LETTER TO THE EDITOR

Pityriasis lichenoides chronica after BNT162b2 Pfizer-BioNTech vaccine: A novel cutaneous reaction after SARS-CoV-2 vaccine

Dear Editor,

We read with interest the review from Gambichler *et al.*[1] about cutaneous reactions following coronavirus disease 2019 (COVID-19) vaccination that prompted us to describe a cutaneous reaction after the mRNA vaccine Comirnaty® (BNT162b2, Pfizer-BioNTech) that has never been reported before. A 47-year-old man presented to our department complaining of a 1-month history of fatigue and severe pruritic and burning eruption on the trunk and proximal extremities. The lesions appeared 1 week after the first dose of the COVID-19 vaccine, but, nevertheless, the patient underwent the second dose after 3 weeks. In the following days, the cutaneous lesions spread further and the itch worsened. The lesions developed in successive crops. General symptoms were absent. Skin examination showed erythematous-squamous macules and papules (3–10 mm in diameter) disseminated on the trunk, extremities and flexural areas. On the trunk, the lesions were distributed in a symmetrical pattern, with their long axes following the lines of cleavage of the skin (Fig. 1a,b). Some macules and papules displayed a centrally adherent micaceous scale which became less adherent with time, sometimes displaying a 'collarette' appearance. The face, palms, soles and mucous membranes were spared. The rest of the physical examination was normal. Routine laboratory investigations and serology for human immunodeficiency virus (HIV), human hepatitis B and C virus, human herpesvirus (HHV)-6 and HHV-7 and Toxoplasma gondii were negative or indicative of past infections. The search for HHV-6 and HHV-7 DNA in the plasma by quantitative real-time polymerase chain reaction (PCR) was negative. On histological examination, the epidermis showed hyperkeratosis, focal parakeratosis, hypergranulosis, focal spongiosis, rare dyskeratotic cells, a diffuse basal cell hydropic degeneration and a moderate lymphocytic exocytosis. Oedema and diffuse, lymphohistiocytic inflammatory infiltrate are present in the papillary dermis and around blood vessels. The inflammatory infiltrate shows a band-like pattern, focally obscuring the dermoepidermal junction and showing a wedge-shaped configuration with involvement of reticular dermis. Rare erythrocytes, occasional eosinophils and colloid bodies were seen in the papillary dermis (Fig. 2a,b). Based on clinical and histopathological features, a diagnosis of pityriasis lichenoides (PL) chronica was made. Over the course of about 4 weeks, the papules flatten and spontaneously resolved leaving hyperpigmented macules. PL, both in acute and chronic form, has rarely been reported following SARS-CoV-2 vaccinations or during COVID-19. PL is a rare skin disease characterized by a spectrum of clinical and histologic variants ranging from acute (pityriasis lichenoides et varioliformis acuta, PLEVA) to chronic forms. The disease affects both children and adults,

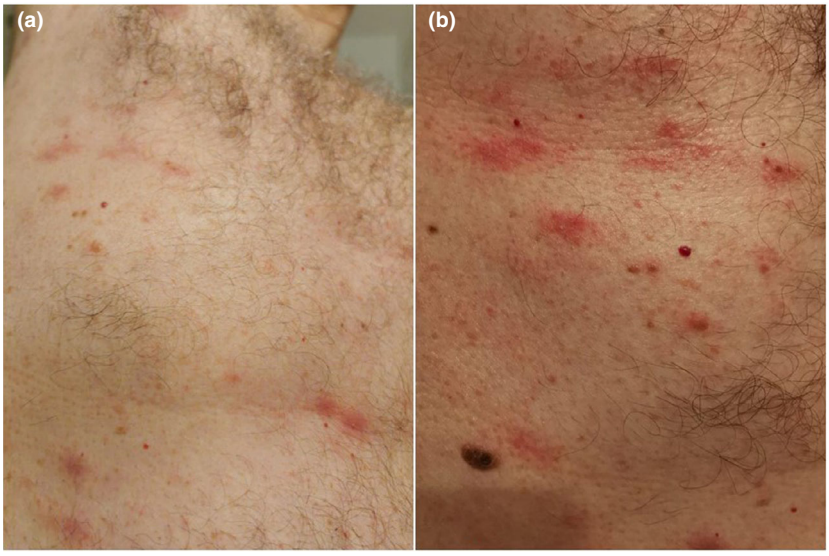

Figure 1 (a) Erythematous-squamous macules and papules on the trunk with their long axes following the lines of cleavage of the skin; (b) figure at higher magnification.

