Dermatologic Reactions Following COVID-19 Vaccination: A Case Series

Hafize Özdemir Alkanat, RN, PhD; Sevgi Kulaklı, MD

PRACTICE **POINTS**

- Cutaneous reactions have been reported following COVID-19 vaccination.
- Herpes infections and urticarial reactions can be associated with COVID-19 vaccination, regardless of the delay in onset between the injection and symptom development.

We describe 7 patients with various dermatologic reactions following COVID-19 vaccination, including herpes zoster (HZ) infection, herpes zoster ophthalmicus (HZO), herpes labialis, and urticaria. Although the reactions described here may be related to COVID-19 vaccination, continued vaccination is recommended, as it is the most effective way to protect against serious COVID-19 infection.

Cutis. 2024;113:E16-E19.

Cutaneous reactions associated with the Pfizer-BioNTech COVID-19 vaccine have been reported worldwide since December 2020. Local injection site reactions (<1%) such as erythema, swelling, delayed local reactions (1%–10%), morbilliform rash, urticarial reactions, pityriasis rosea, Rowell syndrome, and lichen planus have been reported following the Pfizer-BioNTech COVID-19 vaccine.[1] Cutaneous reactions reported in association with the Sinovac-Coronavac COVID-19 vaccine include swelling, redness, itching, discoloration, induration (1%–10%), urticaria, petechial rash, and exacerbation of psoriasis at the local injection site (<1%).[2]

We describe 7 patients from Turkey who presented with various dermatologic problems 5 to 28 days after COVID-19 vaccination, highlighting the possibility of early and late cutaneous reactions related to the vaccine (Table).

Case Reports

Patient 1—A 44-year-old woman was admitted to the dermatology clinic with painful lesions on the trunk of 3 days' duration. Dermatologic examination revealed grouped erythematous vesicles showing dermatomal spread in the right thoracolumbar (dermatome T10) region. The patient reported that she had received 2 doses of the Sinovac-Coronavac vaccine (doses 1 and 2) and 2 doses of the BioNTech COVID-19 vaccine (doses 3 and 4); the rash had developed 28 days after she received the 4th dose. Her medical history was unremarkable. The lesions regressed after 1 week of treatment with oral valacyclovir 1000 mg 3 times daily, but she developed postherpetic neuralgia 1 week after starting treatment, which resolved after 8 weeks.

Patient 2—A 68-year-old woman presented to the dermatology clinic for evaluation of painful sores on the upper lip of 1 day's duration. She had a history of rheumatoid arthritis, hypertension, and atopy and was currently taking prednisone and etanercept. Dermatologic

From Giresun University, Turkey. Dr. Alkanat is from the Faculty of Health Sciences, and Dr. Kulaklı is from the Faculty of Medicine, Dermatology Clinic.

The authors report no conflict of interest.

Correspondence: Hafize Özdemir Alkanat, RN, PhD, Giresun University, Faculty of Health Sciences, 28340 Piraziz/Giresun, Turkey (hafize.ozdemir@giresun.edu.tr).

doi:10.12788/cutis.0966

Demographic and Clinical Data of Patients With Dermatologic Reactions Following COVID-19 Vaccination

