

Herpes zoster after COVID-19 vaccination: A case series

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ABSTRACT

INTRODUCTION The coronavirus disease 2019 (COVID-19) pandemic caused a global health crisis, necessitating the development of vaccines. An emerging cutaneous reaction is herpes zoster.

CASE SERIES We present 7 cases of Filipino patients who developed herpes zoster after receiving the COVID-19 vaccine. Four patients received Sinovac Biotech Ltd (CoronaVac), 2 patients received Oxford AstraZeneca, and 1 patient received Pfizer-BioNTech (COMIRNATY). Five patients developed herpes zoster after their first dose of the vaccine, while 2 patients developed herpes zoster after their second dose. All patients were prescribed anti-viral medication, after which resolution of the lesions was observed.

CONCLUSION As more vaccines are administered, further surveillance is necessary to expand our understanding of a possible association between herpes zoster and COVID-19 vaccines. Additionally, awareness of cutaneous reactions following COVID-19 vaccines and their disease course can contribute to shifting the attitude towards pro-vaccination.

KEYWORDS COVID-19 vaccine, herpes zoster, COVID-19

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic caused a global health crisis, necessitating the development of vaccines. In the past year, different types of vaccines were manufactured: mRNA-based, viral vector-based, and inactivated vaccines.¹ Several cutaneous adverse effects of COVID-19 vaccines have been reported, including delayed large local reaction, local injection site reaction, urticarial eruption, and morbilliform eruption.² An emerging cutaneous reaction is herpes zoster (HZ),²⁻⁶ an uncommon reaction following vaccines other than varicella zoster virus (VZV) vaccine.⁵

CASE REPORT

We present 7 cases of Filipino patients who developed their first episode of HZ after receiving COVID-19 vaccination from April to August 2021 (Table 1). Four (57%) patients were female and 3 (43%) were male. Their median age was 54 years (IQR 28-67). Four (57%) patients received Sinovac Biotech Ltd (CoronaVac), 2 (29%) patients received Oxford AstraZeneca, and 1 (14%) patient received Pfizer-BioNTech (COMIRNATY). Five (71%) patients developed HZ after their first dose of the vaccine, while 2 (29%) patients developed

HZ after their second dose (Figure 1). Five patients had comorbidities, while the two youngest patients were healthy and without other illnesses. All patients had a history of previous varicella infection. The lesions of HZ appeared within a median of 6 days (IQR 3-8) after COVID-19 vaccination and resolved in 6 patients after 7 days (IQR 5.25-8.5). One patient was lost to follow-up. All patients were prescribed antiviral medication for HZ.

DISCUSSION

Herpes zoster, caused by reactivation of the VZV, may occur spontaneously or may be triggered by age-related immunosenescence, stress, fever, trauma, or immunosuppression.^{3-5,7} Herpes zoster following vaccines other than VZV vaccine is uncommon.⁷ A few reports have demonstrated HZ following hepatitis A, influenza, rabies, and Japanese encephalitis vaccines.⁷ Recently, HZ has emerged as a possible cutaneous reaction following COVID-19 vaccines. The postulated mechanism behind this reaction is vaccine-related immunomodulation,^{3,5,7} which pertains to the immunosuppressive effect of vaccines due to impairment of cellular immunity and decrease in alloreactivity.⁷ One noteworthy limitation of this study is that the history of VZV vaccination

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Table 1. Summary of patient characteristics

| Patient | Age | Gender | Allergies and comorbidities | Vaccine brand | 1st or 2nd dose | Latent period (in days) | Affected dermatome/s | Cutaneous description of lesions | Treatment given | Number of days until resolution |
|---------|-----|--------|---|---------------|-----------------|-------------------------|----------------------|---|---|---------------------------------|
| 1 | 54 | Male | Hypertension, diabetes mellitus type 2, end-stage renal disease (on dialysis) | Sinovac | 1st | 8 | C8-T1, left | Multiple, grouped vesicles, some coalescing into bullae, on a slightly erythematous base | Acyclovir 800mg BID for 5 days (adjusted for creatinine clearance), pregabalin 75 mg once daily | 6 |
| 2 | 28 | Female | None | Sinovac | 1st | 3 | V2, right | Multiple, grouped papules and vesicles on an erythematous base | Acyclovir 800mg 5x/day for 7 days, pregabalin 75 mg once daily | 3 |
| 3 | 68 | Female | Hypertension, diabetes mellitus type 2 | Sinovac | 1st | 6 | V2-V3, left | Multiple, grouped vesicles on an erythematous base with areas of crusting, with involvement of the lips | Acyclovir 800mg 5x/day for 7 days, pregabalin 75 mg once daily | 6 |
| 4 | 67 | Male | Psoriasis, hypothyroidism | Sinovac | 2nd | 14 | V1, right | Multiple papules and vesicles on an erythematous base, with involvement of the right eyelid | Valacyclovir 1g TID for 7 days, gabapentin 300 mg once daily | 8 |
| 5 | 53 | Male | Hypertension, diabetes mellitus type 2 | Pfizer | 1st | 3 | T11-T12, left | Multiple, grouped vesicles on an erythematous base with areas of hemorrhagic crusting | Acyclovir 800mg 5x a day for 7 days, pregabalin 75mg BID for 7 days | 8 |
| 6 | 61 | Female | Hypertension, allergy to cotrimoxazole | Astra-Zeneca | 2nd | 7 | T11-T12, right | Multiple, grouped vesicles on an erythematous base | Valacyclovir 1g BID for 7 days, paracetamol + vitamin B complex BID, acyclovir cream BID, fusidic acid + hydrocortisone cream BID | 10 |
| 7 | 27 | Female | None | Astra-Zeneca | 1st | 3 | C4, right | Multiple, grouped vesicles on an erythematous base | Valacyclovir 1g TID for 7 days | Lost to follow up |

BID=Twice a day; TID=Three times a day

in most of our patients is unknown or unrecalled.

