

## Correspondence



# Consider Transverse Myelitis as a Complication of a SARS-CoV-2 Vaccination

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### Disclosure

The author has no potential conflicts of interest to disclose.

To the Editor:

We read with interest the article by Eom et al.<sup>1</sup> about two patients, an 81 years old male (patient-1) and a 23 years old female (patient-2), who developed transverse myelitis three days (patient-1) respectively 21 days (patient-2) following the second (patient-2) respectively first dose of the Biontech Pfizer vaccine (BPV). Patient-1 presented with distal weakness, sensory disturbances and spasticity of the upper limbs.<sup>1</sup> Patient-2 presented with paraparesis and sensory disturbances of the lower limbs and urinary retention.<sup>1</sup> Spinal MRI revealed a T2-hyperintense lesion C1-C3 (patient-1) and a T2-hyperintense lesion in the conus medullaris (patient-2).<sup>1</sup> Both patients received steroids but recovery was incomplete at the one month (patient-1) respectively 3 months (patient-2) follow-up.<sup>1</sup> The study is appealing but raises concerns that need to be discussed.

We disagree that transverse myelitis is a rare complication of SARS-CoV-2 vaccinations.<sup>1</sup> When reviewing the literature about transverse myelitis following a SARS-CoV-2 vaccination, 24 cases were identified of whom detailed individual data were available from 20 patients (**Table 1**). Age of these 20 patients ranged between 23 and 85 years. Twelve of these patients were female and eight were male (**Table 1**). Vaccine brands applied were the BPV (n = 7), the Astra Zeneca vaccine (AZV, n = 9), the Moderan vaccine (MOV, n = 2), the Johnson and Johnson vaccine (JJV, n = 1), and the Sinovac vaccine (SVV, n = 1) (**Table 1**). Latency between vaccination and onset of clinical manifestations of transverse myelitis ranged from one day to 21 days (**Table 1**). Patients were treated with steroids (n = 20, plasma exchange (n = 4), or immune-adsorption (n = 1) (**Table 1**). The outcome at the last follow up was reported as complete recovery in three patients, as incomplete recovery in 16 patients, and as fatal in one patient (**Table 1**). This case series does not include those with myelin oligodendrocyte glycoprotein (MOG)-associated myelitis, neuromyelitis optica spectrum disorder (NMO-SD), those with acute disseminated encephalomyelitis (ADEM), or those with a spinal relapse of multiple sclerosis as complications of a SARS-CoV-2 vaccination. Since not all patients with post-SARS-CoV-2 vaccination transverse myelitis have been published, it is conceivable that the true number of patients with COVID vaccination associated myelitis is much higher.

**Table 1.** Patients reported as per the end of March 2022 in whom SARS-CoV-2 vaccination was complicated by transverse myelitis (modified according to Finsterer, Hum Vaccine Immunother 2022)

Age	Sex	Brand	LVOTM (d)	Treatment	OCLFU	Reference
23	F	BPV	21	ST	IR	Eom 2022
81	M	BPV	3	ST	IR	Eom 2022
26	F	BPV	2	ST	IR	Fernandes 2022
31	F	1. AZV	21	ST	IR	Maroufi 2022
75	M	BPV	3	ST	IR	Miyae 2022
40	F	AZV	14	ST, PE, IA	IR	Helmchen 2022
26	F	1. BPV	3	ST	IR	Alkabal 2021
85	M	BPV	1	ST	FO	Nakano 2021
36	M	AZV	8	ST	CR	Malhotra 2021
63	M	MOV	2	ST	CR	Fitzsimmons 2021
45	M	AZV	8	ST	IR	Pagenkopf 2021
41	M	AZV	14	ST	IR	Hsiao 2021
25	F	AZV	16	ST	IR	Tan 2021
76	F	MOV	6	ST	IR	Gao 2021
58	M	AZV	10	ST, PE	IR	Nothgi 2021
67	F	MOV	1	ST, PE	IR	Khan 2022
44	F	JJV	7	ST, PE	IR	Tahir 2021
78	F	SVV	3	ST	IR	Erdem 2021
Nr	nr	AZV	nr	nr	nr	VAERS
69	F	1. BPV	2	ST	IR	McLean 2021
44	F	1. AZV	4	ST	CR	Vegezzi 2021
N = 3	nr	AZV	nr	nr	nr	Knoll 2021

AZV = Astra Zeneca vaccine, BPV = Biontech Pfizer vaccine, CR = complete recovery, FO = fatal outcome, IA = immune adsorption, IR = incomplete recovery, JJV = Johnson and Johnson vaccine, LVOTM = latency between vaccination and onset of transverse myelitis, MOV = Moderna vaccine, OCLFU = outcome at last follow-up, PE = plasma exchange, ST = steroids, SVV = Sinovac vaccine, nr = not reported.

Overall, the interesting study has limitations which challenge the results and their interpretation. Addressing these issues would strengthen the conclusions and could be more educative. Myelitis as a complication of SARS-CoV-2 vaccinations is not infrequent and treating physicians should be aware of this side effect to diagnose patients thoroughly and treat them adequately in due time.

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# The Authors' Response: Case Reports of Acute Transverse Myelitis Associated With mRNA Vaccine for COVID-19

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The authors have no potential conflicts of interest to disclose.

Dear Editor:

Thank you for your interest in our recent report.<sup>1</sup> We appreciate your supportive comments about the case of acute transverse myelitis (ATM) after the coronavirus disease (COVID-19) vaccination. Some reports are available across the world, and you have provided meaningful clinical information by reviewing previous cases. We should be aware of myelitis as an adverse event after COVID-19 vaccination and treat it promptly.

As of January 12, 2022, approximately 58% of the world's population received at least one dose of the COVID-19 vaccine.<sup>2</sup> According to the Korea Disease Control and Prevention Agency (CDC), the cumulative number of recipients who have been vaccinated against COVID-19 at least once in Korea is 44,947,315.<sup>3</sup> Approximately 73% (32,688,629) of these people received booster shots. In the United States, nine cases of transverse myelitis were reported among 51,755,447 individuals who received vaccinations in 2021.<sup>4</sup> In Taiwan, two cases of transverse myelitis were reported among 9,987,157 individuals who received inoculations in 2021.<sup>5</sup> According to the Korean CDC, there were 23 suspected cases of myelitis among 120,296,705 individuals who received vaccinations in 2022.<sup>6</sup> Citing the reports of these countries, its frequency is estimated to be 0.2 per million of those who received COVID-19 vaccination doses. Considering the inoculation size worldwide, we think that myelitis is a relatively rare side effect; therefore, close attention of neurologists is necessary. In addition, a recent study reported that among the healthcare workers who received the BNT162b2 vaccine, approximately 60% complained of malaise or fatigue, and 45% experienced myalgia.<sup>7</sup> These symptoms were common side effects of COVID-19 vaccination; however, no case of ATM has been reported earlier.

This report was the first of its kind in Korea, which is an Asian country, and it is meant to draw the attention of neurologists. Given the number of worldwide vaccinations, dozens of cases of ATM are expected in each country. Since the annual incidence of myelitis is not high in most countries, the estimated number of ATM cases after COVID-19 vaccination is not small, as reported by Dr. Finsterer.

Criteria for rarity would vary; however, we propose that the number of reported ATM cases is relatively small given the number of vaccinations, as compared to common side effects, such as fever, headache, and myalgia. However, in the case of ATM, the severity is higher than that of the common side effects; thus, we suggest that although a rare adverse event, it should be

taken into account. Based on these reports, we hope that patients diagnosed with myelitis post-vaccination will receive adequate treatment.

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