

SHORT COMMUNICATION

Herpes Zoster in an Immunocompetent Young Patient Following mRNA-1273 Vaccine For COVID-19

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Herpes Zoster (HZ) is characterized by intraepidermal vesicular eruption that occurs in a dermatomal distribution with a prodrome of pain and pruritis. It is caused by the reactivation of the varicella zoster virus (VZV) in individuals with a history of primary varicella infection. VZV remains dormant in the cranial or dorsal root ganglia and can reactivate in patients who are older, immunocompromised such as HIV or lymphoma patients, as well as in stressful situations. HZ has also been reported in children and immunocompetent individuals after administration of some vaccines including the live-attenuated varicella and yellow fever vaccines.^{1,2} Here, we present a case of HZ infection in a young, immunocompetent female following administration of the mRNA-1273 vaccine.

A 29-year-old female health care worker presented to clinic with a painful rash on her back that started 2 days after receiving the 1st dose of the mRNA-1273 vaccine for COVID-19. She also reported subjective fevers, myalgias, and left upper quadrant pain. Her past medical history was only relevant for childhood chicken pox. On exam, she had grouped vesicles on an erythematous base (Figure 1) in the T5/T6 dermatome on



Figure 1

the left side of the body (Figure 2). Based on the clinical presentation of pain accompanied by dermatomal rash, a diagnosis of herpes zoster infection was made. She was started on a 7-day course of 1g valacyclovir q8h. After discussion with the infectious disease specialists, she received an additional 7-day course of valacyclovir starting 2 days prior to the 2nd vaccine dose. Patient received the second vaccine dose with no complications.

At the time of this patient's presentation, there had been no reports of HZ in association with the COVID-19 mRNA-1273 vaccine in immunocompetent young adults. Most cases of HZ reactivation following



Figure 2

mRNA COVID-19 vaccines were seen in older patients.³ There are also reports of concomitant HZ in COVID-19 positive patients, both in older and younger patients.⁴

However, more recently there have been some reports of HZ infection in young immunocompetent individuals after receiving the COVID-19 BNT162b2 and mRNA-1273 vaccines.^{5,6,7} A dermatology clinic in Las Vegas reported 20 cases of herpes zoster, some in relatively young patients with no existing comorbidities, following the COVID-19 mRNA vaccines. 12 out of 20 cases were with the mRNA-1273 1st dose.⁵ Similarly, a registry-based study on the COVID-19 mRNA vaccines reported a high rate of cutaneous manifestations, and zoster was diagnosed in 5% of total patients after the first dose of the mRNA-1273 vaccine.⁶

There have been two proposed mechanisms of VZV reactivation in COVID-19 infected patients. The more common one involves persistent impaired immunity with infection and includes COVID-19 virus induced

lymphopenia, and functional impairment of CD4+ T cells.^{3,4,7} The second mechanism is triggered by acute-illness related stress which creates an inflammatory response followed by molecular and immune cell dysfunction.⁸ Both these processes dampen the immune system and create avenues for HZ reactivation. Similar to the mechanism of the infection itself, COVID-19 vaccines may cause transient lymphopenia or enhance the hyper-inflammatory response and result in immune dysregulation, as shown in Phase I/II clinical trials of the BNT162b2 vaccine.⁹

There is limited information on the occurrence of HZ associated with the COVID-19 vaccines. Our case and the reports mentioned above highlight that HZ can be seen after COVID-19 vaccination. VZV reactivation can be seen with the Pfizer® and Moderna® vaccine, so therefore a class effect could be considered, however it should also be noted that other vaccinations can cause VZV reactivation outside of the mRNA vaccines. This warrants further exploration on the topic, including the need for any prophylactic treatment prior to any subsequent COVID-19 vaccination.

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