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.

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%).

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 with painful sores on the upper lip of 1 day’s 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 with painful sores on the upper lip of 1 day’s 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 with painful sores on the upper lip of 1 day’s 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.
### Demographic and Clinical Data of Patients With Dermatologic Reactions Following COVID-19 Vaccination

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

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 BioNTech COVID-19 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 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 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. In another case, HZ infection developed in a 78-year-old man 5 days after COVID-19 vaccination. Numerous cases of HZ infection developing within 1 to 26 days of COVID-19 vaccination have been reported worldwide.

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. 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.

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. One study reported 414 skin reactions from the COVID-19 vaccine from December 2020 to February 2021; of these cases,
REACTIONS TO COVID-19 VACCINE

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.18 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