Patient no.	Sex/ age, y	Medical history	Medications	Vaccines administered (in chronological order)	Time to onset of reaction	Clinical presentation	Localization	Diagnosis/ treatment	Prognosis
1	F/44	None	None	Sinovac-Coronavac (2 doses), Pfizer-BioNTech (2 doses)	28 d after 4th dose	Stinging, grouped erythematous vesicles	T10 dermatome	HZ/systemic valacyclovir	Lesions resolved after 1 wk of treatment; postherpetic neuralgia developed 1 wk after starting treatment that resolved after 8 wk
2	F/68	Rheumatoid arthritis, hypertension, atopy	Prednisone, etanercept	Sinovac-Coronavac (3 doses)	10 d after 3rd dose	Stinging, grouped vesicles on an erythematous base	Upper lip	Herpes labialis/topical acyclovir	Resolution within 2 wk of treatment
3	F/64	Allergic asthma, hypertension, depression	ARB, SSRI	Sinovac-Coronavac (2 doses), Pfizer-BioNTech (1 dose)	15 d after 3rd dose	Stinging, erythema, edema, grouped vesicles, and partial crusts	Left periorbital region	HZO/systemic valacyclovir	Resolution within 3 wk of treatment
4	M/75	Diabetes mellitus, hypertension, depression, coronary artery bypass surgery	BB, ASA, CCB, metformin, DPP4-I, SSRI	Sinovac-Coronavac (2 doses), Pfizer-BioNTech (1 dose)	15 d after 3rd dose	Stinging, grouped erythematous vesicles	T5 dermatome	HZ/systemic valacyclovir	Resolution within 3 wk of treatment
5	F/50	Psoriasis	None	Sinovac-Coronavac (2 doses), Pfizer-BioNTech (1 dose)	7 d after 3rd dose	Stinging, grouped erythematous vesicles	T2–L2 (widespread)	HZ/systemic valacyclovir	Lesions resolved after 1 wk of treatment but patient developed hypoesthesia and postinflammatory hyperpigmentation
6	F/37	None	None	Pfizer-BioNTech (2 doses)	20 d after 2nd dose	Widespread urticaria	Itching, erythematous urticarial plaques	Urticaria/ IV steroid, oral antihistamine	Resolution after 3 wk of treatment
7	F/63	Breast cancer	Tamoxifen	Sinovac-Coronavac (2 doses), Pfizer-BioNTech (1 dose)	5 d after 3rd dose	Widespread urticaria	Itching, erythematous urticarial plaques	Urticaria/oral antihistamine	Resolution after 6 wk of treatment

Abbreviations: ARB, angiotensin receptor blocker; ASA, acetylsalicylic acid; BB, β-blocker; CCB, calcium channel blocker; DPP4-I, dipeptidyl peptidase 4 inhibitor; F, female; HZ, herpes zoster; HZO, herpes zoster ophthalmicus; IV, intravenous; M, male; SSRI, selective serotonin reuptake inhibitor.

examination revealed grouped vesicles on an erythematous base on the upper lip. A diagnosis of herpes labialis was made. The patient reported that she had received a third dose of the Sinovac-Coronavac vaccine 10 days prior to the appearance of the lesions. Her symptoms resolved completely within 2 weeks of treatment with topical acyclovir.

Patient 3—A 64-year-old woman was admitted to the hospital with pain, redness, and watery sores on and around the left eyelid of 2 days' duration. Dermatologic evaluation revealed the erythematous surface of the left eyelid and periorbital area showed partial crusts, clustered vesicles, erythema, and edema. Additionally, the conjunctiva was purulent and erythematous. The patient's medical history was notable for allergic asthma, hypertension, anxiety, and depression. For this reason, the patient was prescribed an angiotensin receptor blocker and a selective serotonin reuptake inhibitor. She noted that a similar rash had developed around the left eye 6 years prior that was diagnosed as herpes zoster (HZ). She also reported that she had received 2 doses of the Sinovac-Coronavac COVID-19 vaccine followed by 1 dose of the BioNTech COVID-19 vaccine, which she had received 2 weeks before the rash developed. The patient was treated at the eye clinic and was found to have ocular involvement. Ophthalmology was consulted and a diagnosis of herpes zoster ophthalmicus (HZO) was made. Systemic valacyclovir treatment was initiated, resulting in clinical improvement within 3 weeks.

Patient 4—A 75-year-old man was admitted to the hospital with chest and back pain and widespread muscle pain of several days' duration. His medical history was remarkable for diabetes mellitus, hypertension, depression, and coronary artery bypass surgery. A medication history revealed treatment with a β-blocker, acetylsalicylic acid, a calcium channel blocker, a dipeptidyl peptidase 4 inhibitor, and a selective serotonin reuptake inhibitor. Dermatologic examination revealed grouped vesicles on an erythematous background in dermatome T5 on the right chest and back. A diagnosis of HZ was made. The patient reported that he had received 2 doses of the Sinovac-Coronavac vaccine followed by 1 dose of the Pfizer-BioNTech vaccine 2 weeks prior to the current presentation. He was treated with valacyclovir for 1 week, and his symptoms resolved entirely within 3 weeks.

