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DERMATOLOGIC THERAPY WILEY

LETTER

A case of new-onset acute generalized pustular psoriasis following Pfizer-BioNTech COVID-19 vaccine

Dear Editor

Coronavirus disease 2019 vaccination has significantly improved protection from infection and serious illness. However, as more people are getting vaccinated, adverse effects are increasing. Among them, several cutaneous manifestations have been observed, such as the new-onset of skin diseases or flares of pre-existing dermatological conditions. Herein, we present a case of a new-onset acute generalized pustular psoriasis (AGPP) following the first dose of Pfizer-BioNTech COVID-19 messenger RNA vaccine (mRNA-CV).

A 20-year-old man presented to the emergency department with a 3-week history of an acute, rapidly progressive erythematous rash associated with fever, and poor general condition. The patient had a history of mild plaque psoriasis adequately controlled with topical betamethasone. The first dose of mRNA-CV was given 4 days before the onset of the rash. No new medications had been introduced in the weeks preceding the rash and there were no recent illnesses, including COVID-19 respiratory symptoms. On examination, the patient was clinically stable, with high-grade fever and malaise. The cutaneous examination noted coalescing pustules overlying painful, erythematous skin with yellow crusts on the limbs and desquamation on the trunk (Figure 1). No mucosal membrane or palmoplantar involvement was noted. Laboratory tests revealed neutrophilic leukocytosis, normal serum calcium, and elevated C-reactive protein levels. The bacterial skin swab was negative. Histology showed subcorneal aggregation of neutrophils surrounded by multilocular small pustules with spongiosis (Kogoj's spongiform pustule) which confirmed the clinical suspicion of AGPP (Figure 2). The COVID 19-PCR test was negative. The diagnosis of AGPP following mRNA-CV was made. The patient was started on acitretin at 25 mg/d with topical steroids, resulting in a significant improvement and resolution of the rash after 2 weeks.

Our patient presented an acute onset of AGPP 4 days after receiving the first dose of the mRNA-CV. The Known causes of AGPP were excluded. According to the Naranjo criteria, the likelihood of the vaccine as the incriminating agent was highly significant and the score was six "probable."[1] Clinical case discussion concluded that while idiopathic AGPP could not be excluded, the onset of symptoms was consistent with an acute precipitating event around the time the first vaccine dose was administered.

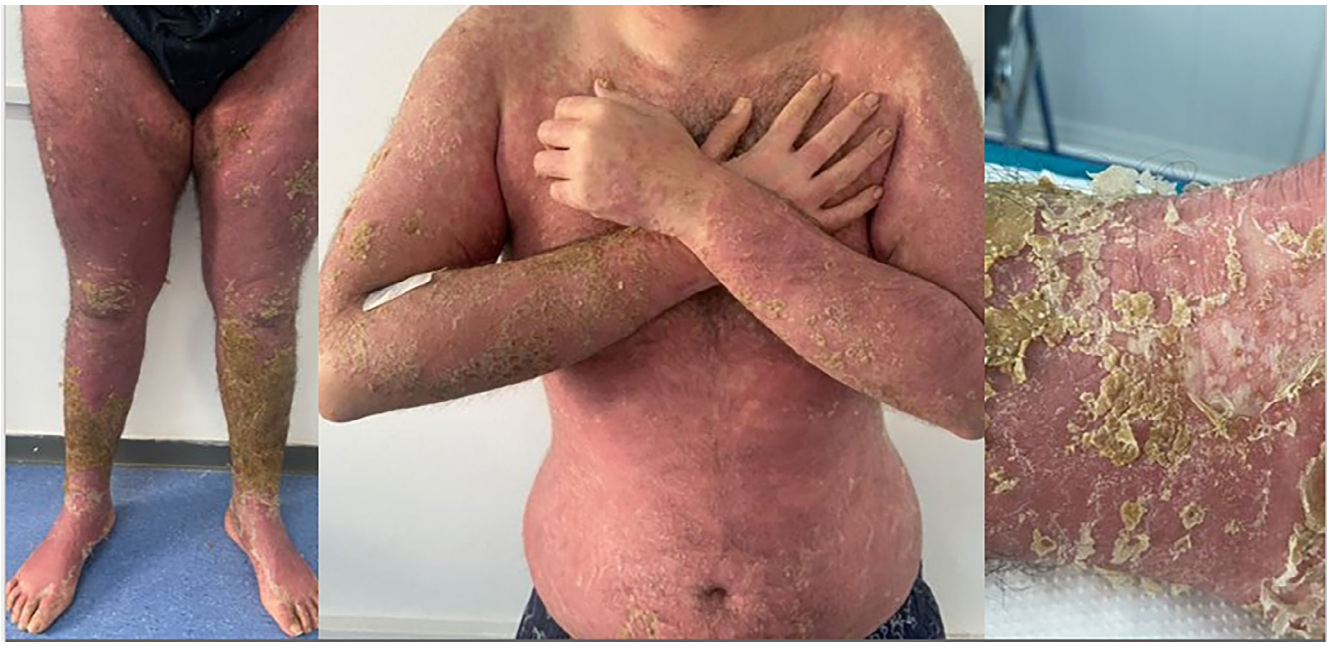

FIGURE 1 Coalescing pustules overlying erythematous skin with yellow crusts on the limbs and desquamation on the trunk

