

Dermatologic Therapy / Early View / e15282

LETTER | [Free Access](#)

Urticarial vasculitis following mRNA anti-COVID-19 vaccine

Gianluca Nazzaro, Carlo Alberto Maronese 

First published: 20 December 2021

<https://doi-org.bibliosan.clas.cineca.it/10.1111/dth.15282>

Dear Editor,

Cutaneous adverse reactions following anti-COVID-19 vaccination are being increasingly reported and comprise a wide variety of clinical phenotypes.^{1, 2} Urticarial vasculitis (UV) has been observed both in patients with COVID-19³ and in those undergoing vaccination, well before the advent of anti-COVID-19 vaccines.⁴

Herein, we report the case of a 27-year-old woman referred to the outpatient service of our Dermatology Unit for an itchy, diffuse, cutaneous eruption, which had appeared 10 days after the first dose of the Moderna anti-COVID-19 vaccine. Her medical history was noncontributory, as she denied either new drug intake or infectious episodes in the preceding months. Moreover, she did not recall of any similar episodes in the past.

Upon physical examination, an erythematous, maculopapular, and partly pomphoid rash was appreciated on the patient's trunk, upper and lower limbs, and plantar surfaces (Figure [1A,B](#)). Subjectively, the patient complained of an accompanying burning sensation. No angioedema could be observed. Dermoscopy was nonspecific, revealing only pale reddish-orangish, structureless areas with central blanching (Figure [1C](#)). Laboratory examinations were within normal ranges. For over a month, such eruption had proved refractory to oral prednisone (37.5 mg/day tapered in about 3 weeks), full-dose antihistamine drugs, a short course with clarithromycin, and topical steroids, both prescribed by the patient's General Practitioner.



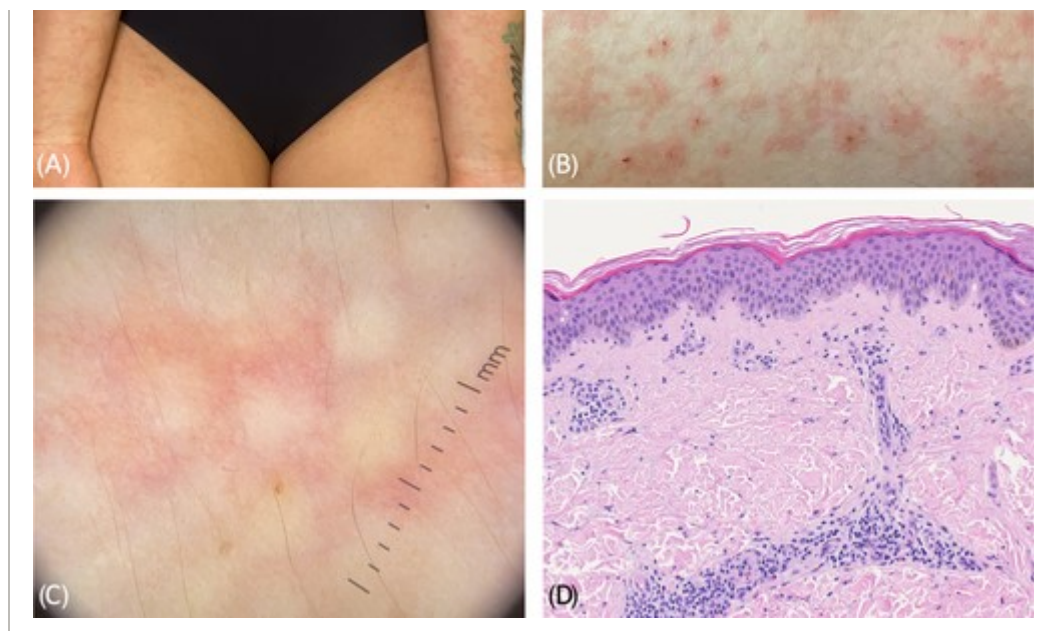


FIGURE 1

[Open in figure viewer](#) | [PowerPoint](#)

Clinical features of anti-COVID-19 vaccine-induced urticarial vasculitis (A, B). Notice the erythematous wheals with central blanching in the detail of the patient's calf. Upon dermoscopy (DermLite DL200 Hybrid, ×10 magnification, polarized mode), only pale reddish-orangish, structureless areas with central blanching were seen. No purpuric dots could be appreciated (C). Histopathological evaluation revealed superficial and mid dermal perivascular cuffing, with signs suggestive of vascular damage, eosinophil-rich infiltrates, and mild dermal edema (hematoxylin and eosin stain, ×20 magnification) (D)

Based on the integrated clinical and dermoscopic findings, a presumptive diagnosis of UV was made, and an incisional biopsy was performed for confirmation.

On histology, edema, mild capillary vasodilation, and perivascular cuffing, with signs of vascular wall damage, were seen in the superficial and mid dermis. The infiltrates consisted mainly of lymphocytes, rare mastocytes, and numerous eosinophilic polymorphonucleates, which were also present in the interstitial area (Figure 1D). A final diagnosis of UV was rendered.

A therapeutic trial with oral methylprednisolone (32 mg/day) slowly tapered over the course of 2 months led to an almost complete resolution of the lesions, with pigmentary residues on the lower limbs and rare wheals still appearing sporadically over the abdomen.

