displayed a Mobius loop recycling symbol on the cosmetic container in addition to the box.

Although our study findings showed that a significant proportion of both full-size and sample-size cosmetic products do not display the Mobius loop recycling symbol on their packaging material, it should be noted that the absence of an on-package Mobius loop symbol does not denote that the material is not capable of being recycled. Clear displaying of relevant recycling information or symbols on packages will encourage and reinforce positive recycling behaviours in children and adults alike, and prompt clinicians to consider the environmental impact of the products they may use and recommend.1

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Supporting Information

Additional Supporting Information may be found in the online version of this article:
Table S1. Data from examination of product packaging.

Pityriasis rubra pilaris-like eruption following administration of the BNT163b2 (Pfizer–BioNTech) mRNA COVID-19 vaccine

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Since the approval of the novel mRNA vaccines for SARS-CoV-2, the dermatology community has sought to characterize the adverse cutaneous effects associated with administration of the vaccine. In the BNT162b2 (Pfizer–BioNTech) mRNA vaccine Phase III study, no participants reported cutaneous adverse events (AE) aside from injection-site reactions.1 We report a case of pityriasis rubra pilaris (PRP)-like eruption following administration of the BNT163b2 COVID-19 vaccine.

An otherwise fit and well 51-year-old man presented with a widespread, scaly, erythematous rash following administration of the BNT163b2 COVID-19 vaccine. He had developed an erythematous scaly rash in his groin and over his knees 3 days following the first dose of the vaccine, and he had been treated by his general practitioner for psoriasis with Enstilar™ foam and emollients, which had achieved partial success. A few days following the second vaccine dose at 12 weeks, the patient noticed the rash worsening, with the plaques becoming more confluent and affecting 60% of his body surface area. Despite continued treatment with topical therapies, his skin continued to worsen and subsequently presented to the acute medical unit where he was found to be mildly hypotensive and tachycardic. He denied taking any medication preceding the skin eruption.

On physical examination, the patient was found to have a confluent, mildly scaly, erythematous skin eruption extending from his scalp to both arms and the proximal thighs with sparing of the periumbilical area (Fig. 1). There were scattered erythematous plaques over his lower legs. His nails were normal and clinically there was no evidence of palmoplantar hyperkeratosis. The differential diagnosis included a drug-induced psoriasiform rash and PRP.

Histological examination of a skin biopsy showed prominent alternating orthokeratosis and parakeratosis in horizontal and vertical directions. The epidermis showed mild irregular acanthosis with broader rete ridges than expected in a psoriasiform reaction. There was mild focal spongiosis with slight lymphocytic exocytosis. There was mild perivascular and perifollicular lymphocytic inflammation within the papillary dermis with neutrophils and occasional eosinophils seen focally (Fig. 2). Overall, the histological features were consistent with a diagnosis of PRP.

Blood tests showed raised level of C-reactive protein, but white cell and eosinophil counts were normal. Serological testing for blood-borne viruses and SARS-CoV-2 PCR was negative. Chest radiography results were normal and there was no suggestion of occult malignancy based on the history or physical examination.

A diagnosis of PRP-like eruption was made and the probable trigger thought to be the BNT163b2 COVID-19 vaccine. The patient was treated with acitretin 20 mg once daily and topical mometasone 0.1% ointment, resulting in improvement of his condition; at his most recent follow-up, 4 months after starting acitretin, he was still continuing with the treatment.

A recent registry of 414 patients who received either of the two mRNA COVID-19 vaccines described cutaneous reactions, including local injection-site reactions, urticarial and morbilliform eruptions, but PRP-like eruptions have yet to be described.2 As seen in our case, worsening or recurrence was seen in up to 43% of patients following administration of the second dose.2

1 Allwright E, Abbott RA. Environmentally sustainable dermatology. Clin Exp Dermatol 2021; 46: 807–13.
Figure 1 Confluent, mildly scaly, erythematous skin eruption extending from the patient’s scalp to both arms and the proximal thighs with sparing of the periumbilical area. Scattered erythematous plaques over this lower legs were also evident.

Figure 2 (a) Prominent alternating orthokeratosis and parakeratosis in horizontal and vertical directions. The epidermis showed mild irregular acanthosis with broader rete ridges than expected in a psoriasiform reaction. There was mild and focal spongiosis with slight lymphocytic exocytosis. There was also mild perivascular and perifollicular lymphocytic inflammation within the papillary dermis with neutrophils and occasional eosinophils seen focally. (b) Prominent alternating orthokeratosis and parakeratosis in the distinct ‘checkerboard’ pattern. Haematoxylin and eosin, original magnification (a) × 20; (b) × 600.
The aetiology of PRP is not known, but it has been suggested that mutations in the gene for caspase recruitment domain-containing protein 14 (CARD14) could be implicated in the pathophysiology. Reported associations include COVID-19 infection, other viral illness and various drugs such as imatinib. There have been cases of postvaccination PRP following inoculation with traditional viral vector vaccines such as the diphtheria and influenza vaccines.

To our knowledge, this is the first reported case of PRP following administration of the BNT163b2 COVID-19 vaccine. If PRP occurs after the first dose, then a discussion with the patient, weighing the risks and benefits including worsening of disease compared with the possibility of severe disease/death from COVID-19 should be undertaken. Although the efficacy and safety profiles of mixing vaccine types has not yet been established, studies such as Com-COV indicated that changing the type of vaccine given as the second dose may help mitigate the severity or recurrence of AE such as PRP.

This case adds an important potential AE of the BNT163b2 mRNA COVID-19 vaccine, and dermatologists need to be made aware of the potentially severe cutaneous AEs of the different COVID-19 vaccines, as early recognition in the future may aid management.

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