

LETTER TO THE EDITOR

Five Japanese cases of delayed large local reactions to coronavirus disease 2019 vaccines

Dear Editor,

Delayed large local reactions, known as “COVID arm”, which are local site reactions that develop several days after coronavirus disease 2019 (COVID-19) vaccination and persist for a long duration, have been reported.^{1–5} COVID arm is mostly reported in Caucasians, but Samarakoon *et al.*⁴ examined it in black, indigenous, or people of color (BIPOC). Of the 510 COVID arm cases after COVID-19 vaccination, 55 were BIPOC, with 27 being Asians (49% of BIPOC). Here, we report the occurrence of COVID arm in five Japanese patients.

Between 1 and 23 June 2021, five patients visited the Sato Dermatology Clinic with the complaint that their upper arm local site reaction did not heal spontaneously (Table 1). None of the five considered a local reaction in the arm to be an adverse reaction to the COVID-19 vaccine. The five patients were 39–80-year-old women (mean: 64.8 years), and cases 1 and 2 were vaccinated with the BNT162b2 vaccine (Pfizer), and no reaction was seen at dose 1. Two days after dose 2, erythema and swelling with a maximum diameter of 10–14 cm were observed. Case 1 was accompanied by herpes zoster. The duration of the local response averaged 7.5 days, varying from 7 to 8 days. In cases 3, 4, and 5, local site reactions were observed 3–9 days after dose 1 of the mRNA-1273 vaccine (Moderna), with an average of 6 days. Erythema and swelling with a maximum diameter of 5–15 cm were observed. The local response duration averaged 12.3 days, varying from 10 to 17 days. Based on these findings, the skin symptoms that developed in the upper arms of five patients were diagnosed as COVID arm. The incidence of COVID arm was previously reported to be 66% for dose 1 and 30% for dose 2 of the mRNA-1273 vaccine and 15% for dose 1 and 18% for dose 2 of the BNT162b2 vaccine.² The proportion of female patients with COVID arm is as high as 83–93%.^{1,2,4} No reports have clarified the reason for this high proportion of female patients with the COVID-19 vaccine. Case 2 had a history of urticaria, and cases 3 and 5 had a history of allergic rhinitis. However, all five had no history of allergic symptoms after other vaccinations or contact allergies due to cosmetics. Polyethylene glycol, which may be found in cosmetics, is found in both the mRNA-1273 and BNT162b2 vaccines, but its role in COVID arm remains unknown.³ In addition,

T-cell lymphocytes and eosinophils have been confirmed by histopathological evaluation by biopsy of COVID arm,⁵ but the pathophysiological mechanisms of COVID arm are unknown.

In conclusion, we report the cases of five Japanese patients who showed COVID arm after COVID-19 vaccination. Further research is warranted to establish the occurrence of COVID arm in Japanese and Caucasians and its cause.

CONFLICT OF INTEREST

None declared.

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TABLE 1 Main characteristics of patients with delayed large local reactions to coronavirus disease 2019 vaccines at the Sato Dermatology Clinic

Variable	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Dermographic and clinical variables					
Age, years	39	80	71	65	69
Sex	Female	Female	Female	Female	Female
Race or ethnic group	Japanese	Japanese	Japanese	Japanese	Japanese
Allergy history	None	Urticaria	Rhinitis	None	Rhinitis
Underlying disease	None	Hypertension	Hyperlipidemia	None	None
Medications	None	Oral treatment	Oral treatment	None	None
Dose 1					
Covid-19 vaccine	BNT162b2 vaccine	BNT162b2 vaccine	mRNA-1273 vaccine	mRNA-1273 vaccine	mRNA-1273 vaccine
Systemic reactions	Myalgias, fatigue	None	Myalgias	None	Itching
Local symptoms	Pain	None	Redness, itching	Redness, swelling	Redness, swelling, itching
Day of reaction onset	5 h	None	9	3	6
Maximum lesion diameter (cm)	None	None	15	5	13
Day of resolution	3	None	10	10	17
Treatment for reaction	None	None	Antihistamine, betamethasone ointment	Antihistamine	Antihistamine, betamethasone ointment
Dose 2					
Covid-19 vaccine	BNT162b2 vaccine	BNT162b2 vaccine	mRNA-1273 vaccine	mRNA-1273 vaccine	mRNA-1273 vaccine
Location	Same arm	Opposite arm	Same arm	Same arm	Same arm
Systemic reactions	Fatigue, myalgias, varicella zoster virus	None	Fever	Fatigue	Fever
Local symptoms	Redness, swelling, pain	Redness, swelling	Redness, swelling	Redness	None
Day of reaction onset	2	2	2	10 h	1
Maximum lesion diameter-cm	10	14	Very mild	Very mild	None
Day of resolution	8	7	1	1	1
Treatment for reaction	Acetaminophen valaciclovir	None	Loxoprofen	Acetaminophen	None
"COVID arm" Delayed large local reactions					
	Dose 2	Dose 2	Dose 1	Dose 1	Dose 1