# COVID-19: A new cause of cutaneous microvascular occlusion syndrome

Dear Editor,

Cutaneous Microvascular occlusion syndrome (MVOS) is a clinically significant skin lesion that manifests as retiform purpura and noninflammatory bland necrosis. On the one hand, it can serve as a marker for identifying associated critical systemic conditions; on the other hand, it can help prevent potentially life-threatening and organ-threatening complications through timely diagnosis and management.[1]

MVOS outcomes are typically determined by the severity, duration, specific underlying cause, and timely and appropriate management. Cutaneous lesions associated with MVOS are frequently misdiagnosed as cutaneous vasculitis or misinterpreted as systemic diseases with little attention paid to skin lesions.

Due to the wide range of differential diagnoses for cutaneous MVOS and the complexity, time commitment, and cost of the evaluation, one of the best approaches is to consider major pathophysiologic categories when making timely decisions.[1,2]

According to pathophysiological mechanisms, the causes of cutaneous microvascular occlusion include platelet-related thrombopathy (e.g., heparin-induced thrombocytopenia syndrome), cold-induced precipitation or agglutination (e.g., cryoglobulinemia), angioinvasive organisms (e.g., ecthyma gangrenosum), embolization (e.g., cholesterol embolus), systemic coagulopathies (e.g., disseminated intravascular coagulation [DIC]), vascular coagulopathies (e.g., livedoid vasculopathy/atrophie blanche), cell occlusion syndromes (e.g., intravascular lymphoma), and iatrogenic causes (e.g., drug-induced calciphylaxis).[1,2]

At the start of the COVID-19 pandemic, several cutaneous noninflammatory purpuras and acral necrosis cases were reported as a manifestation of COVID-19 infection caused by MVOS.[2,3]

Although the exact mechanism by which COVID-19-associated cutaneous lesions occur is unknown, several prevalent theories exist. Several clinical and histological findings suggested that COVID-19 infection could manifest as skin microvascular occlusions.[2,3]

Specific skin lesions in COVID-19 patients, such as livedo reticularis and livedo racemosa, have been hypothesized to result from the accumulation of microthrombosis in other organs, thereby reducing blood flow to the cutaneous microvasculature system.[2-4]

DIC and the accumulation of deoxygenated blood in the venous plexus due to hypoxia may explain such manifestations.[4]

Furthermore, this skin manifestation of COVID-19 infection may be associated with an immune response to infection, activation of an inflammatory response, and pauci-inflammatory thrombogenic vasculopathy with complement factor deposition.[5]

We would like to emphasize COVID-19 as a possible new cause of cutaneous MVOS in patients with noninflammatory purpura and bland necrosis during the severe acute respiratory syndrome coronavirus 2 pandemic. We hope that this letter helps raise awareness regarding the possible role of COVID-19 and other systemic inflammatory syndromes in the development of MOS.

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## Conflicts of interest

There are no conflicts of interest.

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