



Cutaneous Manifestations of COVID-19

Vartika Dube^{a†}, Adarshlata Singh^{a‡} and Vineet Dube^{a*}

^a *Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (M), Wardha, Maharashtra, India.*

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Although the pathogenesis of the newly discovered 2019 coronavirus disease is still unknown, it has several extrapulmonary manifestations, such as cutaneous lesions. Among those who took Covid, the American Academy of Dermatology reports that 22.2% of patients had morbilliform or pernio-like rashes; 17.8% had papulosquamous purpura; 16.8% had macular erythema, and 7.8% had retiform purpura. According to the available information, around 450 patients with (COVID-19) infectious disease have developed a variety of skin lesions. While it's understandable that dermatology consultations have been scarce during this pandemic and that the primary focus has been on systemic manifestations of covid, it's also far from surprising that cutaneous lesions have gone undiagnosed. The patient's ages ranged from 2 months to 75 years (The condition is most commonly encountered in elderly persons).

Cutaneous symptoms are less common in India. According to reports compiled from various sources, skin lesions are more common in Albinos, Scandinavians, and Caucasians than in Indians, Mongolians, and Africans. On the other hand, skin lesions were more prevalent during India's second COVID-19 wave (most likely due to an increment in the number of people affected). Patients with a mild form of the disease were more likely to have pernio-like lesions, while critically ill patients only had retiform-purpura (those who required ventilator support and were on the verge of organ failure). Individuals with COVID-19 have been found to have urticarial rash, erythematous/morbilliform rash, papulovesicular exanthem, chilblain-like patterns, livedo reticularis,

[†]Student, Final MBBS;

[‡]Professor;

^{*}Consultant Dermatologist;

^{*}Corresponding author: E-mail: vartikadube1998@gmail.com;

and purpuric-vasculitic patterns, among other dermatological issues. Chilblains and the Multisystem Inflammatory Syndrome (MIS) in children (2-15 years) are also skin manifestations of (COVID-19), which are more commonly seen in the UK and Western Europe. During the second wave, there were two cases of a multisystem inflammatory syndrome associated with chilblains in India. Covid-19 cutaneous presentations occur in 0.2% to 19.4% of people, but the frequency and timing are difficult to pin down. There is also a variable degree of association between the severity of the illness and specific skin manifestations.

Keywords: COVID-19; skin lesions; immunity; extrapulmonary manifestations.

1. INTRODUCTION

The enormous breadth and wide variety of presentation of Covid-19 have posed enormous hurdles to clinicians. The occurrence of cutaneous symptoms benefits from calling attention to the diagnosis of viral infection earlier than would be possible¹. However, there are data and study/experience limitations in this area. COVID-19 must be defined as its whole before it can be effectively managed. Therefore research on its cutaneous symptoms, etiology, and significance to human health will aid in this effort [1].

In December 2019, people in Wuhan, China, had been infected with a new RNA virus called "severe acute respiratory syndrome coronavirus² (SARS-CoV-2)". "Coronavirus disease-19" (COVID-19) became a pandemic due to the virus's subsequent spread around the world. COVID-19 coronavirus is known to cause respiratory symptoms and pyrexia, but it has also been linked to extrapulmonary manifestations such as dermatological signs and symptoms. COVID-19-associated cutaneous symptoms have been documented, but their exact incidence has yet to be determined. Their pathophysiological mechanisms are mostly unknown, and SARS-CoV-2's role in their pathogenesis is unclear until now. However, pertinent information has been collected on dermatologic manifestations following covid-19 exposure and recovery. Many young people, especially women, are concerned about hair loss due to the aftereffects of covid-19-induced stress, which lasted for 4-6 months and was not alleviated by any of the drugs tested. However, rashes were shown to be less severe and self-limiting after some time, say 14 days. Another troubling post-covid issue was the development of dark circles around the eyes due to stress. Some persons have melano-onychia as a result of their reduced immunity. After undergoing steroid treatment for candidiasis, the external genitalia developed white patches [2].

2. BACKGROUND

There is mounting evidence that the skin symptoms linked to COVID-19 are extremely variable. COVID-19-associated epidermis features have been observed in the following six main clinical patterns:

- (1) urticarial@ rash
- (2) erythematous/maculopapular/morbilliform rash
- (3) papulovesicular@ exanthem@
- (4) chilblain-like@ acral pattern
- (5) livedo reticularis/racemose-like pattern
- (6) purpuric@ "vasculitis" @ pattern.

Other researchers have suggested that COVID-19-associated cutaneous manifestations could be classified in different ways [3].

