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CASE REPORT

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Transition from secukinumab to adalimumab in COVID-19-induced psoriasis flare-up treatment: A case report

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Key Clinical Message

Coronavirus disease 2019 (COVID-19) is known to trigger systemic inflammation and elicit immune responses, which may disrupt the delicate balance of cytokines involved in psoriatic regulation. Compared to other therapies in dermatology, biologics used for immune-mediated dermatological diseases have been more extensively studied during the COVID-19 pandemic. Herein, we report a case of flare-up of previously well-controlled psoriasis shortly after infection with COVID-19, with treatment transition from secukinumab to adalimumab.

KEYWORDS

adalimumab, COVID-19, psoriasis, secukinumab

1 | INTRODUCTION

Psoriasis is a chronic immune-mediated skin disease that affects an estimated 125 million people worldwide.[1] Existing literatures mainly reviewed psoriasis flares following COVID-19 vaccination, but rarely addressed the recurrence of patients on current treatment and after COVID-19 infection. Here, for the first time, we report a patient with psoriasis worsening shortly after COVID-19 infection, which was previously well controlled on secukinumab, and eventually successfully treated with adalimumab.

2 | CASE REPORT

A 62-year-old man, diagnosed as psoriasis vulgaris, had been well controlled on secukinumab (interleukin-17A [IL-17A] inhibitor) since March 2022. Meanwhile, he suffered from coronary heart disease and was taking aspirin

and atorvastatin for long-term treatment. In January 2023, the patient contracted the COVID-19 infection but recovered within 2 days with a mild fever. However, the rash gradually appeared again on his trunk and limbs (Figure 1A,B), which showed no response to 2 consecutive doses of 300 mg/month of secukinumab.

His blood tests revealed increased level of tumor necrosis factor (TNF), 9.98 pg/mL (normal value < 8.10 pg/mL). While interleukin-6 (IL-6), C-reactive protein, and erythrocyte sedimentation rate were normal. Skin biopsy (Figure 1E,F) indicated a psoriasiform dermatitis. Combining the patient's history of psoriasis, the disease was confirmed as psoriasis flare, and the rash subsided significantly after 8 weeks of adalimumab (TNF-α inhibitor) treatment (Figure 1C,D). The patient currently continues to receive adalimumab therapy every other week.

