A Dermatologic Manifestation of COVID-19: Transient Livedo Reticularis

Iviensan F. Manalo, MD, Molly K. Smith, Justin Cheeley, MD, Randy Jacobs, MD

PII: S0190-9622(20)30558-2
DOI: https://doi.org/10.1016/j.jaad.2020.04.018
Reference: YMJD 14444

To appear in: Journal of the American Academy of Dermatology

Received Date: 5 April 2020
Accepted Date: 6 April 2020


This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2020 by the American Academy of Dermatology, Inc.
A Dermatologic Manifestation of COVID-19: Transient Livedo Reticularis

Iviensan F. Manalo, MD,1 Molly K. Smith,2 Justin Cheeley, MD,1,3 Randy Jacobs, MD4

1Department of Dermatology, Emory University School of Medicine, Atlanta, Georgia
2Pariser Dermatology Specialists, Norfolk, Virginia
3Depatment of Medicine, Emory University School of Medicine, Atlanta, Georgia
4University of California Riverside School of Medicine, Riverside, California

Word count:
Body (500)
Figures (2)

Corresponding Author:
Iviensan Manalo, MD
Department of Dermatology
Emory University School of Medicine
1525 Clifton Road, Suite 100
Atlanta, GA 30329
Phone: 404-727-3669
ivie.manalo@gmail.com

Keywords
Coronavirus, COVID-19, livedo reticularis, Severe acute respiratory syndrome coronavirus 2, SARS-CoV-2, disseminated intravascular coagulation
Funding sources

None
We read with great interest “COVID-19 can present with a rash and be mistaken for Dengue.”
To date, other described COVID-19-associated rashes include: nondescript erythematous rash, urticaria, and vesicles in Italy,\textsuperscript{1} and dusky acrocyanosis and dry gangrene in critical intensive care unit (ICU) patients in Wuhan, China.\textsuperscript{2} No photos were available for the first two reports. We present two cases of transient unilateral livedo reticularis (LR) in COVID-19-positive non-ICU subjects to bring awareness to a dermatologic manifestation.

**Case 1:**
A 67-year-old Caucasian male was hospitalized for COVID-19 (nasopharyngeal swab PCR-confirmed) management. His symptoms began 10 days prior with low-grade fever, nasal congestion, post-nasal drip, and cough without shortness of breath. Seven days into his symptoms, he noted a transient non-pruritic blanching unilateral livedoid patch on the right anterior thigh resembling LR (Figure 1). The eruption lasted for 19 hours and resolved by the time dermatology evaluated the patient; thus no biopsy was taken. Concurrent with the lacy patches on the leg, the patient also noted gross hematuria and generalized weakness. In concert with the netlike exanthem, the hematuria resolved within 24 hours. He was eventually discharged home stable on supplemental oxygen.

**Case 2:**
A 47-year-old Caucasian female with history of Celiac disease, Hashimoto’s thyroiditis, and portal vein thrombosis in 2017 with negative work-up for a hypercoagulable state (attributed to a long plane flight combined with prior oral contraceptive) tested COVID-19-positive. Symptoms began with a mild headache, sinus pressure, anosmia, and fever, with highest recorded
temperature of 37.9°C. Ten days after testing positive, and with complete clinical convalescence of COVID-19 symptoms, she was sitting outside in long pants under direct sunlight for approximately 20-30 minutes. A unilateral asymptomatic rash on her right leg resembling LR was noticed incidentally immediately upon moving indoors (Figure 2) despite an equal amount of sun exposure on both legs. The rash lasted approximately 20 minutes and did not recur upon re-challenge with sun exposure the following day.

**Discussion**

Livedo reticularis is caused by conditions, including disseminated intravascular coagulation (DIC), that reduce blood flow through the cutaneous microvasculature system leading to deoxygenated blood accumulation in the venous plexus.\(^3\) We hypothesize that the microthromboses that manifest in other organs (e.g. cardiopulmonary)\(^4\) and as DIC\(^2,5\) in critically ill COVID-19 patients are the most plausible etiology to our patients' LR presentations. We postulate that manifestations can vary from transient LR in mild-moderate cases to acrocyanosis in critically ill patients. Because our patients were not critically ill, perhaps they had transient low-grade DIC, and the concurrent hematuria in Patient 1 could be explained by a possible micro-embolic event causing glomerulonephritis or cystitis. However, due to the evanescent nature of their LR-like eruptions, they were not biopsied. Interestingly, exanthems have not been described for other coronaviruses such as SARS-CoV and MERS-CoV. In the future, histopathology of active exanthema may be helpful in elucidating the underlying pathology of the cutaneous and perhaps systemic manifestations of COVID-19 infection. Additionally, platelet count, coagulation studies, and fibrin degradation products assessments in these patients would be enlightening.
References


Figure 1. Patient described in Case 1 with transient unilateral livedo reticularis patch on the right thigh.
Figure 2. Patient described in Case 2 with unilateral livedo reticularis eruption on right leg despite equal amount of sunlight heat exposure under pants on bilateral legs; the eruption lasted for 20 minutes; and did not recur upon rechallenge with re-exposure to the sunlight the next day.