moderate pinching of the metal clip and the use of soft foams or silicon tapes under the mask. Further, provision of ergonomically designed PPE and reasonable working hours per shift on administration level may improve the PPE adherence and work efficiency of the frontline HCWs.

The limitations of this study include inability to validate the perceived adverse skin reactions by participants and evaluate the severity of these reactions. Nevertheless, this study provides some insight into incidence and risk factors of adverse skin reactions to PPE and such information may prove beneficial to HCWs fighting COVID-19.

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Conflict of interest

None.

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Transient cutaneous manifestations after administration of Pfizer-BioNTech COVID-19 Vaccine: an Italian single-centre case series

Dear Editor,

Numerous skin manifestations associated with COVID-19 infection have been reported so far.[1–3] They include vesicular or macular-papular skin rashes, livedoid/necrotic lesions, urticaria, chilblains-like lesions and drug induced eruptions.[1]

Clinical trial results for BNT162b2 mRNA Covid-19 vaccine reported mild-to-moderate pain at the injection site within 7 days after administration, with severe pain in <1% of

Table 1 Demographics, history and clinical features in 11 patients with cutaneous manifestations after vaccine receipt

N	Sex	Age	Vaccine dose	Onset	Clinical features	Extracutaneous manifestations	Allergy-related history
1	F	67	1°	1 day	Itchy erythemato-oedematous plaque at injection site	N	N
2	F	61	2°	2 days	Erythema & swelling of left foot dorsum	N	N
3	F	55	1°	8 days	Erythema and itch of face	Y	Y
4	F	59	2°	3 days	Diffuse erythematous rash	Y	Y
5	F	62	1°	1 h	Itchy erythemato-oedematous plaque at injection site	Y	Y
6	F	38	1°	1 h	Erythema of both legs	Y	Y
7	M	56	1°	1 h	Urticaria at injection site	N	Y
8	F	56	2°	5 h	Diffuse erythematous rash of trunk	N	Y
9	M†	29	1°	7 days	Erythema and swelling of left chest	N	Y
10	M	36	2°	48 h	Diffuse erythematous rash of trunk	N	N
11	M	32	1°	2 days	Urticarial rash, flare-up of atopic dermatitis	N	Y

F, female; M, male; N, No; Y, yes.
†Previous SARS-CoV-2 infection.