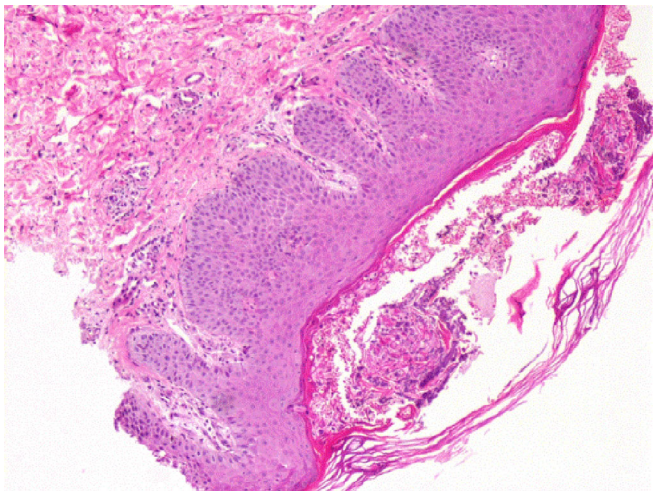

FIGURE 2 Psoriasiform hyperplasia of the epidermis containing macropustule (HEx100)

AGPP is an uncommon life-threatening variant of psoriasis of unknown etiology. It has been associated with the sudden withdrawal of corticosteroids, hypocalcemia, pregnancy, and infections. Some vaccines have also been implicated in triggering AGPP. Yoneyama and al reported a case of AGPP flare occurring 6 days after pneumococcal polysaccharide vaccination.[2] Cases of AGPP after H1N1 influenza vaccination have also been described.[3] To our knowledge, three cases of AGPP following COVID-19 vaccination have been reported in the literature, among them only one case occurred after mRNA-CV.[4–6] The first and the third reported cases had an already known diagnosis of stable plaque psoriasis, as in our patient, and the onset of the rash was acute, developing 4 days and 5 days after Sinovac and Pfizer vaccine administration respectively.[4,6] The second patient developed de novo AGPP following the first dose of the Oxford-AstraZeneca COVID-19 vaccine.[5] Furthermore, AGPP has been associated with COVID-19 infection.[7] This raises the possibility that an immune response to either the virus or the vaccine could have a common consequence.

The mechanisms responsible for the onset of AGPP after COVID-19 vaccination are not yet understood. COVID-19 vaccine might induce a hyperinflammatory state and it is perhaps the most probable explanation of psoriasis exacerbation than a molecular mimicry. Farkas et al. found that vaccines may activate dermal myeloid dendritic cells that play roles in the inflammatory psoriasis cascade.[8] Dendritic cells connect environmental factors to T lymphocytes by releasing the inflammatory mediators which in turn, induce T cells to differentiate into Th1 and Th17 cells, and then trigger the release of downstream cytokines that play a key role in the development of the epidermal changes seen in AGPP.[4]

In summary, we reported here the second case of AGPP following mRNA-CV. Although vaccines against COVID-19 could aggravate already existing psoriasis, trigger psoriasis de novo, or, as reported herein, modify the phenotype of the disease, psoriatic patients should receive the vaccine since its benefits overweigh its side effects.[9]

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None.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

AUTHOR CONTRIBUTIONS

"We certify that we have participated sufficiently in the intellectual content, conception and design of this work, as well as the writing of the manuscript, to take public responsibility for it and have agreed to have our names listed as contributors." Refka Frioui wrote the article with data collection, analysis, and interpretation; Amal Chamli discussed the results and contributed to the final manuscript; Anissa Zaouak carried out critical revision of the article; Imen Hlel analyzed histological images; Fatma Khanchel carried out the histological examination; Samy Fenniche carried out critical revision of the article; Houda Hammami approved final version to be published.

PATIENT CONSENT STATEMENT

The examination of the patient was conducted according to the principles of the Declaration of Helsinki. The authors certify that they have obtained all appropriate patient consent forms, in which the patient gave his consent for images and other clinical information to be included in the journal. The patient understands that his name and initial will not be published and due effort will be made to conceal his identity, but that anonymity cannot be guaranteed.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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