



2023

Section: Dermatology

## Prevalence of Clinical Cutaneous Manifestations in Confirmed COVID-19 Patients

Abdelrahman Mohamed Helmi Abokhalil

*Dermatology, Venereology and Andrology Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt, drabokhalil91@gmail.com*

Abdelshakour Abdelhafiz Elmohamady

*Dermatology, Venereology and Andrology Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt*

Osama Khalil Elsayed Mohamed

*Dermatology, Venereology and Andrology Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt*

Follow this and additional works at: <https://aimj.researchcommons.org/journal>



Part of the [Medical Sciences Commons](#), [Obstetrics and Gynecology Commons](#), and the [Surgery Commons](#)

### How to Cite This Article

Abokhalil, Abdelrahman Mohamed Helmi; Elmohamady, Abdelshakour Abdelhafiz; and Mohamed, Osama Khalil Elsayed (2023) "Prevalence of Clinical Cutaneous Manifestations in Confirmed COVID-19 Patients," *Al-Azhar International Medical Journal*: Vol. 4: Iss. 9, Article 12.

DOI: <https://doi.org/10.58675/2682-339X.2035>

This Original Article is brought to you for free and open access by Al-Azhar International Medical Journal. It has been accepted for inclusion in Al-Azhar International Medical Journal by an authorized editor of Al-Azhar International Medical Journal. For more information, please contact [dryasserhelmy@gmail.com](mailto:dryasserhelmy@gmail.com).

# Prevalence of Clinical Cutaneous Manifestations in Confirmed Coronavirus Disease 2019 Patients

Abdelrahman Mohamed Helmi Abokhalil\*, Abdelshakour Abdelhafiz Elmohamady, Osama Khalil Elsayed Mohamed

Dermatology, Venereology and Andrology Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt

## Abstract

**Background:** The outbreak of Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has put immense pressure on healthcare systems in many countries. Vague models that explain the pathophysiology of SARS-CoV-2 exist. There have been many multiorgan symptoms attributed to it including dermatological manifestations, early on in the pandemic first phase skin symptoms were not documented but lately, reports of cutaneous manifestations of COVID-19 have begun to surface.

**Aim:** The study aims to evaluate and find out the prevalence of the dermatologic manifestations in patients with COVID-19 and identify specific lesions that may facilitate diagnosis.

**Patients and methods:** This cross-sectional study was carried out in Dermatology, Venereology, and Andrology Department, Faculty of Medicine, Al-Azhar University, on 1000 patients confirmed as infected by COVID-19 by nasopharyngeal polymerase chain reaction (PCR). They were recruited from the isolation hospitals in Alexandria and Al-Beheira governorates through weekly visits, from May to October 2021.

**Result:** There was a statistically significant relation between the severity of COVID-19 and rash type ( $P = 0.034$ ). It was noticed that vasculitis was significantly higher in severe cases. Other types of rash were common in moderate cases.

**Conclusion:** In conclusion, we provide a description of the cutaneous manifestations associated with COVID-19. These may help clinicians approach patients with the disease and recognize cases with few symptoms.

**Keywords:** Coronavirus disease 2019, Cutaneous manifestations, Severe acute respiratory syndrome coronavirus-2

## 1. Introduction

A highly contagious new virus known as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) was first identified in China on December 31, 2019. It causes acute respiratory illness.<sup>1</sup>

Due to its rapid proliferation, it was declared a global pandemic by the World Health Organization (WHO) a few months later.<sup>2</sup>

Coronavirus disease 2019 (COVID-19) reached Egypt on February 14, 2020 when a foreigner carrying Chinese citizenship was found infected with the virus at the Cairo International Airport (first confirmed case in Egypt). A lockdown measures were implemented in the country in March of the

same year when the number of confirmed cases totaled 456: international travel was suspended and education institutions were closed, also public socializing was limited and except for essential work, employees were working from home. These measures helped greatly in containing the spread of COVID-19.<sup>3</sup>

In the first reports, COVID-19 manifested itself in a way similar to other viral respiratory infections; a couple of symptoms that are common across these infections are dry cough and fever. Nevertheless, its high fatality rate was noted and the possibility of acute respiratory distress syndrome was also reported.<sup>2</sup> A broad scope of clinical manifestations have been detailed, spanning the absence of symptoms and presence of symptoms such as to

fever, cough, dyspnea, diarrhea, ageusia, anosmia, and even cutaneous lesions.<sup>4</sup>

Even so cutaneous manifestations of COVID-19 are uncommon; the ability to recognize them is of paramount significance for doctors, the disease can be managed better if the diagnosis is early and accurate, even in asymptomatic or symptomatic patients. This may contribute immensely to the epidemiological efforts to contain COVID-19, particularly in places where shortages of diagnostic kits are noticeable.<sup>5</sup>

## 2. Patients and methods

**Study setting:** the study was carried out in Dermatology, Venereology, and Andrology department, Faculty of Medicine, Al-Azhar University. The patients were recruited from the isolation hospitals in Beheira and Alexandria through six visits, from May to October 2021.

