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CLINICAL LETTER

Generalized pustulosis following Covid 19 vaccination in a patient in treatment with adalimumab

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Dear Editors,

Adalimumab is a tumor necrosis factor (TNF)-α inhibitor commonly used for multiple autoimmune diseases. Paradoxical cutaneous reactions under anti-TNF-α drugs have been described in the literature, predominantly linked to adalimumab.[1] Although this adverse effect is widely known, mechanisms underlying its induction, as well as possible risk factors, are still unknown.

Here we report a case of papulopustular psoriasis induced by a second dose of Covid vaccine in a patient treated with adalimumab. The patient was a 52-year-old woman with history of HLA B27(–) spondylarthritis. No personal or family history of psoriasis was reported. During the previous 9 months she had been in treatment with adalimumab (40 mg) subcutaneously every 2 weeks. No other treatment was initiated during this period. However, she had received the second Covid vaccine the previous week (1st dose: Janssen, 2nd dose: Moderna). The patient presented with an abruptly developed generalized papulopustular reaction that had initiated as a palmoplantar pustulosis (Figure 1). A biopsy was performed and revealed generalized pustulosis (Figure 2). Adalimumab was discontinued and daily topical application of clobetasol propionate 0.05% plus urea 20% resulted in progressive improvement of the lesions. However, although clinical improvement was noted after the use of topical corticosteroids, the patient did not present with complete remission of the lesions.

Although TNF-α antagonists are effective in refractory papulopustular psoriasis, paradoxical psoriasiform reactions to these drugs have been reported when used for rheumatologic diseases.[2,3] In addition, adalimumab has been associated with palmoplantar pustulosis in several case reports[4–6] and is the second most commonly implicated anti-TNF in psoriasiform reactions.[7] Several theories have been postulated regarding the immunopathogenesis of this skin reaction, correlating it with those cytokines and cells involved in the development of psoriasis, but further research is needed to better understand the pathogenesis of this paradoxical reaction.[3]

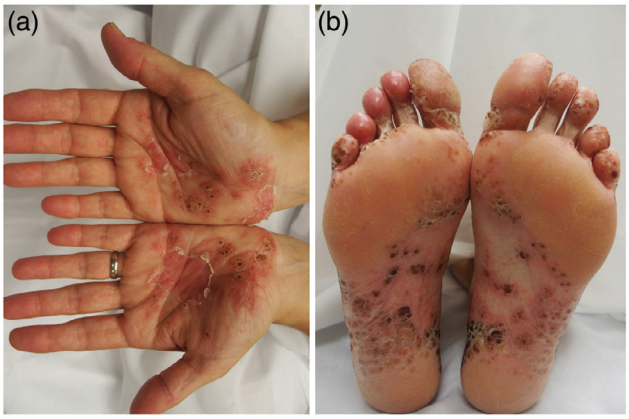

FIGURE 1 Confluent pustular lesions (a) on the palms and (b) on the soles, generalized to the back and lower and upper extremities.

Various cases of generalized pustulosis have been reported after administration of the Pfizer Covid vaccine.[8] These reactions have been seen after both the first and

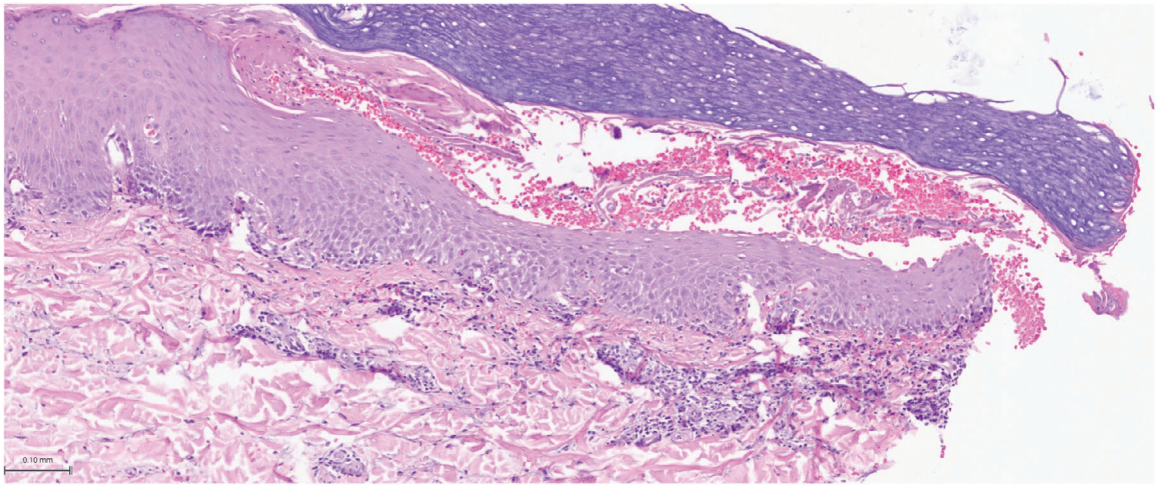

FIGURE 2 Subcorneal pustule with perivascular lymphocytic infiltration and papillary dermal edema (hematoxylin-eosin stain, original magnification x 100).

second doses of the vaccine and they are not yet understood. Some studies hypothesize that the reactions could be due to a dysregulation of the immune system caused by vaccine adjuvants and viral components. In addition, mRNA vaccines have been shown to increase the number of IL-6 cytokines and Th17 cells, which play a main role in psoriasis.[9] Moreover, Awada et al. suggest that such reactions could be due to an increased number of plasma cells as a response to vaccination, which may cause an upregulation of interferon (INF)-α.[10]

On the other hand, it is important to consider that paradoxical reactions to TNF-α inhibitors usually resolve after discontinuation of the drug,[11] although in nearly 50% of the non-severe cases it can be continued despite the cutaneous reaction.[1] In this case, the patient did not experience complete remission of her symptoms after discontinuation of adalimumab. This may suggest either that the Covid vaccine was the primary cause of this skin reaction, or that the use of adalimumab followed by another immune system dysregulation, such as the Covid vaccine, may have led to a chronification of the skin disease.

Even though it cannot be assumed that this adverse effect was caused by either of the treatments received by our patient and although further studies are needed to determine the risk for patients under adalimumab treatment who will be receiving the Covid vaccine, we consider that clinicians should be made aware of this possible adverse effect after Covid vaccine administration in patients using adalimumab.

CONFLICT OF INTEREST

None.

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