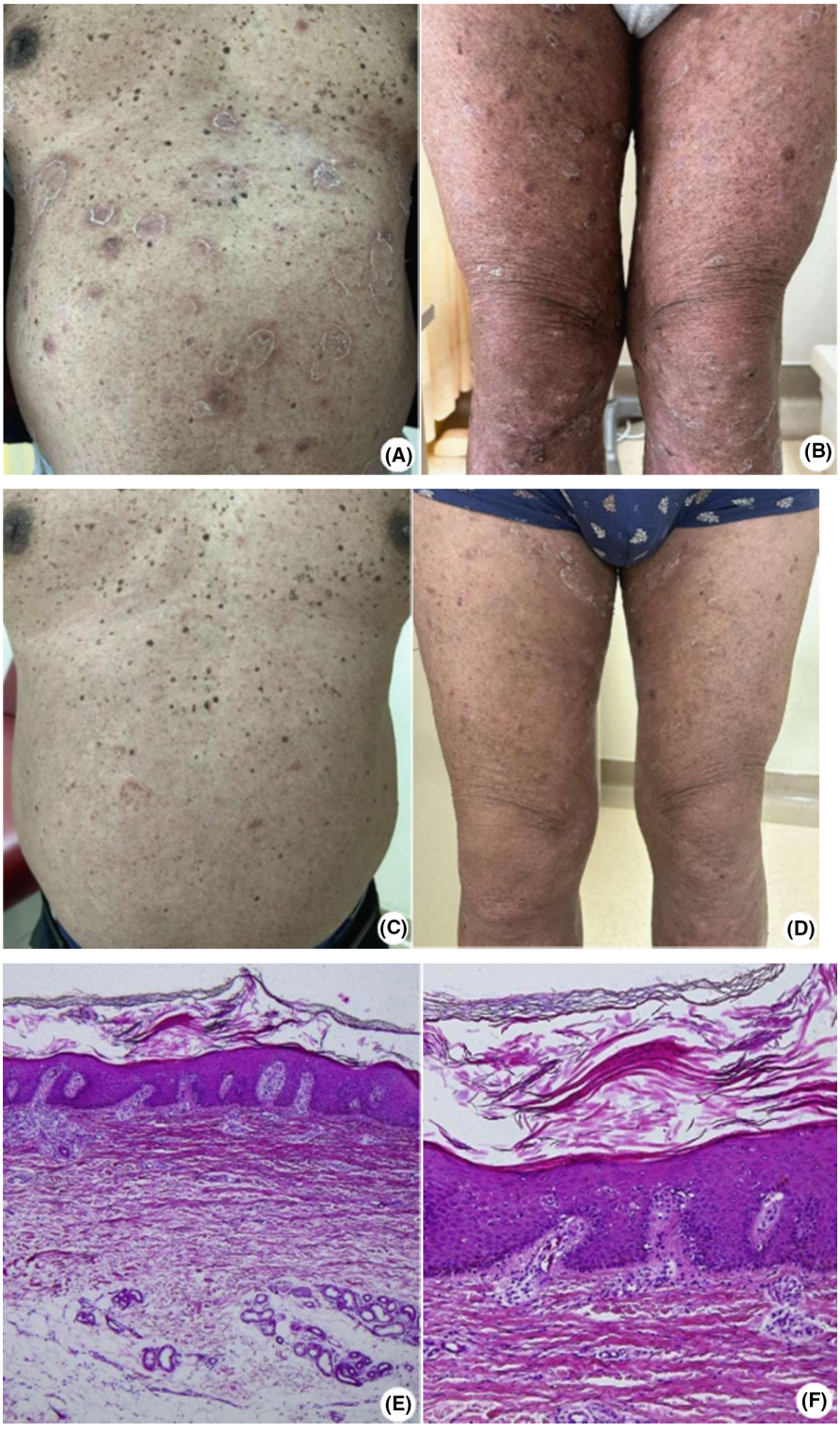

FIGURE 1 (A, B) Cutaneous manifestations of the patient was noted by dark-red plaques with annular scales on his trunk and limbs. (C, D) Cutaneous manifestations 8 weeks after starting adalimumab. (E, F) (hematoxylin and eosin stain, E: 40× magnification; F: 200× magnification). Skin biopsy was characterized by psoriasiform hyperplasia and parakeratosis. These dermal blood vessels and surrounding upper dermal spaces are filled with predominantly mononuclear leukocytes and neutrophils.

3 | DISCUSSION

Viral infection has been shown to be strongly associated with the onset or exacerbation of psoriasis. A possible mechanism is viral RNA stimulation of toll-like receptor 3, leading to dysregulation of the innate immune response and production of IL-36-γ and CXCL8, causing COVID-19 infection associated psoriatic flares. Furthermore, the hyperinflammatory state of COVID-19 may cause worsening of psoriasis.[2] Our patient's recurrent rash was atypical, possibly related to the use of secukinumab therapy. Combined with the patient's past history and pathology, the diagnosis was psorias flares. Although the causality between the COVID-19 infection and psoriasis flare-up cannot be definitively established in this single case, previous study has reported associations between COVID-19 infections and the exacerbation of psoriasis.[3]

Currently, there is no consensus on whether biological agents increase the risk of coronavirus infection.[4] Gargiulo et al. reported a case series which supported the use of biologics in psoriasis patients with short disease duration and emphasized the safety of these treatments during the COVID-19 pandemic.[5] Several studies have shown that the levels of circulating IL-17 are elevated in the peripheral blood of COVID-19 patients, which provided evidence to support treatment decisions for psoriasis patients treated with IL-17 inhibitors during the COVID-19 pandemic.[6] That may also account for the mild symptoms of COVID-19 infection in our patient when using the treatment of secukinumab. While in the case report from Facheris et al, it seemed unlikely that IL-17 inhibition was helpful in preventing a complicated course of COVID-19 infection.[7]

Despite the patient's previous positive response to secukinumab, the increasing psoriatic activity suggested possible resistance or tolerance to this IL-17A inhibitor. Blood tests of our patient revealed an increased level of TNF, a key cytokine in the process of psoriatic inflammation.[8] The elevation of TNF may suggest a compensatory mechanism or an alternative pathway of psoriasis inflammation, warranting a change in the therapeutic approach.

In light of the lack of response to secukinumab and the increased TNF levels, a decision was made to switch the patient's treatment to adalimumab. Although there is still heterogeneity in the literature, anti-TNF-alpha drugs have a protective effect on cardiovascular disease risk.[9] The transition to adalimumab therapy led to a significant improvement, suggesting a relevant role of TNF in driving the psoriasis flare-up and reaffirming the importance of individualizing treatment choices based on patient characteristics and disease manifestations. The patient continues to be under follow-up to monitor the response to adalimumab and assess the long-term treatment outcomes.

It is essential to acknowledge the limitations of this case report. As a single-patient observation, it does not establish a causative relationship between COVID-19 infection and psoriasis flare-up or the efficacy of adalimumab. Further larger scale studies, including controlled trials or observational studies, are needed to elucidate the complex interactions between viral infections and psoriasis, as well as to assess the comparative effectiveness of different biologic agents in similar scenarios.

In conclusion, this case highlights the potential impact of COVID-19 infection on psoriasis course and the importance of adapting treatment strategies to address individual patient responses. The patient's experience with secukinumab followed by adalimumab demonstrates the need for continuous evaluation and optimization of therapeutic approaches in psoriasis management, particularly in the context of viral infections or other triggering factors. Further research and clinical observations are warranted to develop a comprehensive understanding of the underlying mechanisms and to guide evidence-based treatment decisions in similar cases.

AUTHOR CONTRIBUTIONS

Yuting Chen: Conceptualization; data curation; investigation; writing – original draft; writing – review and editing. **Yangyang Qiu:** Data curation. **Meiqing Chen:** Writing – review and editing. **Ling Huang:** Writing – review and editing. **Xinyu Lin:** Data curation; writing – review and editing. **Xiaoyan Qiu:** Writing – review and editing. **Yi Wei:** Writing – review and editing. **Lujuan Gao:** Funding acquisition; supervision; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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