3. METHODOLOGY AND MATERIALS

Various articles, research materials, reports, and data were consulted to ensure that all relevant information was considered about the various skin lesions caused by Coronavirus disease. Again, the research was complex because of the lack of attention to skin lesions during the Covid era. However, the authors also reported several reports that came directly from patients to dermatologists via social networks, with the sending of photos of skin manifestations showing red-purple maculopapular lesions and localized blisters on both feet associated with pain and burning, including chilblains-like lesions in the absence of exposure to low temperatures [4].

These particular acral vasculitic manifestations seem to affect mainly young people and are not associated with respiratory symptoms. Other reports of Sars-CoV-2 pandemic skin lesions were reported by Mazzotta et al. described acute, self-healing vasculitic lesions localized to the hands and feet in asymptomatic children and adolescents. Various skin rashes have been highlighted during COVID-19, but these vasculitic

lesions with peculiar characteristics, never described previously, can represent an essential indicator for epidemiological investigations. In 10% of cases, the family history showed simultaneous presence (or one week later) of the same skin manifestations in the siblings, but absence in the parents affected by COVID-19 or in subjects who came into contact with certain or suspected cases of the disease. These were healthy children and adolescents who had never suffered from acrocyanosis, chilblains, or vasculitis and had no symptoms other than the skin manifestations that usually arose in total well-being or, rarely, a few days after mild flu symptoms. In association with the skin, manifestations were reported: itching, burning, and joint difficulty, in the case of the hands, more often pain when the feet were involved [5].

4. PATHOGENESIS

The pathogenesis of COVID-19 is unknown, but it can be inferred from the skin lesions caused by SARS-CoV-2. When a virus replicates rapidly, it can cause cell death, set off a cascade of inflammatory reactions, and raise cytokine and chemokine levels in blood vessels. SARS-CoV-2 and COVID-19-induced lung injury problems, where massive production of these cytokines is due to the accumulation of cells and fluids, also play an essential role in the body's inflammatory response (cytokine storm). During infection with COVID-19, these cytokines can affect the dermatological lesions described above because they reach the skin and the numerous cells of the cutaneous immune system (mainly because of IgE) (urticarial lesion, vesicles, and erythema) [6].

Manifestations and related issues are discussed. In the course of a SARS-CoV-2 pandemic, vasculitic-like acral skin lesions, often erythema premium type, are being observed more frequently in patients, especially in the feet and less frequently in the hands. Most often, subjects are asymptomatic or paucisymptomatic due to other COVID-19-related systemic manifestations.

An exanthematous (morbilliform) rash has been reported in several cases as the most prevalent cutaneous manifestation of COVID-19, involving the trunk and chest. A rash has been observed either at the onset of disease or, more frequently, after hospital discharge or recovery. Only a few patients with COVID-19 have developed "Livedo reticularis – Livedo reticularis like" vascular lesions. According to the study, four percent to two percent of patients had these vascular

lesions in a sample of 156 lab-confirmed cases. There is a link between severe COVID-19 and the presence of retiform purpura and necrotic vascular lesions in people with fixed livedo racemose. There is no specific treatment for livedo in terms of therapy. Most of the time, treating the underlying cause is all that's needed. Pyrexia with or without urticaria has been associated with COVID-19 infection has been linked to this rash. It comes in all shapes and sizes, from tiny nodules to large tumors. Low-dose systemic corticosteroids are an effective treatment for COVID-19-induced urticarial rash.

Within 2-3 days, the skin lesions evolved from the initial erythema to infiltrated and cyanotic lesions up to spontaneous resolution at a distance of 12-20 days. At the level of the feet, in addition to being more frequent, the lesions were more serious, infiltrated, vesicular, with bruising, superficial necrosis, and involvement of the fingers, of the heel, and the plantar surface (ecchymotic and infiltrated lesions); these areas are often not affected at the same time. At the level of the hands, erythematous lesions prevailed, with purplish erythema or erythematous and infiltrated lesions. These vasculitic lesions are peculiar and not attributable to other morbid conditions. In the literature, recent articles describe ischemic and ecchymotic lesions of fingers in patients suffering from very severe and often lethal forms of COVID-19 as an expression of coagulation disorders, while the manifestations described by Mazzotta et al. they are likely expressions of mild forms of COVID-19 in children and adolescents.

Of the same opinion are Recalcati et al. who report, in their I, latest observations, peculiar skin lesions (similar to chilblains also called perniosis), never previously reported, observed in young patients evaluated on an outpatient basis during the last four weeks of the COVID-19 pandemic (March-April 2020). Fourteen people are being treated (eleven children aged 13 to 18 and three young adults aged 23 to 39). There was also a gathering of families in these instances (3 couples were brothers and sisters). Erythematous-violet papules and macules with acral localization, possible bullous evolution, or digital edema were the cutaneous manifestations [7].