Urticarial eruptions have been observed following anti-COVID-19 vaccinations,^{1,2} with a median onset ranging between 3 and 8 days after the first and 2–5 days after the second dose of mRNA anti-COVID-19 vaccines.¹

Recently, Dash et al. published the very first case of anti-COVID-19 vaccine-induced UV due to whole virion inactivated coronavirus vaccine. The lesions appeared just 1 day after the

administration of the second dose and there was no prior history of drug intake or infection. Direct immunofluorescence was negative. After a 1-week course with oral indomethacin, topical calamine, and systemic levocetirizine, all the lesions had resolved with residual hyperpigmentation.⁵ Conversely, our case was hallmarked by a protracted course and proved refractory to most of the usual pharmacological interventions employed for UV.⁶ The timing was consistent with a primary, adaptive, immune response, whereas the report by Dash et al. suggests a secondary response in a previously sensitized individual.

Classically, UV is thought to result from a Type III hypersensitivity reaction, in which antigen–antibody complexes are deposited in the vascular lumina and trigger complement activation and neutrophil infiltration.⁶ Anti-COVID-19 vaccines induce potent adaptive immune responses, with conspicuous—yet decreasing—antibody production in the months following their administration.⁷ Depending on the subject's genetic background or possibly on molecular mimicry, this may lead to the aforementioned cascade of events.

Although the pathophysiology of anti-COVID-19 vaccine-related UV is still incompletely understood, longer treatment with systemic steroids may be required in a proportion of these cases, especially during the period of peak antibody production.

In conclusion, we reported the second case of anti-COVID-19 vaccine-induced UV, illustrating a longer course of disease than previously observed. Further research is warranted to better define the clinicopathological features of this entity.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

AUTHOR CONTRIBUTIONS

All authors have made substantial contributions to the work and have approved the final version of this article. Gianluca Nazzaro and Carlo Alberto Maronese contributed to study conception and design and data analysis. Carlo Alberto Maronese reviewed the pertaining literature. Gianluca Nazzaro and Carlo Alberto Maronese edited and approved the final draft.

INFORMED CONSENT

Written informed consent was obtained from the patient for publication of this report and accompanying images.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

REFERENCES

1 McMahon DE, Amerson E, Rosenbach M, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: a registry-based study of 414 cases. *J Am Acad Dermatol*. 2021; **85**(1): 46- 55. doi:[10.1016/j.jaad.2021.03.092](https://doi.org/10.1016/j.jaad.2021.03.092)

[Crossref](#) | [CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

2 Farinazzo E, Ponis G, Zelin E, et al. Cutaneous adverse reactions after m-RNA COVID-19 vaccine: early reports from Northeast Italy. *J Eur Acad Dermatol Venereol*. 2021; **35**: e548- e551. doi:[10.1111/jdv.17343](https://doi.org/10.1111/jdv.17343)

[Wiley Online Library](#) | [CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

3 Criado PR, Criado RFJ, Gianotti R, et al. Urticarial vasculitis revealing immunolabelled nucleocapsid protein of SARS-CoV-2 in two Brazilian asymptomatic patients: the tip of the COVID-19 hidden iceberg? *J Eur Acad Dermatol Venereol*. 2021; **35**: e563- e566. doi:[10.1111/jdv.17391](https://doi.org/10.1111/jdv.17391) , [10.1111/jdv.17391](https://doi.org/10.1111/jdv.17391)

[Wiley Online Library](#) | [CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

4 Hughes R, Lacour JP, Baldin B, Reverte M, Ortonne JP, Passeron T. Urticarial vasculitis secondary to H1N1 vaccination. *Acta Derm Venereol*. 2010; **90**(6): 651- 652. doi:[10.2340/00015555-0950](https://doi.org/10.2340/00015555-0950)

[Crossref](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

5 Dash S, Behera B, Sethy M, Mishra J, Garg S. COVID-19 vaccine-induced urticarial vasculitis. *Dermatol Ther*. 2021; **34**:e15093. doi:[10.1111/dth.15093](https://doi.org/10.1111/dth.15093)

[Wiley Online Library](#) | [CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

6 Kolkhir P, Grakhova M, Bonnekoh H, Krause K, Maurer M. Treatment of urticarial vasculitis: a systematic review. *J Allergy Clin Immunol*. 2019; **143**(2): 458- 466. doi:[10.1016/j.jaci.2018.09.007](https://doi.org/10.1016/j.jaci.2018.09.007)

[Crossref](#) | [CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

7 Naaber P, Tserel L, Kangro K, et al. Dynamics of antibody response to BNT162b2 vaccine after six months: a longitudinal prospective study. *Lancet Reg Health Eur*. 2021; **10**:100208. doi:[10.1016/j.lanepe.2021.100208](https://doi.org/10.1016/j.lanepe.2021.100208)

[Crossref](#) | [PubMed](#) | [Google Scholar](#)

About Wiley Online Library

Privacy Policy

Terms of Use

Cookies

Accessibility

Publishing Policies

Help & Support

Contact Us

Training and Support

DMCA & Reporting Piracy

Opportunities

Subscription Agents

Advertisers & Corporate Partners

Connect with Wiley

The Wiley Network

Wiley Press Room