

## Delayed Skin Rash After Receiving SARS-CoV-2 mRNA Moderna Vaccine

### To the Editor:

In a year characterized by the dramatic and devastating global effects of a pandemic fueled by a new virus, the SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), it is not surprising that the announcement of an emergency use authorization for vaccines by the Food and Drug Administration was met with great hope and enthusiasm. It is abundantly clear that vaccines are needed—in addition to social distancing and masking—to prevent



**FIGURE 1.** Rash around injection site 7 days after receipt of vaccine.



**FIGURE 2.** Rash around injection site 11 days after receipt of vaccine.

coronavirus disease 2019 (COVID-19) and to protect individuals who are high risk for death. In the United States, 3 vaccines have so far been approved under emergency use authorization by the Food and Drug Administration. The first 2 were both based on the novel mRNA vaccine platform from 2 different companies, Pfizer-BioNTech and Moderna. The third one, which was approved on February 27, 2021 and currently in use, from Johnson & Johnson uses double-stranded DNA in a modified adenovirus that can enter cells but cannot replicate inside them or cause illness. The reported excellent efficacy of these vaccines has been encouraging,<sup>1</sup> although this new technological platform raises concerns for adverse effects, which might have not been elicited yet. In the phase 3 randomized, observer-blinded, placebo-controlled trial sponsored by Moderna, the mRNA vaccine under investigation had local and systemic reactions, but no safety concerns were identified.<sup>1</sup> In this same trial, rare reports of injection site rash were reported, and temporal relation (immediate vs delayed) to the injection was not delineated. As per the Centers for Disease Control and Prevention, over 80 million doses of the mRNA vaccine have been administered in the United States to date,<sup>2</sup> with

health care personnel being included in this initial phase. Physicians and patients have reported a skin rash, described as rounded, pruritic, erythematous, often tender, around the injection site, approximately 5 to 9 days after the injection of the first dose of the Moderna vaccine only. This condition has been dubbed as “COVID arm.”<sup>3</sup> Similar findings were noted in a recently published case series of 12 patients.<sup>4</sup> We report the cases of 2 of our colleagues who received the Moderna vaccine and developed similar rash.

A middle-aged nurse and a middle-aged physician received the first dose of the Moderna vaccine in December 2020. The nurse, a previously healthy woman, developed a skin rash at the injection site 7 days later (see Fig. 1). The rash was mildly indurated, pruritic, and painless. It subsided in 4 days without any permanent skin changes. There was no recurrence of this rash with the second dose of the vaccine; she received it at the opposite arm. The physician, a previously healthy man, developed a similar, nonpruritic, painless rash 11 days after the injection (see Fig. 2). The rash resolved within a few days. There was no recurrence of this rash with the second vaccine dose; he received it in the same arm. Neither of them had a fever or any other systemic or local symptoms. The physician took cephalexin empirically for 3 days.

This skin rash could be a delayed hypersensitivity reaction or a minor local allergic reaction, but the fact that it did not occur with the second dose is reassuring. This suspicion has been supported by skin biopsies that were performed in the recently published case series,<sup>4</sup> with findings of superficial perivascular and perifollicular lymphocytic infiltrates with rare eosinophils and scattered mast cells, consistent with T-cell-mediated hypersensitivity. Our colleagues developed similar rashes with the ones recently reported.<sup>3,4</sup> Patients should be informed about the possibility to develop such a rare skin phenomenon associated with the first dose of the Moderna vaccine and that should not dissuade them from receiving the second dose.

The SARS-CoV 2 vaccine, similarly to other vaccines, is associated with a few benign adverse effects, such as pain and swelling at the injection site, brief febrile illness, fatigue, and headaches. The latest reported adverse effect specifically related to the Moderna vaccine is a delayed appearance of a large red lesion around the

injection site with the first dose. Although investigation of this phenomenon is ongoing, it is encouraging that it does not occur with the second vaccine dose.

**Aikaterini Papamanoli, MD**

Department of Infectious Diseases  
Stony Brook Medical Center  
Stony Brook, NY

**Monique Thorne, EdD, MS, NPD-BC**

Department of Nursing  
Northport Veterans Affairs Medical Center  
Northport, NY

**George Psevdos, MD**

Department of Infectious Diseases  
Northport Veterans Affairs Medical Center  
Northport, NY  
george.psevdos@va.gov

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