Patient 5—A 50-year-old woman presented to the hospital for evaluation of painful sores on the back, chest, groin, and abdomen of 10 days' duration. The lesions initially had developed 7 days after receiving the BioNTech COVID-19 vaccine; she previously had received 2 doses of the Sinovac-Coronavac vaccine. The patient had a history of untreated psoriasis. Dermatologic examination revealed grouped vesicles on an erythematous background in the T2–L2 dermatomes on the left side of the trunk. A diagnosis of HZ was made. The lesions resolved after 1 week of treatment with systemic valacyclovir; however, she subsequently developed postherpetic neuralgia, hypoesthesia, and postinflammatory hyperpigmentation in the affected regions.

Patient 6—A 37-year-old woman presented to the hospital with redness, swelling, and itching all over the body of 3 days' duration. The patient noted that the rash would subside and reappear throughout the day. Her medical history was unremarkable, except for COVID-19 infection 6 months prior. She had received a second dose of the BioNTech vaccine 20 days prior to development of symptoms. Dermatologic examination revealed widespread erythematous urticarial plaques. A diagnosis of acute urticaria was made. The patient recovered completely after 1 week of treatment with a systemic steroid and 3 weeks of antihistamine treatment.

Patient 7—A 63-year-old woman presented to the hospital with widespread itching and rash that appeared 5 days after the first dose of the BioNTech COVID-19 vaccine. The patient reported that the rash resolved spontaneously within a few hours but then reappeared. Her medical history revealed that she was taking tamoxifen for breast cancer and that she previously had received 2 doses of the Sinovac-Coronavac vaccine. Dermatologic examination revealed erythematous urticarial plaques on the trunk and arms. A diagnosis of urticaria was made, and her symptoms resolved after 6 weeks of antihistamine treatment.

Comment

Skin lesions associated with COVID-19 infection have been reported worldwide[3,4] as well as dermatologic reactions following COVID-19 vaccination. In one case from Turkey, HZ infection was reported in a 68-year-old man 5 days after he received a second dose of the COVID-19 vaccine.[5] In another case, HZ infection developed in a 78-year-old man 5 days after COVID-19 vaccination.[6] Numerous cases of HZ infection developing within 1 to 26 days of COVID-19 vaccination have been reported worldwide.[7-9]

In a study conducted in the United States, 40 skin reactions associated with the COVID-19 vaccine were investigated; of these cases, 87.5% (35/40) were reported as varicella-zoster virus, and 12.5% (5/40) were reported as herpes simplex reactivation; 54% (19/35) and 80% (4/5) of these cases, respectively, were associated with the Pfizer-BioNTech vaccine.[10] The average age of patients who developed a skin reaction was 46 years, and 70% (28/40) were women. The time to onset of the reaction was 2 to 13 days after vaccination, and symptoms were reported to improve within 7 days on average.[10]

Another study from Spain examined 405 vaccine-related skin reactions, 40.2% of which were related to the Pfizer-BioNTech vaccine. Among them, 80.2% occurred in women; 13.8% of cases were diagnosed as varicella-zoster virus or HZ virus reactivation, and 14.6% were urticaria. Eighty reactions (21%) were classified as severe/very severe and 81% required treatment.[11] One study reported 414 skin reactions from the COVID-19 vaccine from December 2020 to February 2021; of these cases,

83% occurred after the Moderna vaccine, which is not available in Turkey, and 17% occurred after the Pfizer-BioNTech vaccine.[12]

A systematic review of 91 patients who developed HZ infection after COVID-19 vaccination reported that 10% (9/91) of cases were receiving immunosuppressive therapy and 13% (12/91) had an autoimmune disease.[7] In our case series, it is known that at least 2 of the patients (patients 2 and 5), including 1 patient with rheumatoid arthritis (patient 2) who was on immunosuppressive treatment, had autoimmune disorders. However, reports in the literature indicate that most patients with autoimmune inflammatory rheumatic diseases remain stable after vaccination.[13]

Herpes zoster ophthalmicus is a rare form of HZ caused by involvement of the ophthalmic branch of the trigeminal nerve that manifests as vesicular lesions and retinitis, uveitis, keratitis, conjunctivitis, and pain on an erythematous background. Two cases of women who developed HZO infection after Pfizer-BioNTech vaccination were reported in the literature.[14] Although patient 3 in our case series had a history of HZO 6 years prior, the possibility of the Pfizer-BioNTech vaccine triggering HZO should be taken into consideration.

