

A Study of Cutaneous manifestations of Covid-19Parmil Kumar¹, Jasmeet Singh^{2*}¹Assistant Professor, Department of Dermatology, World College of Medical Science and Research, Jhajjar, Haryana, India²Senior Resident, Department of Dermatology, Saraswati Institute of Medical Sciences, Hapur, Uttar Pradesh, India

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Abstract

Covid 19, the pandemic affecting mankind is an infection from a species of corona virus. Though known to cause mild to severe respiratory infection, it has present in various forms. Skin manifestation is the latest one of interest of researchers across the world. **Aims and Objectives:** To the study the cutaneous manifestations of COVID-19 and To compare the cutaneous lesions with other lesions. **Methodology:** 50 patients with cutaneous manifestations of COVID -19 were recruited in to the study. The data was analysed to segregate in to various typologies. **Conclusion:** Cutaneous manifestations presented in variety of forms ranging from urticarial rashes to purpuric lesions.

Keywords: Covid-19, respiratory, infection.

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Introduction

COVID-19 is known to affect different organ systems. Skin is no exception. Initially, it was thought of causing influenza like illness to pneumonia. Hence, the COVID 19 was almost in domain of Internists, Pulmonologists and Intensivist. However, with evolution of time and research done across the globe, various non-pulmonological manifestations were brought to the frontline.

There are few descriptions of the cutaneous manifestations of COVID-19. 20 % of patients in an a european country had cutaneous lesions, described as rash or urticaria and including one case of 'chickenpox-like' lesions. Other case reports from elsewhere describe a rash mistaken for dengue,acro-ischaeamia in children and critical patients, plaques on the heels, and urticaria. Most of these reports lack clinical images, due to safety concerns, and they describe few patients in hospital settings.

Covid 19 is presenting in polymorphic ways. Its representative patterns are varied in nature and difficult to group. However, under broad areas they are described as below by Galvan et al following a study in Spain :

1. Acral areas of erythema-oedema with some vesicles or pustules (pseudo-chilblain) (19% of cases). These lesions may resemble chilblains and have purpuric areas, affecting the hands and feet. They were usually asymmetrical.
2. Other vesicular eruptions (9%). Some presented on the trunk and consisted of small monomorphic vesicles (i.e. at same stages, unlike polymorphic vesicles in chickenpox). They may also affect the limbs, have haemorrhagic content, and become larger or diffuse.
3. Urticarial lesions (19%). These are mostly distributed on the trunk or dispersed. A few cases were palmar.
4. Other maculopapules (47%). Some of these cases showed perifollicular distribution and varying degrees of scaling. Some were described as being similar to pityriasis rosea. Purpura was also sometimes present, either punctiform or on larger areas. A few cases showed infiltrated papules on the extremities, mostly the dorsum of

the hands, that look pseudovesicular or resemble erythema elevatum diutinum or erythema multiforme.

5. Livedo or necrosis (6%). These patients showed different degrees of lesions suggesting occlusive vascular disease, including areas of truncal or acral ischaemia.

A few patients showed other manifestations such as enanthen or purpuric flexural lesions.

According to study by Galvan et al, the different clinical patterns were associated with differences in demographics and in other clinical manifestations. Pseudo-chilblain lesions affected younger patients, lasted longer (mean 12.7 days), took place later in the course of COVID-19 disease and were associated with less severe disease (in terms of hospital admission, pneumonia, intensive care unit admission or mortality). These lesions could cause pain (32%) or itch (30%). Vesicular lesions appeared in middle-aged patients, lasted for a mean of 10.4 days, appeared more commonly than the other types (15%) before other symptoms and were associated with medium severity. Itching was common (68%)[1-4].

Urticarial and maculopapular lesions showed very similar patterns of associated findings. They lasted for a shorter period (mean 6.8 days for urticarial and 8.6 for maculopapular), usually appeared at the same time as the other symptoms and were associated with more severe COVID-19 disease (2% mortality in the maculopapular sample). Itching was very common for urticariform lesions (92%) and occurred in 56% of cases of maculopapular lesions. Livedoid or necrotic lesions were seen in older patients with more severe disease (10% mortality). However, the manifestations of COVID-19 in this group were more variable, including transient livedo, with some having COVID-19 that did not require hospitalization.

The severity of the associated disease followed a gradient, from less severe disease in pseudo-chilblain to most severe in patients with livedoid presentations, as shown by the increasing percentages of pneumonia, hospital admission and intensive care requirements.

Of 71 patients with pseudo-chilblain, only one had a previous history of pemphigus. The percentage with confirmed presence of SARS-CoV-2 in this group was 41%; lower than in the other morphological groups.

Patients in the group with urticarial eruptions were receiving drugs more commonly than those with pseudo-chilblain or vesicular

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lesions, but less commonly than those with maculopapules or livedoid lesions, in relationship with increased severity.