Several types of COVID-19 vaccines are currently available and include mRNA-based, viral vector-based, and inactivated vaccines. The mRNA-based vaccines are Pfizer-BioNTech (COMIRNATY) and Moderna, the viral vector-based vaccines are Oxford AstraZeneca and Johnson & Johnson, while the inactivated vaccines are Sinovac Biotech Ltd (CoronaVac) and Sinopharm.¹ Herpes zoster has been reported following mRNA vaccine^{2,4,6} and inactivated COVID-19 vaccine.³ This reaction occurs in both immunocompetent and immunocompromised patients.^{3,6} There were no reports of disease dissemination even in immunocompromised patients.^{3,6} Herpes zoster was also reported to occur both in patients with comorbidities and in those who are healthy with no known illnesses.^{3-5,8} While most case reports demonstrated cases of HZ occurring in patients with comorbidities, a larger case series by Fathy et al. reported a significant number of healthy patients who also developed HZ, with 40% of these patients having no known comorbidities.⁸ Ad-

ditionally, this was seen in both elderly and young patients.^{3-5,8} In a review of 40 cases of VZV reactivation after COVID-19 vaccination, the median age of patients was 46 years, with patients as young as 36 years old also affected,⁸ while other cases reported this reaction to occur primarily in an older age group.^{3,4} Our report describes HZ occurring in both immunocompetent and immunocompromised patients, in both healthy patients and those with comorbidities, and in both the young and elderly after receiving COVID-19 vaccination.

In the cases found in literature, majority of patients were reported to develop HZ after their first dose of COVID-19 vaccine, and for all cases, no adverse effects were noted after the second dose.^{5,8} Our report shows similar findings, with 5 out of 7 patients developing HZ after their first dose. Of these 5 patients, 3 received their second vaccine dose with no noted recurrence of HZ. For the 2 remaining patients, one has yet to receive the second dose, while the other expired due to underlying renal disease prior to receiving the second dose.



Figure 1. Representative images of herpes zoster occurring after recent COVID-19 vaccination. **A.** 68-year-old female with herpes zoster presenting as multiple, grouped vesicles on an erythematous base with areas of crusting on the left side of the face along the V2-V3 dermatomes, with involvement of the lips. **B.** 54-year-old male with herpes zoster presenting as multiple, grouped vesicles, some coalescing into bullae, on a slightly erythematous base on the left arm along the C8-T1 dermatomes. **C.** 67-year-old male with herpes zoster presenting as multiple papules and vesicles on an erythematous base on the right temporal aspect of the face along the V1 dermatome, with involvement of the right eyelid.

While most studies did not report the course of HZ following COVID-19 vaccination, there was no indication of poor health outcomes or serious sequelae in these studies.^{3-5,8} Lesions in our patients who were able to follow up resolved after treatment with no disease dissemination nor serious sequelae. Although 1 patient expired 3 days after treatment completion, his cause of death was fatal arrhythmia secondary to hyperkalemia, which is related to the patient's underlying renal disease rather than HZ.

Another notable finding is the perspective of patients on vaccines and the vaccine hesitancy that ensues following adverse effects such as HZ. Vaccine hesitancy pertains to the unwillingness to receive safe and recommended vaccines and has become a concern especially during the COVID-19 pandemic.⁹ A study by Fathy et al. reported one patient who expressed his

intention to no longer receive the second dose of COVID-19 vaccine due to the development of HZ after his first dose.⁸ A similar response was observed in one of our patients who initially expressed her refusal of the second dose of COVID-19 vaccine due to fear of recurrence of HZ. After extensive counseling, the patient received the second dose, with no noted recurrence of HZ nor other adverse effects. Other patients included in this study who developed HZ after their first dose of COVID-19 vaccine did not hesitate to receive the second dose. It has been shown that while vaccine acceptance is attributed primarily to the interest in protecting oneself against the COVID-19 virus, vaccine hesitancy is most commonly due to concerns about the vaccine's side effects, highlighting the importance of reporting adverse events after vaccination.⁹

CONCLUSION

While this case series cannot establish a direct association between HZ and COVID-19 vaccine, this observation is noteworthy because of the temporal relationship. Despite the multitude of cases of HZ following COVID-19 vaccination, several doctors assert that no evidence of an association exists, and that these events may merely be coincidental. Herpes zoster is triggered by physical or emotional stress, which have been found to be common during the pandemic. Herpes zoster is also usually seen in those who were the first to receive the COVID-19 vaccine, which includes the older population with comorbidities. It is speculated that these may explain the increased incidence of HZ following COVID-19 vaccination, and that the vaccine itself may be unrelated to HZ.¹⁰ Despite the divergent views on this topic, the possibility of an association continues to be of interest and must be further studied as more cases of HZ following COVID-19 vaccination are coming to light.

As more vaccines are administered worldwide, further surveillance is necessary to expand our understanding of this association. Additionally, vaccine hesitancy is complex and dynamic. Awareness of cutaneous reactions following COVID-19 vaccines, their postulated mechanisms, disease course, and appropriate interventions can contribute to shifting the attitude towards pro-vaccination.

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