

COVID-19 Pandemic: Are There Unique Cutaneous Manifestations in Patients Infected With SARS-CoV-2?

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INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the single-stranded RNA beta-coronavirus responsible for the novel coronavirus disease 2019 (COVID-19) causing respiratory diseases, including pneumonia and acute respiratory distress syndrome.¹ Although not fully studied, the predominant routes of transmission are respiratory droplets and direct contact.¹ SARS-CoV-2 was first identified in Wuhan in early December 2019 and spread rapidly and globally within the next few months.¹ This led to the World Health Organization (WHO) declaring COVID-19 a pandemic on March 11, 2020 after more than 118,000 cases were reported. These cases have only increased since then without any sign of declining as of April 13, 2020.^{2,3}

Cutaneous manifestations have been reported in COVID-19 patients, which is unsurprising given the established connection between exanthems and viral infections, including those witnessed in SARS-CoV patients occasionally during the 2003 SARS epidemic.^{4,5} Many reports detail generalized sporadic erythematous exanthems along the trunk or the extremities that resolve spontaneously within days without treatment.^{1,4,6,7} Some may have additional clinical features such as petechiae as reported by Joob and colleagues. Few cases have reported on generalized urticaria.^{8,9} Recalcati and colleagues also report one patient that developed a vesicular eruption mimicking varicella.⁴ Disease severity did not correlate with these exanthems. Lastly, several critically ill COVID-19 patients have been reported to have vasculopathic presentations, including ischemia of the lower extremities and acral regions associated with antiphospholipid syndrome.¹⁰⁻¹³ Ma and colleagues treated dry gangrene of right index finger associated with antiphospholipid syndrome with multiple series of plasma exchange to lower antiphospholipid antibodies.¹¹ Zhang and colleagues report seven COVID-19 patients had acro-ischemia in the ICU with presentations of cyanotic digits, skin bulla, and dry gangrene.¹³ These patients interestingly had elevated D-dimer, fibrinogen, and fibrinogen degradation product and were treated with low dose heparin. Four of these patients developed disseminated intravascular coagulation (DIC), and five died from acro-ischemia within a median time of 12 days.

Like other viral infections, exanthems appear as an immune hypersensitivity response to the viral DNA or RNA.¹⁴ These viral exanthems are typically transient and resolve on their own. Generally, respiratory viruses produce diffuse morbilliform or erythematovesicular eruptions.¹⁴ These eruptions may be pruritic and petechial.^{6,9} SARS-CoV-2 may trigger antiphospholipid syndrome, and infect endothelial cells, leading to DIC, and thrombosis.¹⁰ This has been shown in COVID-19 patients that had severe thrombosis associated with high titer antibodies for anticardiolipin antibodies and anti- β 2 glycoprotein-I, and elevated D-dimer.^{9,10} SARS-CoV-2 can also activate lymphocytes to instigate cytokine storms, which can create systemic inflammation and vasculitis that may produce painful acrosyndromes.¹⁰ Coagulopathy and vasculitis can cause local ischemia, leading to ulcer or gangrene formation, and death.

In conclusion, we report that the erythematous exanthems, such as the morbilliform eruption, are not novel to SARS-CoV-2 infection and may resolve spontaneously without treatment. However, it is imperative to recognize cutaneous signs of vasculitis or vasculopathy early in suspected COVID-19 patients because these can cause serious complications, such as limb ischemia. Vasculopathy may be a sign of hypercoagulability, which is more prevalent in severely ill COVID-19 patients and should be aggressively managed to prevent limb ischemia, and ultimately death.

DISCLOSURES

We declare no conflicts of interest.

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