

## Case Report

# Cutaneous Manifestations of COVID-19: Case Report and Discussion

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### Abstract

#### Introduction

Various cutaneous manifestations of COVID-19 have been described and awareness of these findings is beneficial for clinicians for an accurate diagnosis.

#### Clinical Findings

We present a case of skin findings consistent with acral microthrombi induced changes in an elderly gentleman who was positive for COVID-19.

#### Outcomes

The patient had a mild course of COVID-19. Cutaneous findings resolved after one week from presentation with supportive care.

#### Conclusions

This case highlights the importance of awareness of manifestations of COVID-19, which may assist in timely diagnosis and prevention of transmission.

#### Keywords

SARS-CoV-2; COVID-19; coronavirus infections/complications; vasculitis; telemedicine

### Introduction

Infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2, COVID-19) has presented in many unusual ways that have continued to intrigue the medical community. Its presentation ranges from asymptomatic to severe pulmonologic complications and death. Additionally, cutaneous manifestations have been well documented and can occur in up to 20% of cases.<sup>1</sup> While so-called “COVID Toes” have become pervasive in the popular and medical literature, skin findings associated with COVID-19 range from more to less specific and include erythematous, petechial, urticarial and vesicular rashes.<sup>1-3</sup> As the pandemic continues to evolve, it is important to make note of unique presentations and highlight the importance of reporting confirmed or suspected cutaneous associations with COVID-19. We present a case that highlights a suspected cutaneous manifestation in an elderly gentleman with a diagnosis of COVID-19.

### Clinical Findings

An elderly gentleman with a diagnosis of COVID-19 and multiple comorbidities including mild cognitive impairment, hypertension, sick sinus syndrome and moderate pulmonary hypertension, presented initially via telemedicine to his primary care physician due to the sudden onset of painful, blue hands and fingertips. He reported difficulty with grasping objects due to the discomfort. He and his wife were diagnosed with COVID-19 via polymerase chain reaction (PCR) at an outside facility 3 weeks prior to presentation. He had no new medications. He had minimal respiratory symptoms despite multiple comorbidities. Examination of the hands revealed violaceous discoloration of the fingertips with multiple linear erosions. Reportedly, he had preserved capillary refill and brisk distal pulses. After acceptance, the D-dimer value was measured as 450 µg/L.

## Outcomes

The patient was evaluated by dermatology with a “store-and-forward” method. In this scenario, a photograph was obtained by the patient (**Figure 1**) and sent to the referring physician. This photo demonstrates dusky, erythematous digits with linear fissuring. Biopsy evaluation was not possible in this setting. In light of the recent diagnosis of COVID-19 and sudden onset of painful, violaceous fingertips, the diagnosis of acro-ischemia secondary to COVID-19 was made. Additionally, signs of irritant contact dermatitis were visible in the photograph. These findings were attributed to frequent handwashing by the patient in an effort to avoid transmission of COVID-19. Other diagnoses were considered at this time, including pernio and connective tissue diseases. These diagnoses were considered less likely as an isolated finding that improved with recovery from COVID-19. Acrocyanosis associated with exposure to cool temperatures was also considered, but in our patient’s case he had no known exposure and no improvement with warming. The discoloration and ulceration of his fingertips resolved after 1 week with the only intervention being emollients. He continued to do

well at a subsequent 1-month follow up and had no evidence of respiratory or dermatologic sequelae.

## Discussion

This case is an example of one of the possible unusual presentations of COVID-19 that clinicians may be presented with in their practice, whether in person or while practicing telemedicine. Limitations of this investigation include lack of in-person assessment and routine histopathological examination. Without a more thorough investigation, it is challenging to say if these lesions represented acral ischemia or pernio-like lesions. In either regard, infection with COVID-19 is believed to be the cause of this patient’s skin findings.

