

Varicella-zoster virus reactivation after SARS-CoV-2 BNT162b2 mRNA vaccination: Report of 5 cases



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INTRODUCTION

A few months ago, we reported that to consider vesicular exanthems associated with COVID-19, varicella-zoster virus (VZV) and herpes simplex virus must be ruled out.¹ The natural history of herpes zoster is influenced by the immune status of the host. Reactivation is influenced by age-related immunosenescence, disease-related immunocompromised state, or iatrogenic immunosuppression, with age being the major risk factor for most cases of herpes zoster. Among VZV reactivation triggers, vaccines are not common, and excluding herpes zoster appearing after VZV vaccination, we have found only 1 case of a child who experienced herpes zoster after diphtheria/tetanus/acellular pertussis, inactivated polio, *Haemophilus influenzae* type b, and meningococcal C vaccine. Nonetheless, the patient had also previously received an allogeneic hematopoietic transplant, which is a possible confounding factor.² Recently, a single case of herpes zoster after an mRNA COVID-19 vaccine has been reported.³

CASE SERIES

In Spain, the vaccination campaign with the BNT162b2 mRNA COVID-19 vaccine (Pfizer)⁴ started on January 1, 2021, targeting first the elderly living in nursing homes and health workers. During the 4 weeks of vaccinations at our center, 3007 of 3707 health workers (81.8%) received the first dose. In this period, 3 patients presented to our department with herpes zoster appearing after the first dose of the

Abbreviation used:

VZV: varicella-zoster virus

vaccine and 2 after the second dose (Table 1). All patients were young, healthy adults, and their blood count did not show any abnormality.

DISCUSSION

In patients infected naturally with SARS-CoV-2, a cytokine storm may occur that involves a considerable release of proinflammatory cytokines, including interleukin 6, tumor necrosis factor- α , and interleukin 12, that could favor VZV reactivation. In the above-mentioned report,¹ we hypothesized that the SARS-CoV-2 infection characteristically produces lymphopenia, a known factor favoring VZV recurrences. Fernandez-Nieto et al⁵ also described 7 cases of herpes zoster in patients infected with COVID-19. Of note, in the COVID-Piel study that attempted to summarize and classify the different cutaneous manifestations of COVID infection, a perceived increase in cases of herpes zoster in infected patients was remarked.⁶ In our geographical area, the standardized annual herpes zoster incidence rates in Madrid have been calculated to range from 249.9 to 359.4 cases per 100,000 person-years.⁷ The incidence rate in our series would be 1995.3 cases per 100,000 person-years after a 1-month follow-up of all vaccinated patients. The vaccine phase III clinical trial

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Table I. Summary of cases with herpes zoster after vaccination

Case number	Sex	Age (years)	Position	Past relevant medical history/ medication	Cutaneous manifestation	Dermatome	Latency* (days)	Viral confirmation
Case 1	Male	58	Administrative	Hypertension/ Losartan	Asymptomatic herpetiform umbilicated vesicles Fever Cervical Lymphadenopathy	Cervical 6	1	PCR positive [‡]
Case 2	Female	47	Preventive medicine physician	None/None	Herpetiform umbilicated vesicles Fever Dysesthesia	Dorsal 2 to Dorsal 4	5	PCR positive [‡]
Case 3	Male	39	Thoracic surgeon	None/None	Painful herpetiform umbilicated vesicles	Dorsal 4	3	Not performed
Case 4	Female	56	Radiologist	None/None	Herpetiform umbilicated vesicles Dysesthesia	CN V1	2 [†]	PCR positive [‡]
Case 5	Female	41	Administrative	None/None	Herpetiform umbilicated vesicles Dysesthesia	Dorsal 5	16 [†]	Not performed

CN, Cranial nerve; PCR, polymerase chain reaction.

*Latency refers to the time of Herpes Zoster symptoms appearance since vaccination.

[†]Latency appearing after the second dose.

[‡]Microarray PCR was performed.

involved approximately 7 times the number of vaccinated patients. However, the adverse event reporting method did not specify the type of adverse event but just the severity.⁴

Patients receiving the BNT162b2 mRNA COVID-19 vaccine apparently do not suffer from lymphopenia and do not have symptoms suggesting cytokine release. However, it is possible that the vaccine causes some kind of immunomodulation that allows VZV to escape from its latent phase. Although we are aware that the association could be coincidental, since VZV does not otherwise typically appear following other established vaccinations, we find these observations noteworthy.

Conflicts of interest

None disclosed.

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