



# Cutaneous manifestations of COVID-19: report of three cases

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## Abstract

Coronavirus disease 2019 (COVID-19) shows rapid spread around the world. Its classic presentation is a respiratory illness. However, cutaneous manifestations have rarely been described as the first clinical manifestation in patients with this infection. The aim of this article is to describe cutaneous manifestations in patients with COVID-19 through three case reports.

**Keywords** COVID-19 · Cutaneous manifestations · COVID-19 symptoms

## Introduction

Coronavirus disease 2019 (COVID-19), first detected in Wuhan City on December 31, 2019, has emerged as a public health emergency [1]. In Tunisia, the epidemic phase of COVID-19 began in March 2020 and resulted in implementing special emergency measures. By May 2, 2020, 1013 confirmed cases and 42 deaths have been caused by COVID-19.

The most common symptoms of COVID-19 are fever, dry cough, fatigue, myalgia and dyspnea [1–3]. However, other symptoms have been reported, including gastrointestinal and neurological manifestations. Cutaneous lesions were not recognized at the early stages of the pandemic, but have received much recent attention in scientific journals [4–8].

This article describes three cases of COVID-19 revealed by cutaneous manifestations.

## Case 1

A 20-year-old woman, belonging to medical staff, presented cervical, axillary and inguinal nodes. Four days later, she developed a fever and pruritic maculopapular lesions (Fig. 1) and urticaria (Fig. 2) on the trunk. Subsequently, the rashes spread to form target lesions (erythema multiform like), painful eroded and ulcerated papules, small plaques on the upper limbs (Fig. 3a, b) and purple to blue lesions in the thighs (Fig. 4). Laboratory tests revealed a lymphopenia. The naso-pharyngeal swab tested for SARSCoV-2 RNA amplification was positive. In the following days, she developed dry cough. The oxygen saturation was 98%. The chest CT scan was normal. She remained hemodynamically stable, and she had not any treatment. The patient cured from COVID-19 about one month after the start of the clinical picture; she kept post-inflammatory hyperpigmentation on the thighs (Fig. 5).

## Case 2

A 35-year-old woman, belonging to medical staff, presented burning retrosternal discomfort and a dry cough without fever 7 days after a contact with COVID-19 patient. Three days later, she developed itchy rash on upper chest (Fig. 6) and livedo reticularis on the arm (Fig. 7). The naso-pharyngeal swab tested for SARSCoV-2 RNA amplification was positive. Evolution was favorable in 14 days, and the cutaneous manifestations were completely disappearing after 3 days.

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**Fig. 1** Maculopapular rash (morbilliform) on the trunk



**Fig. 2** Urticarial lesions on the trunk



**Fig. 3** **a** Target lesions (erythema multiforme-like) in the forearm. **b** Eroded and ulcerated papules and small plaques on the arm

### Case 3

A 36-year-old woman complained of arthralgia, myalgia and low-grade fever. She was living with her husband, who was diagnosed with COVID-19. The naso-pharyngeal swab tested for SARSCoV-2 RNA amplification was positive. Four days later, she developed a maculopapular rash on sub-mammary fold and trunk, anosmia and ageusia. These cutaneous lesions healed in 7 days.

### Discussion

Coronavirus disease 2019 (COVID-19) is an emerging infectious disease. Increasing evidence shows that coronavirus isn't always confined to the respiratory tract. However, skin manifestations are increasingly reported in the literature.

Cutaneous manifestations present less than 1% of the cases in the Chinese epidemiological series [1] and more than 20% of the cases (18 confirmed cases out of 88) in Italian series in Lombardy [9]. However, their exact incidence is unknown due to the fact that these lesions were often missed in the epidemiological studies since COVID-19 testing was not done for most of mild disease cases and lesions may be transitory.

Most of these publications lack iconography because of the high risk of contagion. The most common manifestations reported were maculopapular rash and generalized urticaria [9–11]. However, chickenpox-like lesions, livedo, cutaneous necrosis, erythema multiform and pseudo-chilblain lesions were rarely reported [4–6, 12]. The majority of these lesions were localized on the trunk, and they occurred at the onset of the disease like in our cases [8, 9]. The majority of



**Fig. 4** Purple to blue lesions in the thighs



**Fig. 6** Itchy rash on upper chest



**Fig. 5** Postinflammatory hyperpigmentation on the thighs



**Fig. 7** Livedo reticularis on the arm

studies have reported no correlation between the severity of COVID-19 and skin involvement [8].

Almost all studies reported the healing of the cutaneous lesions between 7 and 10 days [9]. In our study, one patient is keeping a scar.

In our case reports, the same patient had several aspects of skin involvement. In general, it is very uncommon that

a virus can lead to various cutaneous manifestations, and especially in the same patient. The mechanisms of this polymorphism remain poorly elucidated.

It was underlined that the COVID-19 infection can lead to systemic vasculitis manifestations and thrombotic disease, thus causing several complications [13–16]. The clinical manifestations may depend on the location, the size and the depth of the vessels involved [17]. The pathophysiological mechanisms of dermatological manifestations of COVID-19 are not well documented. The lymphocytic vasculitis and microthrombi described in some studies may be induced by blood immune complexes that activate cytokines [16, 18, 19]. The virus could also induce a modification in the structure of the keratinocyte [19].

In conclusion, paucisymptomatic patients who initially presented with skin involvement are easily missed or misdiagnosed as other viral or allergic diseases. So, the clinician should be aware of this skin involvement in COVID-19 to make early diagnosis. On another side, further histological and clinical studies are required to better illustrate the cutaneous features and the vasculitis mechanisms.

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## Compliance with ethical standards

**Conflicts of interest** The authors declare that they have no conflicts of interest concerning this article.

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