Exanthematous (morbilliform) rash

In several case series, a morbilliform rash predominantly involving the trunk has been reported as the most common cutaneous manifestation of COVID-19. The rash has been noted either at the disease onset or, more frequently, after hospital discharge or recovery.

Chilblain-like acral lesions

Pernio (chilblain)-like lesions of acral surfaces ("COVID toes") present as erythematous-violaceous or purpuric macules on fingers, elbows, toes, and the lateral aspect of the feet, with or without accompanying edema and pruritus. They have been described across the age spectrum in patients with confirmed or suspected COVID-19, in the absence of cold exposure or underlying conditions associated with pernio. Resolution may occur in two to eight weeks.

Pathogenesis of these lesions is still under evolution, though it appears to be a primarily inflammatory process with histopathologic and direct immunofluorescence findings similar to those seen in idiopathic and autoimmune-related pernio. The demonstration by immunohistochemistry and electron microscopy of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in endothelial cells of lesional skin biopsies in a small series of pediatric patients suggests a virus-induced, vascular injury as a potential pathogenetic mechanism. However, these findings need to be confirmed in larger studies[5].

Livedo reticularis-like

Livedo reticularis-like vascular lesions have been reported in a few patients with COVID-19. In a series of 171 laboratory-confirmed cases, these vascular lesions were noted in 5.3 and 2.3 percent of patients, respectively.

Fixed livedo racemosa/retiform purpura/necrotic vascular lesions

Retiform purpura and necrotic vascular lesions seem to be associated with severe COVID-19. In a series of 11 patients with retiform purpura and laboratory confirmed COVID-19, all were hospitalized and nine had acute respiratory distress syndrome. In three patients with SARS-CoV-2 infection and severe respiratory failure who had retiform purpura or livedo racemosa, histologic and immunohistochemistry studies of skin biopsies revealed a pattern of complement-mediated microvascular injury in both involved and normally appearing skin. Histopathologic findings of thrombotic vasculopathy and/or laboratory coagulation alterations have also been demonstrated in patients with severe COVID-19 and acral ischemic lesions.

Urticaria

Acute urticaria with or without concomitant fever has been reported as a presenting sign of COVID-19 infection.

Vesicular (varicella-like) eruptions

There are several reports describing a vesicular-pustular, varicella-like eruption associated with COVID-19. In a series of 24 patients, an eruption of small papules, vesicles, and pustules appeared 4 to 30 days after the onset of COVID symptoms and resolved in a median of 10 days. A real-time PCR for SARS-CoV-2 from vesicle content performed in four patients yielded negative results. Seventeen of 24 patients were not taking any medications, ruling out a drug reaction.

Multisystem inflammatory syndrome in children (MIS-C)

An erythematous, polymorphic rash, erythema and/or firm in duration of hands and feet, oral mucositis, and conjunctivitis, along with systemic, laboratory, and imaging findings of atypical, severe Kawasaki disease, have been described in a cohort of 10 Italian children during the COVID-19 pandemic. Similar cases have been

reported in the United Kingdom, the United States, and other countries.

It is surprising that cutaneous manifestations of viral diseases, that a single virus can lead to several different clinical patterns, especially as different patterns do not coexist in the same patient. Patients who may be classified as having more than one pattern are very uncommon.

A hypothesis to explain this polymorphism may be that some of them have alternative causes, or there are differences in the virus or the host. The fact that some of the lesions, even in patients with confirmed COVID-19, are similar to those in other viral infections (notably parvovirus), and the perceived increased number of cases of zoster, raises the possibility of some of these being the result of coinfection and uncertainty as to whether SARS-CoV-2 is responsible for this[6-7].

In terms of arousing suspicion of COVID-19, pseudo-chilblain and vesicular lesions may be useful as indicators of disease. They uncommonly (10 of 373 cases with data) presented preceding other symptoms in our sample. Pseudo-chilblain lesions more commonly appear later during the disease and are not associated with severe disease, so they might be more useful as epidemiological markers than for diagnosis. It is possible that the sampling strategy might bias this result, and pseudo-chilblain might appear without other COVID-19 symptoms more commonly in the general population. Urticarial lesions may be due to many causes and mostly did not precede other symptoms in our study, so they are unlikely to lead to diagnosis. Regarding maculopapular lesions, they tend to co-occur with other symptoms, and most of them are not specific. A few subtypes, such as the pseudovesicular type and those resembling erythema elevatum diutinum or erythema multiforme could lead to suspicion of a diagnosis. Livedoid or necrotic lesions occur late in the evolution and are probably unhelpful for diagnosis. However, they fit nicely with the idea of vascular damage due to COVID-19[5-8].

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