

LETTER

Figurate purpuric eruption post-COVID-19 vaccination

Dear Editor,
COVID-19 pandemic had spread rapidly all around the world leading to variety of manifestations that ranged from being asymptomatic to death.¹ While COVID-19 vaccination has played a very important role in ending this pandemic, adverse reactions are increasingly reported including cutaneous ones. Injection-site local reactions are among the most common reported cutaneous manifestations, followed by

urticaria, pityriasis rosea-like lesions, and pernio/chilblains.² Herein we report a post-vaccine urticarial eruption that had unique presentation and could be considered a new urticarial variation following COVID-19 vaccination.

Herein, we report a 58-year-old woman with no significant past medical history presented to our clinic with 1 week history of pruritic lesions on trunk and both lower extremities. The eruption had

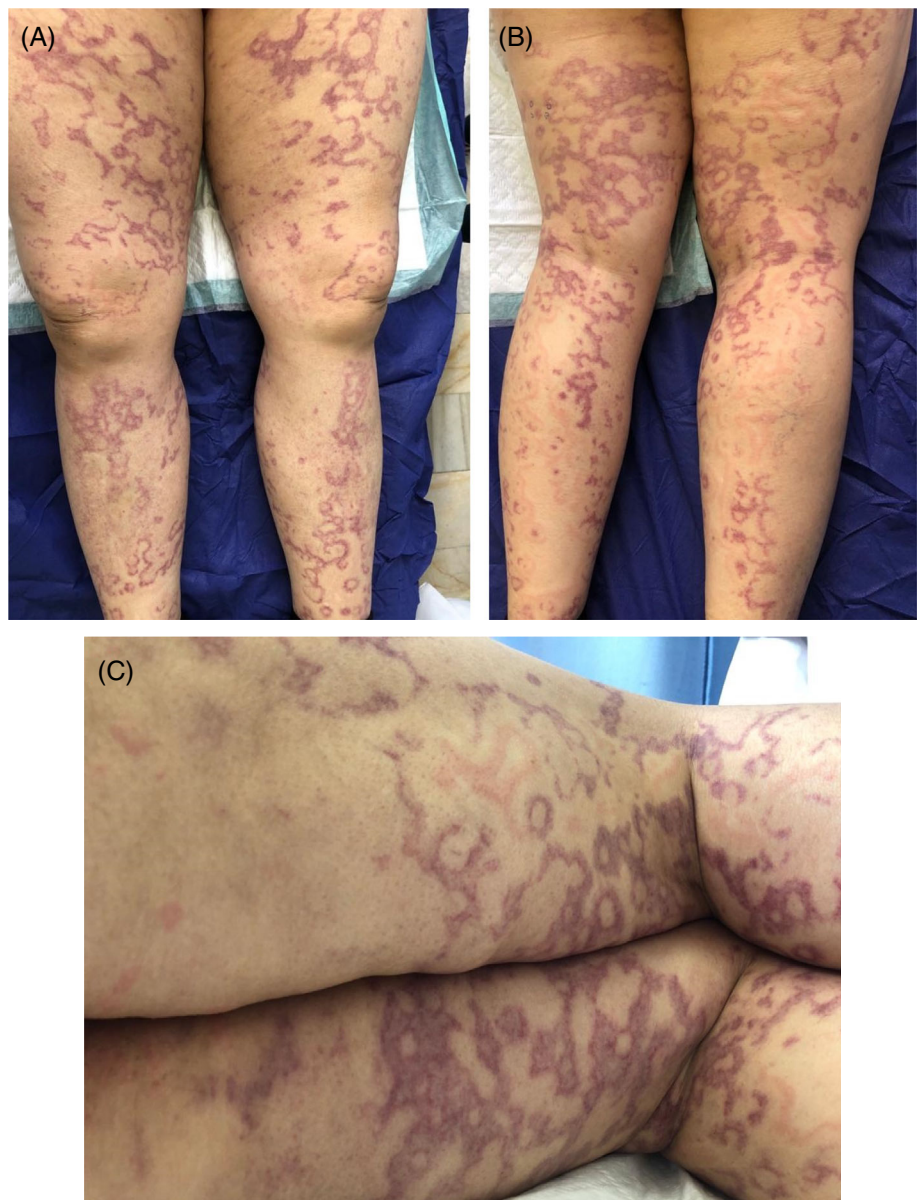


FIGURE 1 (A–C) Figurate purpuric plaques extending on the anterior and posterior sides of both lower extremities