**Study type:** cross-sectional study

**Study population:** 1000 confirmed COVID-19 cases by nasopharyngeal polymerase chain reaction (PCR).

**Inclusion criteria:** Both males and females, Patients with confirmed COVID-19 infection.

**Exclusion criteria:** Suspected patients not confirmed by PCR.

### 2.2. Methods

Every patient was subjected to the following:

**History taking:** Including Name, Age, sex, Socio-demographic data, COVID-19 infection, past history of any dermatological disease. Current treatment Associated diseases: (Thyroid disease, Diabetes mellitus or others).

**Examination:** Visual inspection is the central evaluation tool, a full skin examination, including examination of the scalp, nails, and mucous membranes, is done to screen for skin signs and to detect clues to the diagnosis of a widespread eruption, Identify type and location of lesions.

**Follow-up:** time of appearance of skin lesions, healing duration, and the correlation of COVID-19 infection severity with skin lesions.

## 3. Results

This cross-sectional study was conducted on 1000 patients confirmed as infected by COVID-19 by nasopharyngeal PCR.

The age of studied cases was ranged from 33 to 81 years with mean  $\pm$  SD was  $49.52 \pm 11.45$  years and median of 49.5 years. The commonest age group

involved was 40- less than 50 years age group with 320 (32%) cases followed by greater than or equal to 60 years group with 280 (28%) cases. The age group least involved was 30- less than 40 years with 180 (18%) cases, 480 (48%) of patients were males and 520 (52%) were females with male to female ratio of 0.92 : 1. (Table 1).

There were only 46 (4.6%) patients showed cutaneous manifestations. (Table 2).

Their mean age was  $50.15 \pm 11.46$  years. The commonest age group involved was 40- less than 50 years age group (30.4%) cases. More than half (52.2%) of patients were females with male to female ratio of 0.92 : 1. (Table 3).

Regarding rash type, maculopapular rash was the most common type representing (34.8%) cases.

Table 1. Demographic characteristics of coronavirus disease 2019 patients (n = 1000).

Parameters	Studied patients (N = 1000) N (%)
Age distribution	
30- <40 years	99 (9.9%)
40- <50 years	227 (22.7%)
50- <60 years	281 (28.1%)
$\geq 60$ years	393 (39.3%)
Age (y)	
Mean $\pm$ SD	$49.52 \pm 11.45$
Median	49.5
Range	33.0–81.0
Sex	
Male	480 (48.0%)
Female	520 (52.0%)

Table 2. Distribution of cutaneous manifestations in coronavirus disease 2019 patients (n = 1000).

Cutaneous manifestation	Studied patients (N = 1000) N (%)
No	954 (95.4%)
Yes	46 (4.6%)

Table 3. Characteristics of studied patients with cutaneous manifestations (n = 46).

Parameters	Studied patients (N = 46) N (%)
Age distribution	
30- <40 years	9 (19.6%)
40- <50 years	14 (30.4%)
50- <60 years	11 (23.9%)
$\geq 60$ years	12 (26.1%)
Age (y)	
Mean $\pm$ SD	$50.15 \pm 11.46$
Median	49.5
Range	33.0–81.0
Sex	
Male	22 (47.8%)
Female	24 (52.2%)

There was eight (17.4%) patients had urticaria, six (13%) patients had Chilblain-like lesions with mean age was 41 years. Herpes zoster rash were found in six (13%) patients with mean age was 53 years. Vasculitis like rash were found in four (8.7%) patients, appeared in old age. Varicella-like rash were found in three (6.5%) patients. (Table 4).

The commonest location was found in legs (39.1%) followed by trunk in (34.8%) patients then arms in (26.1%) patients while the least site found was buttocks, ears, neck and shoulder in (2.1%) patients.

The mean duration of rash in the studied cases was  $6.61 \pm 2.601$  days and ranged from 1 to 11 days with median of 7 days.