Feet and hands had the most lesions, with feet and hands having the least. After a few days, the hands and elbows of two kids developed erythematous papular target lesions. In three

cases, the only symptoms were minor itching. Cough and fever were present three weeks before lesions appeared in three patients. The lesions resolved after 2-4 weeks without any treatment. There was no exposure to cold, no comorbidities, or prior drug use. But in these cases, no one in the family had ever had symptoms associated with COVID-19. Sars-CoV-2 was not found in nasopharyngeal (in 3 patients) or rectal (in 2 patients) swabs [8]. However, the author hypothesizes that these manifestations may be correlated with the coronavirus-2 due to the presence of a close temporal relationship with the pandemic in progress, due to the unusual appearance of injuries in multiple members of the same family as well as to the contemporary reporting of similar cases in other areas affected by the pandemic.

These women have three things in common: they're young, the tampon is negative, and there are no other symptoms. According to this hypothesis, the skin lesions observed would represent late manifestations of Sars-CoV-2 infection in young, healthy subjects, probably due to an immune response that only involves the cutaneous vessels, which would explain the swab's negative results [9]. According to the author, the absence of similar skin symptoms in adult SARS-CoV-2 patients during the acute phase would support this assumption. Further observations and reliable laboratory data will be necessary to eventually confirm that the skin manifestations described so far can be considered a clinical sign of COVID-19 to identify children and adolescents with minimal forms of infection, but potential sources of further infection.

5. DISCUSSION ON- MANIFESTATIONS AND RELATED PROBLEMS

Identification of skin problems caused by coronary heart disease:

A: The first category of problems arises from our measures to protect and prevent this virus. For example, one of the recommendations. To prevent this disease, wash your hands regularly with soap and water. The use of disinfectants for the hands and the environment. They are part of protective behaviors, but they can create skin problems or aggravate existing or latent skin diseases [10]. B: The second category of skin problems and lesions associated with the coronavirus is one of the treatments prescribed for patients with Covid-19. Many treatments and medications, such as antibiotics, new antivirals,

and recombinant drugs prescribed to patients, can cause many skin problems [11]. A: The third category of skin problems, which is the most critical category of Corona-related lesions, is the virus involved in creating skin. So far, a wide range of these lesions has been reported. Numerous studies conducted globally show the prevalence of skin lesions are very different in Crohn's patients [12]. Depending on the location, Report, country, and circumstances in which the study was conducted, less than one percent has been variable in about 20% of patients. Studies also show the virus has caused various skin forms and manifestations. It should be noted that the type of skin lesions can not be distinguished. Definitely reached Covid-19 disease because of skin lesions in infected patients. Coronary lesions are nonspecific lesions that occur in many other skin diseases or due to infection with other viruses are also possible. It is to be seen, so see lesions similar to the following. It is explained, necessarily, that a person has Covid-19 disease. It should not be excluded from the sum of symptoms, laboratory, and paraclinical tests [13].

Appropriate solutions to prevent skin damage. Skin lesions appear to be present in patients with coronary artery disease. Due to the reactions of the immune system and defense systems, and the presence of the coronavirus causes cell stimulation. Today there is no conclusive evidence to show that the virus itself attacks the skin directly. Also, there is no evidence so far. Covid-19 skin lesions are not contagious. While in some viral diseases such as genital warts, or Herpes virus itself is present in skin lesions and usually comes in contact with them, and secretions in the lesions can cause disease transmission [14-19].

6. CONCLUSION

They show that skin lesions should be recognized in the spectrum of presentations linked to this infection, even though they don't prove that COVID-19 was the direct cause. Summary: Some skin manifestations, such as uncertain chilblain, or unless proven otherwise, may be a warning sign for asymptomatic virus carriers or may be discovered in previously vaccinated individuals. Further research and studies are required to determine the relationship between COVID-19-related skin lesions.

Appropriate solutions to prevent skin damage. Frequent use of alcohol and other disinfectants. Most disinfectants are based on alcohol, and