appeared 4 days after the first dose of Sinopharm COVID-19 vaccine. Clinical examination showed figurate urticarial rash and bilateral reticulated purpuric patches on the anterior and posterior sides of lower trunk and both lower extremities (Figure 1). She had no systematic manifestations including fever, myalgia, arthralgia, or dyspnea. There was no mucosal involvement. The patient mentioned that she was infected with COVID-19 virus 1 month before vaccination. Skin biopsy from her thigh was done with differential diagnosis of urticarial vasculitis, COVID-19 rash, drug reaction and purpura annularis telangiectodes of majocchi.

Pathology results showed normal epidermis, dilated vessels with flat endothelial cells, perivascular inflammatory cell infiltrate including lymphocytes, neutrophils and few eosinophils with red blood cell extravasations, which were seen in the superficial dermis in addition to superficial dermal edema. The result was compatible with urticaria (Figure 2). The laboratory tests showed an increased level of C reactive protein of 50 mg/L and ESR 26 mm/hr. Other tests including complete blood count, albumin, CPK, CK-MB, liver function tests, creatinine, BUN, PT, PTT, and INR were all normal. Only antihistamine was recommended for her. During follow-up, her lesions resolved spontaneously in 2 weeks. She was diagnosed with reticulated purpuric urticarial rash as a vaccine-induced hypersensitivity reaction based on history, clinical picture, and laboratory findings.

Messenger RNA-based vaccines, adenoviral vector vaccines, and inactivated whole-virus vaccines are the three main COVID-19 vaccines, which are being used globally.³ Unfortunately, adverse events are increasingly reported ranging from injection-site reactions which seem to be self-limited to vaccine-induced prothrombotic immune thrombocytopenia and anaphylaxis which are very serious consequences.³

A hypersensitivity reaction can be the main cause for urticarial and morbilliform eruptions.⁴ Vaccine-associated hypersensitivity

reactions are probably IgE-mediated or IgG and complement-mediated anaphylactic or very rarely could be attributed to delayed T-cell mediated reactions.⁵ There are two types of hypersensitivity reaction that has been recorded post-COVID-19 vaccination including acute reaction that varied from urticaria, angioedema to anaphylaxis, and delayed reactions that presented with maculopapular petechial rash which were self-limited and do not contraindicate the administration of future boosters of the same vaccine.⁶

One month before vaccination our patient was infected with COVID-19 virus, and upon injection of the first dose of COVID-19 vaccine, she developed the cutaneous eruption. We suggest that the patient developed an intense inflammatory response after the first dose, which led to this presentation. The first case of vaccine-induced urticarial vasculitis, which was reported by Siddhartha Dash after the second dose of COVID-19 vaccination for a patient who was not infected previously with COVID-19 virus, suggested that the marked inflammatory response was the leading cause for vascular inflammation after the second dose.⁷ In our case, it can be suggested that antigen had presented after COVID-19 infection and the hypersensitivity inflammatory aroused after the first dose of vaccine, which mean that this patient has developed a considerable inflammatory response leading to this presentation. More studies are needed to know the exact type of the antibodies leading for this reaction.

Most of the reported post-vaccination cutaneous manifestations are self-limited, and vaccination should be continued in parallel to raising attention for possible complications.⁴ As a dermatologists, we must be familiar with cutaneous manifestations post-vaccination in order to initiate proper management.⁸ This case report is interesting for dermatologist and medical doctors because it highlights a rare post-vaccination cutaneous reaction that may seem worrying for the patient and physician.