Pruritus was the commonest associated cutaneous symptoms that found in 28 (60.9%) patients. Burning sensation and pain were found in (17.4%) and (21.7%) patients, respectively.

Majority of cutaneous manifestations started after other COVID-19 symptoms in 30 (65.3%) patients. They started at the same time as other COVID-19 symptoms in 10 (21.7%) patients while they started before other COVID-19 symptoms in six (13%) patients.

Half patients (50%) had moderate COVID-19 symptoms, 15 (32.6%) patients had severe COVID-

19 symptoms while eight (17.4%) patients had mild symptoms.

There was statistically significant relation between age group and rash type ( $P = 0.010$ ) as vasculitis was found to be significantly higher in old-aged patients, Chilblain-like and urticaria was significantly higher in younger age ( $P = 0.01$ ).

There was no statistically significant relation between severity of COVID-19 and duration of rash ( $P = 0.340$ ).

There was statistically significant relation between severity of COVID-19 and rash type ( $P = 0.034$ ). It was noticed that vasculitis was significantly higher in severe cases. Other types of rash were common in moderate cases. (Table 5).

#### 4. Discussion

December 2019 marked the sudden emergence of COVID-19 it rapidly appeared in many countries and territories until it reached the state of a pandemic.<sup>6</sup>

Common symptoms of COVID-19 include fever, cough, fatigue, headache, and GIT upsets.<sup>7</sup>

The skin is one of many organs COVID-19 may affect.<sup>8</sup>

Dermatological manifestations of COVID-19 take several forms more so than any viral infection.<sup>9</sup>

The most common cutaneous manifestations are Maculopapular, vesicular, and urticarial lesions, in that order. Other lesions are rare.<sup>10</sup>

The aim of this study was to evaluate and find out the prevalence of the dermatologic manifestations in patients with COVID-19 and identify specific lesions that may facilitate diagnosis.

This study was conducted on 1000 confirmed COVID-19 patients by nasopharyngeal PCR.

Among those 1000 patients enrolled in this study, there were 46 (4.6%) cases had cutaneous manifestations. Other studies show variation in the percentage of subject patients with cutaneous manifestations. Jindal and Chauhan,<sup>11</sup> Put the range

Table 4. Distribution of studied patients regarding rash type.

Parameters	Studied patients (N = 46) N (%)
Rash type	
Maculopapular rash	16 (34.8%)
Urticaria	8 (17.4%)
Chilblain-like	6 (13.0%)
Herpes zoster	6 (13.0%)
Vasculitis	4 (8.7%)
Varicella-like	3 (6.5%)
Others:	
Pityriasis rose	1 (2.2%)
Erythema multiforme-like	1 (2.2%)
Pruritus without rash	1 (2.2%)

Table 5. Relationship between severity of coronavirus disease 2019 and rash type.

	Severity of COVID			P- value*
	Mild (N = 8)	Moderate (N = 23)	Severe (N = 15)	
Rash type				
Maculopapular rash N (%)	0	11 (47.8%)	5 (33.3%)	0.034
Urticaria N (%)	3 (37.5%)	4 (17.4%)	1 (6.7%)	
Chilblain-like N (%)	3 (37.5%)	3 (13.0%)	0	
Herpes zoster N (%)	2 (25.0%)	2 (8.7%)	2 (13.3%)	
Vasculitis N (%)	0	0	4 (26.7%)	
Varicella-like N (%)	0	1 (4.3%)	2 (13.3%)	
Erythema multiforme-like N (%)	0	0	1 (6.7%)	
Pityriasis rose N (%)	0	1 (4.3%)	0	
Pruritus without rash N (%)	0	1 (4.3%)	0	

of variation between 0.6% and 20.4%. A study conducted by Hedou et al.,<sup>12</sup> reported (4.9%) of patients had cutaneous manifestations. Another study conducted by Recalcati,<sup>13</sup> reported a much higher percentage (20.4%). The age of studied cases ranged from 33 to 81 years with mean  $\pm$  SD was  $50.15 \pm 11.46$  years and median of 49.5 years.

