

Livedo reticularis on bilateral knees after the third dose of messenger RNA-1273 SARS-CoV-2 vaccine

To the Editor: Livedo reticularis has been described in both mild and severe COVID-19 cases,^{1,2} yet it is not associated with SARS-CoV-2 vaccination.³ Here, we report a case of livedo reticularis on the knees after the third 100- μ g dose of the messenger RNA (mRNA)-1273 SARS-CoV-2 (Moderna) vaccine that resolved with warming.

A 65-year-old woman presented to the hospital with a 3-week history of rash on her knees. One week prior to the onset of the rash, she received the third full dose of the mRNA-1273 vaccine. She had completed the 2-dose series 5 months prior without side effects. The appearance of the rash was accompanied by diarrhea and acute kidney injury. Four months prior to presentation, she had received a bilateral lung transplant for chronic obstructive pulmonary disease and was on tacrolimus, mycophenolic acid, and low-dose prednisone. She also had a remote history of coronary artery disease with stent placement and was taking aspirin, metoprolol, and rosuvastatin.

The patient had fixed pink and purple blanching patches overlying the knees with a surrounding violaceous retiform network (Fig 1, A). The hands, feet, and elbows were unaffected. There was no associated pain and no history of the Raynaud phenomenon, pernio, photosensitivity, trauma, or

recent invasive procedures. There was no extreme cold exposure; however, the presentation was occurring during moderately cold autumn temperatures. Heat packs were applied overnight to the left knee, leading to near resolution of the pink and purple patches compared with the right knee on the following day (Fig 1, B). The right knee was subsequently treated, leading to the resolution of the lesions.

Initial laboratory evaluation was notable for the creatinine level of 3.47 mg/dL (baseline level, 0.5–1.0 mg/dL). Tacrolimus level was supratherapeutic at 23.9 μ g/L (reference level, 6–8 μ g/L). Findings of coagulation, autoimmune, and infectious studies were within the normal ranges. SARS-CoV-2 polymerase chain reaction was negative, serum SARS-CoV-2 receptor-binding domain IgG of 0.746 was positive, and serum SARS-CoV-2 receptor-binding domain IgA of 0.007 was negative. Histopathology demonstrated mild dermal edema with minimal inflammation. The etiology of the supratherapeutic tacrolimus levels remained unknown. The acute kidney injury resolved on the fifth day of the hospital admission.

Livedo reticularis occurs when there is increased visibility of the venous plexus often caused by reduced arterial inflow or venodilation.⁴ Endotheliitis and vasoconstriction have been hypothesized to lead to livedo reticularis during SARS-CoV-2 infection.² This is the first report, to



Fig 1. A, Livedo reticularis–like lesions. Pink and purple reticulated patches limited to the knees on the initial presentation (3 weeks after onset of the rash and 4 weeks after receiving messenger RNA-1273 vaccination). Sites A and B on the right knee indicate biopsy locations. **B,** Near resolution of livedo reticularis patches on left knee on day 3 after hot pack application overnight. Right knee, untreated, with livedo reticularis–like purple patches and dressing over the biopsy site.

our knowledge, of livedo reticularis following SARS-CoV-2 vaccination. Livedo reticularis is the most likely diagnosis, given the location on the lower extremities, the bland histopathology, and the resolution of the reticulated lesions with warming. We postulate that vasoconstriction from elevated tacrolimus levels⁵ predisposed the patient to livedo reticularis following the third 100- μ g dose of SARS-CoV-2 mRNA vaccine. Pernio is a less likely diagnosis, given the location on nonacral sites and lack of lymphocytic infiltrate on the 2 biopsies.

In the case reported here, livedo reticularis was strikingly limited to the knees following the third dose of the mRNA-1273 vaccine and was responsive to warming (Fig 1). We report this benign case to the community, given the likelihood of repeated vaccine series in patients with medically complex cases.

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Michelle Amy Mintz, PhD,^{a,b} Neba Jariwala, MD,^a
Victoria Fang, MD, PhD,^a Alexandra Coromilas,
MD,^a and Misha Rosenbach, MD^a

From the Department of Dermatology, University of Pennsylvania, Philadelphia, Pennsylvania^a; and UCSF School of Medicine, San Francisco, California.^b

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Correspondence to: Misha Rosenbach, MD, Department of Dermatology, Hospital of the University of Pennsylvania, 3600 Spruce Street, 2nd Floor, Maloney Building, 2M47, Philadelphia, PA 19104-4283

E-mail: misha.rosenbach@pennmedicine.upenn.edu

Conflicts of interest

Dr Rosenbach is a member of the American Academy of Dermatology's COVID-19 Ad Hoc Task Force. Drs Mintz, Jariwala, Fang, and Coromilas have no conflicts of interest to declare.

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