alcohol is the skin's natural fat Destroys. Excessive and frequent use of alcohol, especially in those who Have a history of dry skin or eczema, can cause skin problems. Intensify. It is recommended that these people use non-alcoholic disinfectants to wash and disinfect their hands [20]. Gels in There is a market where the basis of their disinfectants is not alcohol and substances. Another is used as an oxygenator. These gels can also Good disinfection Hands retain skin moisture. Also, You can use Vaseline-based emollient hand creams. These people help. Another point is that many people disinfect dishes and surfaces. They use bleaching agents or so-called Vitex. These people, When using bleach, must be diluted first [21]. Second, do not work with them without hands because of direct skin contact with the material.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Freeman EE, McMahon DE. Creating dermatology guidelines for COVID-19: The pitfalls of applying evidence-based medicine to an emerging infectious disease. *J Am Acad Dermatol.* 2020;82:e231.
2. Galván Casas C, Català A, 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.* 2020;183:71.
3. de Masson A, Bouaziz JD, Sulimovic L, et al. Chilblains is a common cutaneous finding during the COVID-19 pandemic: A retrospective nationwide studies from France. *J Am Acad Dermatol.* 2020;83:667.
4. Freeman EE, McMahon DE, Lipoff JB, et al. Pernio-like skin lesions associated with COVID-19: A case series of 318 patients from 8 countries. *J Am Acad Dermatol.* 2020;83:486.
5. Daneshgaran G, Dubin DP, Gould DJ. Cutaneous Manifestations of COVID-19: An Evidence-Based Review. *Am J Clin Dermatol.* 2020;21:627.
6. Guan WJ, Ni ZY, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med.* 2020;382:1708.
7. Recalcati S. Cutaneous manifestations in COVID-19: a first perspective. *J Eur Acad Dermatol Venereol.* 2020;34:e212.
8. Madigan LM, Micheletti RG, Shinkai K. How Dermatologists Can Learn and Contribute at the Leading Edge of the COVID-19 Global Pandemic. *JAMA Dermatol.* 2020;156:733.
9. Suchonwanit P, Leerunyakul K, Kositkuljorn C. Cutaneous manifestations in COVID-19: Lessons learned from current evidence. *J Am Acad Dermatol.* 2020;83:e57.
10. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet.* 2020 Feb;395(10223):497–506.
11. Marzano AV, Cassano N, Genovese G, Moltrasio C, Vena GA. Cutaneous manifestations in patients with COVID-19: A preliminary review of an emerging issue. *Br J Dermatol.* 2020 Sep;183(3):431–42.
12. Matar S, Oulès B, Sohier P, Chosidow O, Beylot-Barry M, Dupin N, et al. Cutaneous manifestations in SARS-CoV-2 infection (COVID-19): A French experience and a systematic review of the literature. *J Eur Acad Dermatol Venereol.* 2020 Jun; jdv.16775.
13. Galván Casas C, Català A, Carretero Hernández G, Rodríguez-Jiménez P, Fernández-Nieto D, Rodríguez-Villa Lario A, et al. Classification of the cutaneous manifestations of COVID-19: A rapid prospective nationwide consensus study in Spain with 375 cases. *Br J Dermatol.* 2020 Jul;183(1):71–7
14. Acharya, Sourya, Samarth Shukla, and Neema Acharya. Gospels of a Pandemic- A Metaphysical Commentary on the Current COVID-19 Crisis. *Journal of*

- Clinical and Diagnostic Research. 2020;14(6):OA01–2.
Available:https://doi.org/10.7860/JCDR/2020/44627.13774
15. Arora Devamsh, Muskan Sharma, Sourya Acharya, Samarth Shukla, Neema Acharya. India in 'Flattening the Curve' of COVID-19 Pandemic - Triumphs and Challenges Thereof. Journal Of Evolution of Medical and Dental Sciences-JEMDS. 2020;9(43): 3252–55.
Available:https://doi.org/10.14260/jemds/2020/713
16. Bawiskar, Nipun, Amol Andhale, Vidyashree Hulkoti, Sourya Acharya, and Samarth Shukla. Haematological Manifestations of Covid-19 and Emerging Immunohaematological Therapeutic Strategies. Journal of Evolution of Medical and Dental Sciences-JEMDS. 2020;9(46): 3489–94.
Available:https://doi.org/10.14260/jemds/2020/763
17. Burhani Tasneem Sajjad, Waqar M Naqvi. Telehealth - A Boon in the Time of COVID 19 Outbreak. Journal of Evolution of Medical and Dental Sciences-JEMDS. 2020;9(29):2081–84.
Available:https://doi.org/10.14260/jemds/2020/454
18. Butola Lata Kanyal, Ranjit Ambad, Prakash Kesharao Kute, Roshan Kumar Jha, Amol Dattaroa Shinde. The Pandemic of 21st Century - COVID-19. Journal of Evolution of Medical And Dental Sciences-JEMDS. 2020;9(39)28:2913–18.
Available:https://doi.org/10.14260/jemds/2020/637
19. Dasari Venkatesh, Kiran Dasari. Nutraceuticals to Support Immunity: COVID-19 Pandemic- A Wake-up Call. Journal of Clinical and Diagnostic Research. 2020;14(7):OE05–9.
Available:https://doi.org/10.7860/JCDR/2020/44898.13843
20. Potekaev NN, Zhukova OV, Protsenko DN, Demina OM, Khlystova EA, Bogin V. Clinical characteristics of dermatologic manifestations of COVID-19 infection: Case series of 15 patients, review of literature, and proposed etiological classification. Int J Dermatol. 2020 Aug; 59(8):1000–9.
21. Najarian DJ. Morbilliform exanthem associated with COVID-19. JAAD Case Rep. 2020 Apr;6(6):493–4.

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