

## LETTER

# Psoriasis flare after influenza vaccination in Covid-19 era: A report of four cases from a single center

Dear Editor,

Psoriasis is a chronic inflammatory disease affecting 1% to 3% of the world's population<sup>1,2</sup> and results from the interaction between genetics and environmental factors such as stress, infections, and drugs, causing a T-cell-mediated response.<sup>1-3</sup> Vaccination is an uncommon triggering factor for the flare-ups of several skin diseases,<sup>2,4-6</sup> and a potential association between vaccination and the onset or exacerbation of psoriasis has been previously documented.<sup>2,5-7</sup> In this letter, we report four new cases of psoriasis flare-ups after an influenza vaccination (Table 1).

The first patient was a 41-year-old man with chronic plaque psoriasis undergoing adalimumab therapy who developed a severe flare-up that required hospital admission 24 hours after an intramuscular Chiroflu influenza vaccination (Trivalent A/Victoria/2452/2019 H1N1, A/Hong Kong/2671/2019 H3N2, and B/Victoria/705/2018) (Figure 1). The patient clinically improved after treatment with subcutaneous guselkumab, topical corticosteroids, and emollients.

The second patient was a 70-year-old woman with chronic psoriasis who was undergoing treatment with topical corticosteroids and vitamin D analogs. The patient was referred to our department from the emergency room because she had started to develop diffuse erythema and numerous plaques following an intramuscular Chiroflu influenza vaccination 7 days earlier (Figure 2). The patient was started on treatment with oral acitretin, oral prednisone in slow de-escalation, and topical methylprednisolone aceponate, showing marked improvement after 3 weeks.

The third patient was a 55-year-old woman with severe chronic psoriasis treated with subcutaneous secukinumab (previously with

etanercept, adalimumab, and ustekinumab) who developed a facial psoriasis plaque 24 hours after a subcutaneous Chiroflu influenza vaccination. The patient was treated with topical fluticasone, with complete resolution of the skin lesion in 2 weeks.

The fourth patient was a 67-year-old woman with severe chronic psoriasis undergoing guselkumab therapy who developed a guttate psoriasis flare-up following a Chiroflu influenza vaccination 1 month earlier. The patient's biological therapy was changed to brodalumab, with improvement in the cutaneous lesions.

New-onset or severe exacerbations of psoriasis following influenza vaccination are uncommon. Most reported vaccination-related psoriasis flare-ups have been classified as guttate and guttate/plaque variants.<sup>2,4-7</sup> We report four cases of psoriasis exacerbation following influenza vaccination with H1N1, H3N2, and B influenza strains. In our four patients, the close temporal relationship between the vaccination and the onset of the psoriasis flare-ups suggests a possible causal association.<sup>5</sup> Although the etiological relationship between psoriasis and vaccination remains uncertain, it is known that the influenza vaccine generates T-helper (Th)1 and Th17 immunologic responses, which could represent a possible mechanism for vaccination-induced psoriasis.<sup>2</sup> The immunologic reaction to the influenza vaccination might rely on the generation of interleukin (IL)-6 and IL-22, producing Th17 cells that play a key role in the development of the characteristic epidermal changes of psoriasis.<sup>5,6,8</sup> In patients treated with IL-17 inhibitors, Th1 cells might be involved in the development of psoriasis flare-ups instead of Th17 cells. However, we found no differences in the clinical outcomes between the patient treated with secukinumab and the other patients. To date, "psoriasis

**TABLE 1** Summary of psoriasis flares following influenza vaccination

Case	Age	Gender	Treatment before psoriasis flare	Vaccine type	Time from vaccination to psoriasis flare	Psoriasis type after vaccination	Treatment for flare
1	41	Male	Adalimumab	Chiroflu (anti-H1N1, H3N2 and B)	24 h	Plaque	Guselkumab Topical corticosteroids
2	70	Female	Topical corticosteroids Vitamin D analogs	Chiroflu (anti-H1N1, H3N2 and B)	7 d	Plaque	Oral acitretin Oral prednisone in slow de-escalation Topical corticosteroids
3	55	Female	Secukinumab	Chiroflu (anti-H1N1, H3N2 and B)	24 h	Plaque	Topical fluticasone
4	67	Female	Guselkumab	Chiroflu (anti-H1N1, H3N2 and B)	30 d	Guttate	Brodalumab



**FIGURE 1** Chronic hyperkeratotic plaques on the legs with surrounding erythematous macules



**FIGURE 2** Diffuse erythematous scaly plaques on the legs

vaccinalis” has also been described with Bacillus Calmette-Guerin, tetanus-diphtheria, and pneumococcal polysaccharide vaccines, including psoriasis-like eruptions and psoriatic arthropathy.<sup>8-11</sup> The very low incidence of this condition and the favorable cost-effectiveness of the influenza vaccine should not change the immunization practice, especially for patients with psoriasis undergoing

immunosuppressive and/or biological therapy.<sup>5,6</sup> Nevertheless, it is important to acknowledge vaccination as a triggering factor of psoriasis flare-ups, particularly in the COVID-19 era, given that we do not yet know whether COVID-19 vaccines will be a triggering factor for preexisting or new dermatological conditions, although it appears possible. Patients should therefore be carefully monitored once the COVID-19 immunization process begins.

#### CONFLICT OF INTEREST


The authors declare no potential conflict of interest.

#### AUTHOR CONTRIBUTIONS

All authors have contributed to the work. Marta Drake-Monfort, Susana Armesto, Marcos Antonio González-López, and Pablo Munguía-Calzada reported the four cases. Pablo Munguía-Calzada and Marcos Antonio González-López wrote the article. Leandra Reguero-del Cura and Ana Elisabet López-Sundh made the photographs, reviewed the bibliography, and performed the critical revision of the letter.

#### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author.

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