Among those 46 cases, the most common age group involved was 40- less than 50 years with 14 (30.4%) cases followed by greater than or equal to 60 years group with 12 (26.1%) cases. The age group least involved was 30- less than 40 years with 9 (19.6%) cases. Twenty-two (47.8%) of patients were males and 24 (52.2%) were females with male to female ratio of 0.92. In agreement with our results, a study by Galván Casas et al.<sup>8</sup> demonstrated similar results, of those cases with cutaneous manifestations (48.3%) were male and (51.7%) were female and the mean age was 56.38 years, and Jindal and Chauhan,<sup>11</sup> reported 48.6% male, 51.4% female. In disagreement with the median age and mean age in our study, Freeman et al.<sup>14</sup> reported, 40.5 years median age which is much lower than ours, and Rosell-Diaz et al.<sup>15</sup> reported a mean age of 66 years which is much higher than ours.

Regarding rash type, in our study the maculopapular rash was the most common type representing (34.8%) cases followed by urticaria in 17.4% cases, six (13%) patients had Chilblain-like lesions, Herpes zoster rash were found in six (13%) patients, Vasculitis like rash were found in four (8.7%) patients and Varicella-like rash were found in three (6.5%) patients, other manifestations such as pityriasis rosea, erythema multiforme, generalized pruritus represented three (6.6%) patients. In agreement Jindal and Chauhan,<sup>11</sup> noted that, most present rash types are maculopapular exanthema and followed by urticaria.

In our study the most common rash location was found in legs (39.1%) followed by trunk (34.8%) patients then arms (26.1%) while the least site found was buttocks, ears, neck and shoulder in (2.1%) patients. However Recalcati,<sup>13</sup> found that trunk was the most common rash location.

The mean duration of rash in our study was  $6.61 \pm 2.601$  days and ranged from one to 11 days with median of 7 days. In a study conducted by Marzano et al.<sup>16</sup> cutaneous manifestations lasted from 4 to 15 days. In the study by Galván Casas et al.<sup>8</sup> a few days was the mean duration of the lesions, but some took very short time before disappearing (20 min) and others remained for a relatively long time (4 weeks).

Our results observed that, pruritus were the commonest associated cutaneous symptoms that

found in 28 (60.9%) patients. Pain and burning sensation were found in (21.7%) and (17.4%) patients respectively. Also pruritus was mentioned in Marzano et al.<sup>16</sup> study, with (40.9%) of patients presented with it.

We found that majority of cutaneous manifestations started after systemic symptoms in 30 (65.3%) patients. They started at the same time and before the onset of systemic symptoms in 10 (21.7%) patients and six (13%) patients, respectively. In the same line Sachdeva et al.<sup>17</sup> reported that majority of cutaneous manifestations started after systemic symptoms in (69.4%) of patients and cutaneous lesions started at the same time other COVID-19 symptoms started in 12.5% of patients, timing was not reported in 18.1% of cases. In the same line Jindal and Chauhan,<sup>11</sup> noted that cutaneous lesions started after systemic symptoms in almost 50% of the cases, at the same time when systemic symptoms started in almost 40% of the cases and before the start of systemic symptoms in almost 10% of the cases.

The present study showed that, half patients (50%) had moderate COVID-19 symptoms, 15 (32.6%) patients had severe COVID-19 symptoms while eight (17.4%) patients had mild symptoms. In a study by Mostafa et al.<sup>18</sup> (54.5%) of cases had mild illness, (20.5%) had moderate illness, (4.5%) had serious illness and (20.5%) showed no symptoms.

There was statistically significant relation between age group and rash type ( $P = 0.010$ ) as vasculitis was found to be significantly higher in old-aged patients, maculopapular and vesicular rash were higher in middle-aged patients, Chilblain-like and urticaria were significantly higher in younger age. In agreement the study by Galván Casas et al.<sup>8</sup> and another by Jamshidi et al.<sup>10</sup> confirmed chilblain-like is associated with young age and vasculitis is associated with old age.

Our results showed that, there was statistically significant relation between severity of COVID-19 and rash type ( $P = 0.034$ ). It was noticed that vasculitis was significantly higher in severe cases. Other types of rash were common in moderate cases. On the other hand there was no statistically significant relation between severity of COVID-19 and duration of rash ( $P = 0.340$ ). In agreement De Giorgi et al.<sup>19</sup> and Galván Casas et al.<sup>8</sup> linked the severity of COVID-19 infection with skin manifestations, as petechiae, purpura, and acral ischemia were common with severe COVID-19 cases and chilblain was common with less severe conditions, and age was considered a noticeable factor. This conclusion was contradicted in two studies by Recalcati<sup>13</sup> and by Mostafa et al.<sup>18</sup> who found no link whatsoever.