Although cutaneous reactions after the Sinovac-Coronavac vaccine were observed in only 1 of 7 patients in our case series, skin reactions after Sinovac-Coronavac (an inactivated viral vaccine) have been reported in the literature. In one study, after a total of 35,229 injections, the incidence of cutaneous adverse events due to Sinovac-Coronavac was reported to be 0.94% and 0.70% after the first and second doses, respectively.[15] Therefore, further study results are needed to directly attribute the reactions to COVID-19 vaccination.

Conclusion

Our case series highlights that clinicians should be vigilant in diagnosing cutaneous reactions following COVID-19 vaccination early to prevent potential complications. Early recognition of reactions is crucial, and the prognosis can be improved with appropriate treatment. Despite the potential dermatologic adverse effects of the COVID-19 vaccine, the most effective way to protect against serious COVID-19 infection is to continue to be vaccinated.

REFERENCES

1. Polack FP, Thomas SJ, Kitchin N, et al. Safety and efficacy of the BNT162b2 mRNA COVID-19 vaccine. *N Engl J Med.* 2020;383:2603-2615.
2. Zhang Y, Zeng G, Pan H, et al. Safety, tolerability, and immunogenicity of an inactivated SARS-CoV-2 vaccine in healthy adults aged 18–59 years: a randomised, double-blind, placebo-controlled, phase 1/2 clinical trial. *Lancet Infect Dis.* 2021;21:181-192.
3. Tan SW, Tam YC, Oh CC. Skin manifestations of COVID-19: a worldwide review. *JAAD Int*. 2021;2:119-133.
4. Singh H, Kaur H, Singh K, et al. Cutaneous manifestations of COVID-19: a systematic review. advances in wound care. 2021;10:51-80.
5. Aksu SB, Öztürk GZ. A rare case of shingles after COVID-19 vaccine: is it a possible adverse effect? clinical and experimental vaccine research. 2021;10:198-201.
6. Bostan E, Yalici-Armagan B. Herpes zoster following inactivated COVID-19 vaccine: a coexistence or coincidence? *J Cosmet Dermatol.* 2021;20:1566-1567.
7. Katsikas Triantafyllidis K, Giannos P, Mian IT, et al. Varicella zoster virus reactivation following COVID-19 vaccination: a systematic review of case reports. *Vaccines (Basel)*. 2021;9:1013. doi:10.3390/vaccines9091013
8. Rodríguez-Jiménez P, Chicharro P, Cabrera LM, et al. Varicella-zoster virus reactivation after SARS-CoV-2 BNT162b2 mRNA vaccination: report of 5 cases. *JAAD Case Rep*. 2021;12:58-59. doi:10.1016/j.jdcr.2021.04.014
9. Lee C, Cotter D, Basa J, et al. 20 Post-COVID-19 vaccine-related shingles cases seen at the Las Vegas Dermatology clinic and sent to us via social media. *J Cosmet Dermatol.* 2021;20:1960-1964.
10. Fathy RA, McMahon DE, Lee C, et al. Varicella-zoster and herpes simplex virus reactivation post-COVID-19 vaccination: a review of 40 cases in an International Dermatology Registry. *J Eur Acad Dermatol Venerol*. 2022;36:E6-E9.
11. Català A, Muñoz-Santos C, Galván-Casas C, et al. Cutaneous reactions after SARS-CoV-2 vaccination: a cross-sectional Spanish nationwide study of 405 cases. *Br J Dermatol.* 2022;186:142-152.
12. McMahon DE, Amerson E, Rosenbach M, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: a registry-based study of 414 cases. *J Am Acad Dermatol*. 2021;85:46-55.
13. Furer V, Eviatar T, Zisman D, et al. Immunogenicity and safety of the BNT162b2 mRNA COVID-19 vaccine in adult patients with autoimmune inflammatory rheumatic diseases and in the general population: a multicentre study. *Ann Rheum Dis.* 2021;80:1330-1338.
14. Bernardini N, Skroza N, Mambrin A, et al. Herpes zoster ophthalmicus in two women after Pfizer-BioNTech (BNT162b2) vaccine. *J Med Virol.* 2022;94:817-818.
15. Rerknimitr P, Puaratanaarunkon T, Wongtada C, et al. Cutaneous adverse reactions from 35,229 doses of Sinovac and AstraZeneca COVID-19 vaccination: a prospective cohort study in healthcare workers. *J Eur Acad Dermatol Venereol.* 2022;36:E158-E161.