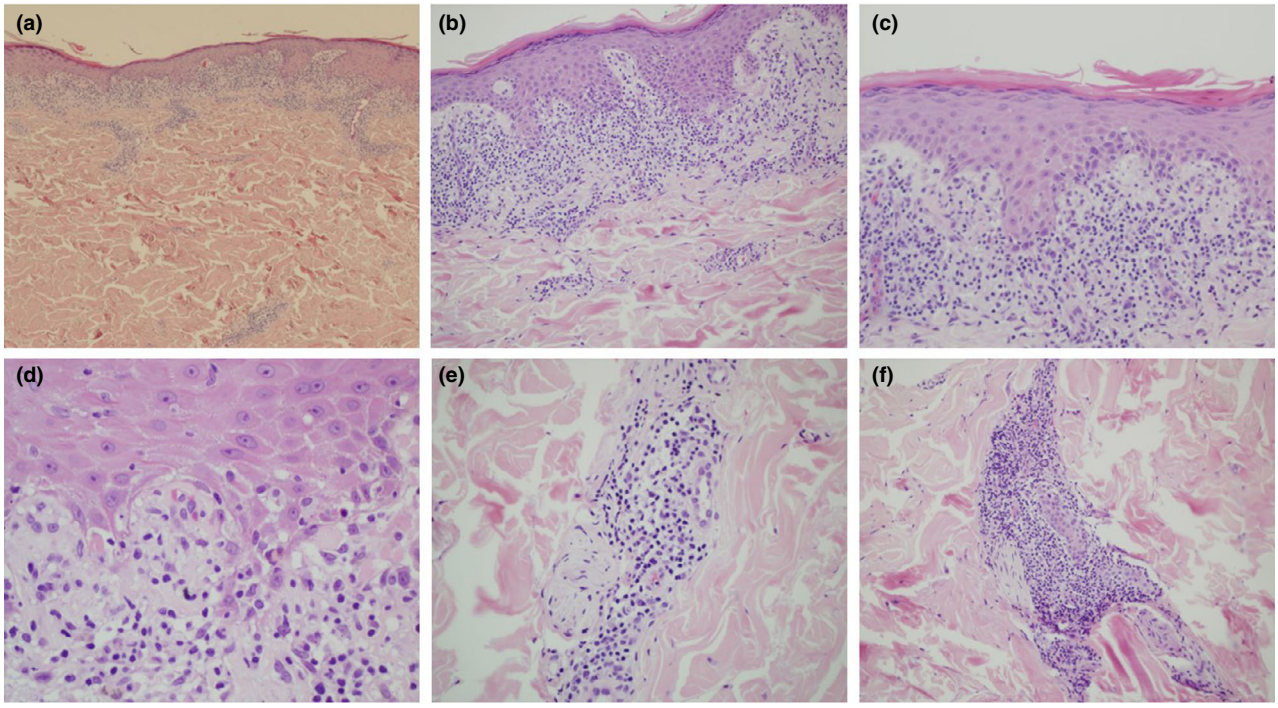

Figure 2 (a) Haematoxylin and eosin stain (H&E), original magnification 5×: interface dermatitis with a lichenoid pattern and a typical wedge-shaped configuration of chronic inflammatory infiltrate in the reticular dermis; (b), (c) original magnification 20×: epidermis with hyperkeratosis, focal parakeratosis, hypergranulosis, irregular acanthosis and a moderate lymphocytic exocytosis (H&E); (d) original magnification 40×: basal cell hydropic degeneration with dyskeratotic cells and colloid bodies and an interstitial and perivascular chronic inflammatory infiltrate within the papillary dermis(H&E); (e), (f) original magnification 40× and 20×: a perivascular and periannexial chronic inflammatory infiltrate within the reticular dermis(H&E).

and the aetiology is still unknown. An immune complex or cell-mediated immunologic reaction to an infectious agent has been suggested, but a pathogen has never been identified.[2,3] A broad spectrum of cutaneous reactions has been reported after SARS-CoV-2 vaccinations, which vary from local injection site and delayed large local reactions, urticaria, papulovesicular or purpuric eruptions, erythromelalgia, chilblain-like lesions, pityriasis rosea-like eruptions[1,4] and rosacea-like eruptions.[5] Reactivation of latent pre-existing cutaneous infections such as herpes simplex and varicella-zoster virus has also been observed.[1–4] The patterns of these adverse reactions following SARS-CoV-2 vaccinations resemble the dermatological manifestations occurring during COVID-19,[6] suggesting that the host immunological response against the virus or vaccine rather than a direct viral damage may cause these manifestations. PL, both in acute and chronic form, has previously been described following anti-tetanus-diphtheria, measles-mumps-rubella and influenza vaccination.[7–9] PL following SARS-CoV-2 vaccination may occur as a delayed hypersensitivity response against vaccine excipients or SARS-CoV-2 spike glycoprotein or through a molecular mimicry mechanism between a viral epitope and host proteins resulting in a T-cell-mediated hypersensitivity skin reaction.[10] In conclusion, we described a case of PL following SARS-CoV-2 vaccine never described before.

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Conflict of interest
None.

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Authors contribution
Giulia Ciccarese and Francesco Drago wrote the paper in consultation with Aurora Parodi.

Data availability statement
The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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