#### 4.1. Conclusion

In conclusion, we provide a description of the cutaneous manifestations associated with COVID-19. These may help clinicians approach patients with the disease and recognize cases with few symptoms. The high diversity of cutaneous manifestations linked to the novel coronavirus, coupled with the low availability of RT-PCR tests from nasopharyngeal swabs is still interfering with our ability to accurately classify each morphology as either COVID-19-related or drug-related. Furthermore studies should be performed to investigate the nature of the relation between the appearance of skin lesions and COVID-19.

#### Disclosure

The authors have no financial interest to declare in relation to the content of this article.

#### Authorship

All authors have a substantial contribution to the article.

#### Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

#### Conflicts of interest

The authors declared that there were no conflicts of interest.

#### References

- Phelan AL, Katz R, Gostin LO. The novel coronavirus originating in Wuhan, China: challenges for global health governance. *JAMA*. 2020;323:709–710.
- Li Q, Guan X, Wu P, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus–infected pneumonia. *Engl J Med*. 2020;382(13):1199–1207.
- Saied AA, Metwally AA, Madkhali NAB, Haque S, Dhama K. Egypt's COVID-19 recent happenings and perspectives: a mini-review. *Front Public Health*. 2021;9:696082.
- Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *J Autoimmun*. 2020;109:102433.
- Lancet T. COVID-19: protecting health-care workers. *Lancet (London, England)*. 2020;395:922.
- Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. *Engl J Med*. 2020;382(8):727–733.
- Estébanez A, Pérez-Santiago L, Silva E, Guillen-Climent S, García-Vázquez A, Ramón MD. Cutaneous manifestations in COVID-19: a new contribution. *J Eur Acad Dermatol Venereol*. 2020;34(6):e250.
- Galván Casas C, Catala ACHG, Carretero Hernández G, et al. Classification of the cutaneous manifestations of COVID-19: a rapid prospective nationwide consensus study in Spain with 375 cases. *Br J Dermatol*. 2021;183:71–77.
- Brumfiel CM, DiLorenzo AM, Petronic-Rosic VM. Dermatologic manifestations of COVID-19-associated multisystem inflammatory syndrome in children. *Clin Dermatol*. 2021;39:329–333.
- Jamshidi P, Hajikhani B, Mirsaeidi M, Vahidnezhad H, Dadashi M, Nasiri MJ. Skin manifestations in COVID-19 patients: are they indicators for disease severity? A systematic review. *Front Med*. 2021;8:634208.
- Jindal R, Chauhan P. Cutaneous manifestations of coronavirus disease 2019 in 458 confirmed cases: a systematic review. *J Fam Med Prim Care*. 2020;9:4563.
- Hedou M, Carsuzaa F, Chary E, Hainaut E, Cazenave-Roblot F, Regnault MM. Comment on “Cutaneous manifestations in COVID-19: a first perspective” by Recalcati S. *J Eur Acad Dermatol Venereol*. 2020;34(7):e299–e300.
- Recalcati S. Cutaneous manifestations in COVID-19: a first perspective. *J Eur Acad Dermatol Venereol*. 2020;34:5.
- Freeman EE, McMahon DE, Lipoff JB, et al. The spectrum of COVID-19–associated dermatologic manifestations: an international registry of 716 patients from 31 countries. *J Am Acad Dermatol*. 2020;83:1118–1129.
- Rosell-Díaz AM, Mateos-Mayo A, Nieto-Benito LM, et al. Exanthema and eosinophilia in COVID-19 patients: has viral infection a role in drug induced exanthemas? *J Eur Acad Dermatol Venereol: JEADV*. 2020;34:e561–e563.
- Marzano AV, Genovese G. Response to: ‘Reply to ‘Varicella-like exanthem as a specific COVID-19-associated skin manifestation: multicenter case series of 22 patients’: to consider varicella-like exanthem associated with COVID-19, virus varicella zoster and virus herpes simplex must be ruled out. *J Am Acad Dermatol*. 2020;83:e255–e256.
- Sachdeva M, Gianotti R, Shah M, et al. Cutaneous manifestations of COVID-19: report of three cases and a review of literature. *J Dermatol Sci*. 2020;98:75–81.
- Mostafa PI, Alieldin LG, El-Kalioby M. Can skin affection be a clue to COVID-19? results from a dermatology outpatient clinic in Egypt. *J Egypt Women's Dermatol Soc*. 2020;19:108.
- De Giorgi V, Recalcati S, Jia Z, et al. Cutaneous manifestations related to coronavirus disease 2019 (COVID-19): a prospective study from China and Italy. *J Am Acad Dermatol*. 2020;83:674–675.