Cutaneous manifestations of COVID-19 described in the literature vary widely and include both the more well-known pernio- or chilblains-like lesions and the less well-known presentations, including erythematous rash, petechial rash, livedo reticularis type lesions, urticarial rash and vesicular rash.<sup>1-3</sup> While the most frequently discussed cutaneous find-



**Figure 1.** Linear and scattered erosions with background faint dusky erythema on bilateral distal fingertips, consistent with irritant contact dermatitis in a COVID-19 positive patient.

ing may be “COVID Toes,” the most common finding is a generalized morbilliform, or measles-like, rash.<sup>3</sup> Morbilliform rash is a relatively nonspecific finding and may be overlooked as related to COVID-19 since it is frequently attributed to a drug reaction. Pernio-like findings are the most frequently reported cutaneous lesions associated with COVID-19 and have been described more frequently in young, otherwise healthy individuals with mild COVID-19.<sup>4,5</sup> These findings are in partial contrast to the patient in this case, who was elderly with multiple comorbidities, though with a mild presentation of COVID-19. Additionally, feet have been affected more than hands, as in this case.<sup>4,5</sup> Timing of the onset of these lesions is from 3 to 13 days after diagnosis.<sup>3</sup> Pernio-like lesions are associated with a generally mild course, whereas presentation with retiform purpura is associated with more severe disease and is seen in ill, hospitalized patients.<sup>6</sup> However, emerging data is calling into question any true association with pernio-like lesions and COVID-19 infection.<sup>7</sup> In our case, the patient responded with observation and conservative measures, such as warming and emollients. If the patient’s symptoms had ceased to improve, a trial of topical steroids would have been a reasonable option. Topical corticosteroids would be beneficial for treatment of the fissuring related to contact dermatitis and have been used to treat pernio.<sup>8</sup> In general, treatment for pernio-like lesions of COVID-19 is similar to that of primary pernio and includes topical steroids, physical warming and calcium channel blockers.<sup>9</sup>

The pathophysiology behind these findings is unclear, but theories exist regarding the different presentations of COVID-19 associated skin findings. In the case of pernio-like lesions, the most widely accepted theory is that an abundance of type 1 interferons (INF-1) and a cytokine storm lead to the microangiopathy that characterizes pernio.<sup>3,4</sup> It is possible that some of the cutaneous findings can be attributed to viral particles in the blood causing an immune response that leads to a lymphocytic vasculitis, which leads to destruction of the vasculature.<sup>3</sup> Keratinocytes themselves may or may not be a direct target of the immune response, or they may be damaged due to nearby inflammation.<sup>3,5</sup> Another potential factor in the development of skin lesions is a COVID-19 associated coagulopathy, which has been implicated in cases

of thromboembolism and lab abnormalities such as antiphospholipid antibodies and elevated D-dimer.<sup>5,10,11</sup> It is postulated that multiple microthrombi lead to reduced blood flow to the cutaneous vasculature, leading to clinically evident acral ischemia.<sup>3</sup>

Challenges facing clinicians are multiple and include the speed at which information about the virus emerges and nonspecific skin findings associated with COVID-19. Additionally, the ability to accurately evaluate those suspected with the virus can be complicated by the use of telemedicine or delayed presentation. Information about this disease is widely available but rapidly changing. An algorithm approach has been suggested to help the dermatologist or other clinician faced with a rash in a patient who has a suspected or confirmed case of COVID-19 with a tool to classify the disease.<sup>2</sup> A simplified algorithmic approach adopted from Orgega-Quijano et al. is to delineate if the rash is non-blanching or blanching.<sup>2</sup> If it is non-blanching, a diagnosis of acral ischemia or livedo reticularis should be considered. Clinicians who are concerned about a rash are encouraged to take photographs (with patient permission) if dermatology evaluation is not readily available. In our case, a “store-and-forward” method of evaluation was used and demonstrates the changing landscape of gathering historical and physical information in treating patients. This method highlights the need of systems in place to accurately and quickly evaluate complaints in individuals with suspected or confirmed infections. Furthermore, as individuals may be otherwise asymptomatic, recognition of cutaneous findings associated with COVID-19 is of great importance to guide testing.

Collective understanding of the varied presentations of COVID-19 is evolving with the course of this unprecedented pandemic. A collaborative database supported by the American Academy of Dermatology (AAD) exists for any clinician who suspects COVID-19 related skin manifestations. Clinicians who suspect a COVID-10 related skin finding are encouraged to report this to the AAD COVID Database ([www.aad.org/covidregistry](http://www.aad.org/covidregistry)).

### Conflicts of Interest

The authors declare they have no conflicts of interest.

Dr. Russell is an employee of LewisGale Hospital Montgomery, a hospital affiliated with the journal's publisher.

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