

**LETTER**

# Herpes zoster as a potential complication of coronavirus disease 2019

Dear Editor,

Although coronavirus disease 2019 (COVID-19) primarily manifests pulmonary symptoms, providers are recognizing extrapulmonary symptoms including cutaneous manifestations. Cutaneous manifestations in COVID-19 patients include acroischemic, chilblain-like eruption, petechiae and purpura, vesicles, urticaria, and erythematous maculopapules.<sup>1</sup>

Herpes zoster (HZ) is caused by the varicella-zoster virus, which reactivates and spreads from the dorsal root ganglia to its respective dermatome. Patients at risk of HZ include elders and immunocompromised hosts. Although COVID-19 is known to affect the immune system and may increase the risk of HZ, limited reports confirm an association between HZ and COVID-19.<sup>2,3</sup> Here, we present a 70-year-old COVID-19 patient complicated by HZ.

## 1 | CASE REPORT

A 70-year-old African American female with a past medical history of hypertension and complicated type 2 diabetes presented to clinic secondary to fever, cough, and shortness of breath that started 1 week ago. She endorsed possible exposure to COVID-19 at work. She denied skin changes at that time. Vital signs and physical examination were normal, whereas laboratory results were positive for COVID-19. All other laboratory results including absolute lymphocyte count were normal. Therefore, she was advised to self-quarantine and take acetaminophen for fever. However, she started to develop a rash on her left hip the next day. Due to a worsening rash, she presented to her provider via video 6 days later. The rash started as a tender red patch that developed multiple small painful non-hemorrhagic vesicles with severe burning. By that time, her COVID-19-associated symptoms resolved. On physical examination, the left superior buttock had an erythematous patch with multiple vesicles and hemorrhagic crust. Lower extremity neurologic examination was normal. No photographs were taken. After making a clinical diagnosis of HZ, she was prescribed gabapentin for pain and no antiviral therapy.

## 2 | DISCUSSION

Although the relationship between COVID-19 and the Herpesviridae is not well known, some reports suggest HZ as a possible complication. One study reported two HZ patients with concomitant

COVID-19.<sup>2</sup> Another report of two COVID-19 patients with herpetiform vesicles speculated that the vesicles may be due to human herpes virus 1, human herpes virus 2, or varicella-zoster virus.<sup>4</sup> Furthermore, another case reported a possible association of pityriasis rosea and COVID-19.<sup>5</sup> As pityriasis rosea is associated with herpesvirus 6 and 7 reactivation, COVID-19 could influence Herpesviridae reactivation.

Cell-mediated immunity is influenced by T cells. HZ is reactivated when the host's cell-mediated immunity decreases, as seen in patients with immunodeficiency. However, COVID-19 also decreases cell-mediated immunity by decreasing lymphocyte count and CD3+, CD4+, and CD8+ T cells.<sup>3</sup> Therefore, COVID-19 could increase the risk of HZ by decreasing cell-mediated immunity. Furthermore, HZ can precipitate during increased psychological stress. As COVID-19 survivors can suffer from tremendous psychological stress, COVID-19 patients may be at risk of HZ due to increased psychological stress.<sup>6</sup>

Our case had a normal absolute lymphocyte count. However, three studies with COVID-19 patients with complicated HZ described five patients with low lymphocyte count and one patient with a normal lymphocyte count.<sup>7-9</sup> Although our case's normal lymphocyte count argues against decreased cell-mediated immunity as the cause of HZ, increased psychological stress from COVID-19 may explain her reactivated zoster. Therefore, COVID-19 patients with a normal lymphocyte count may still be at risk of HZ reactivation.

Cutaneous manifestations of COVID-19 include petechiae and purpura, acroischemia, red maculopapules, chilblain-like eruption, and vesicles. Although the association of HZ and COVID-19 is not well known, we present a case suggesting HZ may be a complication of COVID-19.

Adrian Pona   
Rahim A. Jiwani  
Felix Afriyie  
Jonathan Labbe  
Paul P. Cook  
Yuxuan Mao

*Department of Internal Medicine, Vidant Medical Center/East Carolina University, Greenville, North Carolina*

### Correspondence

Adrian Pona, Department of Internal Medicine, Vidant Medical Center/East Carolina University, Greenville, NC.  
Email: pona1318@hotmail.com

## ORCID

Adrian Pona  <https://orcid.org/0000-0002-0087-7326>

## REFERENCES

1. Wollina U, Karadağ AS, Rowland-Payne C, Chiriac A, Lotti T. Cutaneous signs in COVID-19 patients: a review. *Dermatol Ther.* 2020; e13549. <https://doi.org/10.1111/dth.13549>.
2. Elsaie ML, Youssef EA, Nada HA. Herpes zoster might be an indicator for latent COVID 19 infection. *Dermatol Ther.* 2020;e13666. <https://doi.org/10.1111/dth.13666>.
3. Xu B, Fan CY, Wang AL, et al. Suppressed T cell-mediated immunity in patients with COVID-19: a clinical retrospective study in Wuhan, China. *J Infect.* 2020;81:51-60.
4. Tammaro A, Adebajo GAR, Parisella FR, Pezzuto A, Rello J. Cutaneous manifestations in COVID-19: the experiences of Barcelona and Rome. *J Eur Acad Dermatol Venereol.* 2020 [Epub ahead of print].
5. Ehsani AH, Nasimi M, Bigdelo Z. Pityriasis rosea as a cutaneous manifestation of COVID-19 infection. *J Eur Acad Dermatol Venereol.* 2020 [Epub ahead of print].
6. Xiao S, Luo D, Xiao Y. Survivors of COVID-19 are at high risk of post-traumatic stress disorder. *Glob Health Res Policy.* 2020;5:29.
7. Tartari F, Spadotto A, Zengarini C, et al. Herpes zoster in COVID-19-positive patients. *Int J Dermatol.* 2020 [Epub ahead of print].
8. de Freitas Ferreira ACA, Romão TT, Sim Y, Pupe C, Nascimento OJ. COVID-19 and herpes zoster co-infection presenting with trigeminal neuropathy. *Eur J Neurol.* 2020 [Epub ahead of print].
9. Llamas-Velasco M, Rodríguez-Jiménez P, Chicharro P, De Argila D, Muñoz-Hernández P, Daudén E. Reply to "Varicella-like exanthem as a specific COVID-19-associated skin manifestation: multicenter case series of 22 patients": to consider varicella-like exanthem associated with COVID-19, virus varicella zoster and virus herpes simplex must be ruled out. *J Am Acad Dermatol.* 2020 [Epub ahead of print].