COVID-19 vaccination.⁶

■ **Psoriasis following vaccination.** The pathologic mechanism for the new onset or flare of psoriasis after COVID-19 vaccination is unknown. What is known is that the dysregula-

tion of Th-1 and Th-17 plays an important role in the pathogenesis of psoriasis.⁷ Previously, it was found that psoriasis can manifest after tetanus-diphtheria vaccines due to an increase in the production of Th-17 cells.⁷ Th-1 and Th-17 production also increases after influenza vaccine and can cause an onset or flare-up of psoriasis.⁸

The differential includes syphilis and exfoliative dermatitis

The differential diagnosis includes various forms of psoriasiform dermatitis, such as secondary syphilis, chronic spongiotic dermatitis, psoriasiform drug eruption, exfoliative dermatitis, and pityriasis rubra pilaris. A combination of clinical and histopathologic findings is used to zero in on the diagnosis. The summary below highlights the clinical findings.

■ **Secondary syphilis** manifests with symmetric papular eruptions primarily on the trunk and extremities with involvement on the palms and soles. Lesions are red or reddish brown, can be smooth, and are rarely pustular.

■ **Chronic spongiotic dermatitis** manifests with a shiny, glazed, cracked appearance and itchy reddish lesions on the soles.

■ **Psoriasiform drug eruption** manifests after drug administration with a psoriasis-like rash with erythematous, squamous, thick, dry, and plaque-type lesions.

■ **Exfoliative dermatitis** manifests with erythematous single or multiple pruritic patches on the trunk, head, and genitals.

■ **Pityriasis rubra pilaris** manifests in various ways. Patients may have plaques that are erythematous, scaly, or follicular. Sometimes, it may manifest as erythroderma with an “island of sparing,” which is normal-looking skin in the affected areas.

How to make the diagnosis

Psoriasis can be diagnosed by physical examination. A skin biopsy is not usually necessary but can be helpful for complex cases.

There are no laboratory or genetic tests to confirm the diagnosis of psoriasis. Depending on the case, routine bloodwork (eg, complete blood count and metabolic panel) and infectious disease tests (eg, HIV, hepatitis panel, and rapid plasma reagin for syphilis) can be helpful to rule out other etiologies of skin rash.

Treatment is based on patient factors and disease severity

Starting with a low- to medium-potency steroid, such as betamethasone valerate 0.1% cream twice per day or triamcinolone acetonide 0.1% cream twice per day for 2 weeks, provides high safety and efficacy for localized disease.⁹ An appropriate-potency steroid should be chosen based on the disease severity, location, and patient's preference and age. Topical vitamin D analogues often are used in conjunction with topical steroids to treat psoriasis.⁹

Depending on the severity, patient age, comorbidities, and availability of treatment, other treatment options for psoriasis include oral methotrexate (2.5 mg to 25 mg weekly, starting with a low dose), acitretin (10 mg to 50 mg daily), apremilast (10 mg daily, gradually increasing to 30 mg twice per day in a divided dose), biologics, and narrowband ultraviolet light.

In this case, betamethasone dipropionate 0.05% cream twice daily for 2 weeks was not sufficiently effective due to the extent of the psoriasis. Following consultation with a dermatologist, clobetasol propionate 0.05% cream twice per day and oral apremilast (10 mg once per day on the first day and 10 mg twice per day afterward) were prescribed for 2 weeks. The patient's psoriasis im-

proved somewhat after 2 weeks of the treatment, but many plaques remained. Therefore, apremilast was stopped and subcutaneous adalimumab was started (initial loading dose, 80 mg, then 40 mg every other week). The psoriasis lesions cleared over the next 2 to 3 months. The patient was maintained on the adalimumab to avoid a recurrence of lesions.

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