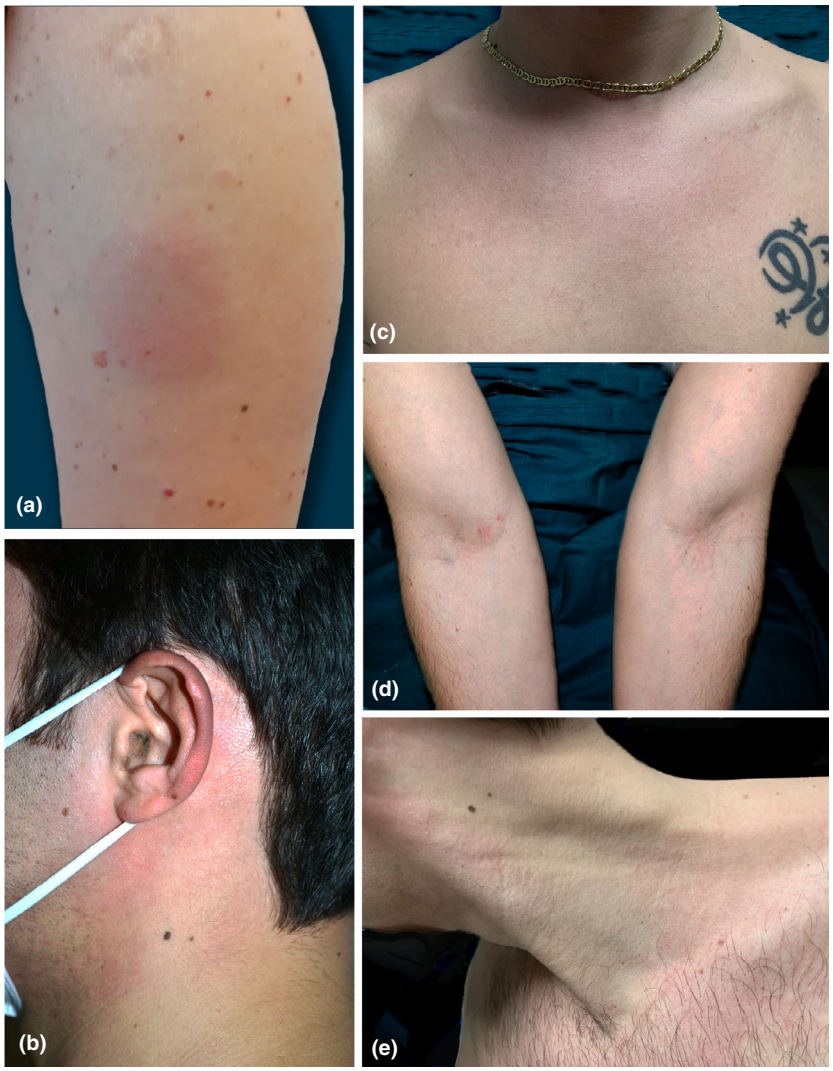

Figure 1 Spectrum of cutaneous manifestations after administration of Pfizer-BioNTech COVID-19 Vaccine. (a) Erythemato-oedematous plaque at injection site; (b) Erythematous rash of neck and ear, (c) and on the chest; (d) Erythemato-squamous and xerotic plaques of the antecubital fossae, at left excoriated erythematous linear lesions from scratching; and (e) erythema on the left lateral region of the neck and chest.

participants and redness or swelling in a lower percentage. Local reactions incidence did not increase after the second dose and were mostly mild-to-moderate and resolved within 1–2 days.[4]

Since vaccines have been approved by regulatory authorities and administered on large scale, cases of severe allergic reaction, including anaphylaxis after receipt of the first dose, have been described for both Moderna and Pfizer vaccine.[5,6] Among the cases reported after Pfizer-BioNTech COVID-19 Vaccine, 21 patients manifested anaphylaxis with a rate of 11.1 per million doses administered: 17 of them had a documented history of allergies or allergic reactions, while seven patients had a history of anaphylaxis.[6] The onset of symptoms was reported to occur within few minutes after vaccine receipt.

Cutaneous manifestations after vaccination have not yet been described in the literature, except a recent overview on cutaneous reactions in clinical trials, with a set of consideration for counselling, prevention and management of possible cutaneous adverse reactions.[7] These included injection site pain and swelling and, for Moderna vaccine, injection site urticaria, maculopapular rash and reactions to dermal filler following vaccination.[7] Based on our experience, 3170 healthcare providers were vaccinated with Pfizer-BioNTech COVID-19 Vaccine, and 0.91% (29 cases) developed mild adverse effects. Among these cases, 38% (11 patients), reported in Table 1, developed cutaneous symptoms, such as erythemato-oedematous reaction at injection site, diffuse morbilliform rash, mild erythema and

positive dermographism (Fig. 1). One patient experienced, apart from a mild urticarial rash, a flare up of his previously well-controlled atopic dermatitis under treatment with dupilumab (Fig. 1d). In four patients (36.3%) extracutaneous manifestations occurred such as laryngospasm, periorbital oedema, and angioedema; these data are consistent with CDC report.[6] All manifestations resolved spontaneously within 2–3 days without treatment, except in the patients with extracutaneous symptoms. In addition, the patient who manifested a relapse of atopic dermatitis underwent a short oral steroids course prescribed by his general practitioner. Although the majority of patients (72.7%, eight cases) had a previous history of allergy or allergic diathesis, the skin reactions were very mild.

Media spread alarmism regarding severe anaphylactic reactions and a hypothetical exclusion of people with an allergic diathesis from vaccination. In our experience, cutaneous adverse reactions from COVID-19 vaccine were very rare, all mild and characterized by rapid, and generally spontaneous resolution. Flares of pre-existent dermatitis could alarm patients and physicians and doubts arise regarding the management of patient in therapy with biologic agents. Altogether cutaneous reactions observed in our series do not constitute a contraindication to a second dose of vaccine. The dermatologist, in collaboration with the colleagues of occupational medicine service, and immunologists should reassure patients for both recurrence of previously diagnosed cutaneous diseases and onset of new skin lesions.

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Incidence and prognosis of COVID-19 in psoriasis patients on biologic therapy: a multicentre retrospective cohort study

Editor

Current guidelines recommend continuing biologic therapy in dermatologic patients who have not tested positive for or exhibited signs/symptoms of COVID-19 and postponing biologic therapy in patients who have tested positive for or exhibited signs/symptoms of COVID-19.[1–3] In order to help guide current recommendations, we aimed to investigate the incidence and prognostic outcomes of positive SARS-CoV-2 infection in psoriasis patients on biologic therapy.

Following ethics committee approval, a multicentre retrospective cohort study was undertaken at two tertiary academic hospitals and four community practices in Canada. Inclusion criteria were all adult and paediatric patients treated with a biologic for moderate-to-severe psoriasis since COVID-19 was declared a global pandemic. Data were obtained from Patient Support