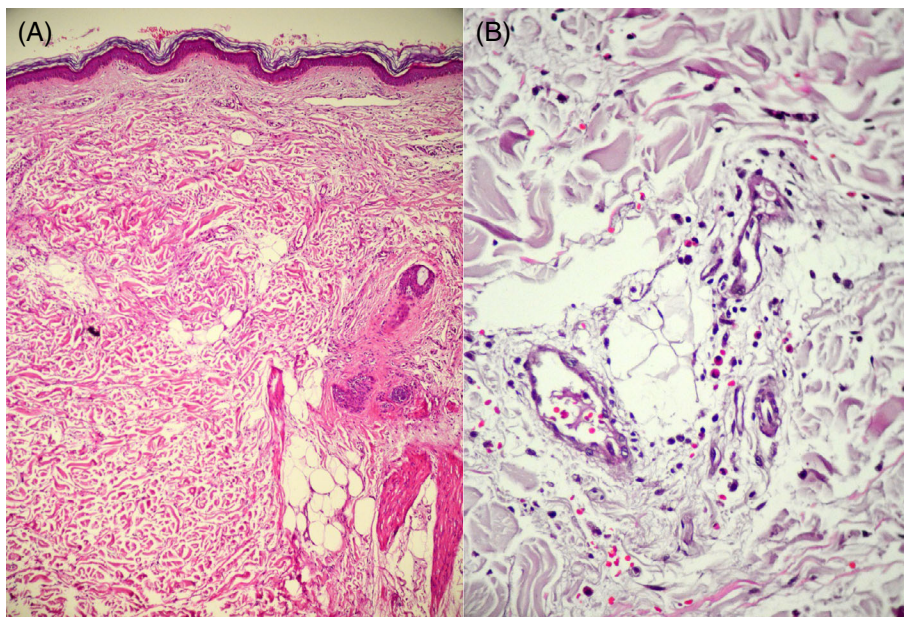


FIGURE 2 (A and B) Sections showed normal epidermis, dilated vessels with flat endothelial cells, perivascular inflammatory cell infiltrate including lymphocytes, neutrophils, and few eosinophils. Red blood cell extravasations were seen in the superficial dermis in addition to superficial dermal edema. No vasculitis was noted

ACKNOWLEDGMENTS

We would like to thank the patient for granting us permission to publish this article.

CONFLICT OF INTEREST


The authors have no conflicts of interest to declare.

AUTHOR CONTRIBUTIONS

Nastaran Namazi was involved in the diagnosis and management of the patients and have been responsible for the clinical part of the manuscript. Elena Jamali reported the result of histopathological evaluation. Reem Diab, Ghazal mardani, and Ali Kaddah did literature review and drafted the manuscript. Nastaran Namazi was responsible for final editing of the manuscript, and coordinated the study. All authors have read and approved the final manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

1. Dadras MS, Rakhshan A, Ahmadzadeh A, et al. Dermatomyositis-lupus overlap syndrome complicated with cardiomyopathy after SARS-CoV-2 infection: a new potential trigger for musculoskeletal autoimmune disease development. *Clin Case Rep.* 2021;9(10):e04931. doi:10.1002/ccr3.4931
2. Merhy R, Sarkis A-S, Kaikati J, El Khoury L, Ghosn S, Stephan F. New-onset cutaneous lichen planus triggered by COVID-19 vaccination. *J EADV.* 2021;35(11):e729-e730.
3. Bogdanov G, Bogdanov I, Kazandjieva J, Tsankov N. Cutaneous adverse effects of the available COVID-19 vaccines. *Clin Dermatol.* 2021;39(3):523-531.
4. Gronbeck C, Grant-Kels JM. Attention all anti-vaccinators: the cutaneous adverse events from the mRNA COVID-19 vaccines are not an excuse to avoid them! *Clin Dermatol.* 2021;39:674-687. doi:10.1016/j.clindermatol.2021.05.027
5. Michael MM, DeStefano F. Vaccine-associated hypersensitivity. *J Allergy Clin Immunol.* 2018;141(2):463-472. doi:10.1016/j.jaci.2017.12.971
6. Cebeci F, Kartal İ. Petechial skin rash associated with CoronaVac vaccination: first cutaneous side effect report before phase 3 results. *BMJ J Eur J Hosp Pharm.* 2021:ejhpharm-2021-002794. doi:10.1136/ejhpharm-2021-002794.
7. Dash S, Behera B, Sethy M, Mishra J, Garg S. COVID-19 vaccine-induced urticarial vasculitis. *Dermatol Therapy.* 2021;34(5):e15093.
8. Pourani MR, Dadras MS, Salari M, Diab R, Namazi N, Abdollahimajd F. Cutaneous adverse events related to COVID-19 vaccines: a cross-sectional questionnaire based study of 867 patients. *Dermatol Therapy.* 2022;35(2):e15223. doi:10.1111/dth.15223