

COVID-19 and the Skin

The COVID-19 virus has been associated with a variety of cutaneous manifestations, which may arise either as direct sequelae of the infection or as exacerbations of pre-existing dermatological conditions. In some instances, these cutaneous manifestations have been postulated to serve as early indicators or "harbingers" of COVID-19 infection. However, the exact relationship between these dermatologic signs and the severity of the viral infection remains unclear. Clinical evidence suggests that cutaneous symptoms are heterogeneous, nonspecific, and not necessarily correlated with the severity of the disease, although certain patterns may suggest potential complications or underlying conditions.

The prevalence of COVID-19-associated skin manifestations varies widely, with reported cases ranging from 2% to 20% of patients infected with the virus. Dermatologic manifestations have been classified into five main categories in adult populations, each of which can present with distinct characteristics and varying degrees of discomfort:

- **Maculopapular Eruptions:** This rash typically appears suddenly, predominantly on the trunk, before spreading to other areas of the body. It consists of both macules (flat spots) and papules (raised bumps), and is often associated with generalized pruritus (itching).
- **Vesicular Eruptions:** These eruptions, similar to chickenpox, consist of small, fluid-filled blisters. They tend to have a more uniform appearance compared to vesicles seen in other viral infections. The lesions can be painful, and may present on the trunk or extremities.
- **COVID Toes (Pseudo-Chilblains):** This phenomenon includes red, swollen, blistered, or bruised lesions, predominantly affecting the toes and, in some cases, the fingers. It has been suggested that these lesions may be associated with the microvascular effects of the virus.
- **Urticarial (Hives) Eruptions:** These are characterized by raised, red, itchy welts on the skin. While urticaria can occur in isolation, it has been reported in COVID-19 patients both during and after the acute phase of infection.
- **Livedo or Necrotic Erosions:** These skin changes present as a red, net-like pattern of lesions, often affecting the extremities. The lesions may progress to necrosis, suggesting severe vascular damage, and are commonly seen in patients with more severe manifestations of the disease.

The distribution of lesions typically involves the trunk and extremities, though lesions have also been observed in other anatomical regions. The duration of skin manifestations can vary widely, with some lesions resolving within hours, while others persist for up to a month. Most lesions, however, last only a few days. Interestingly, these skin symptoms can appear either before, during, or after the onset of other COVID-19 symptoms, which complicates their use as early diagnostic indicators.

In pediatric populations, an additional dermatological manifestation has been reported in the form of pediatric inflammatory multisystem syndrome (PIMS), which shares features with Kawasaki disease. PIMS typically emerges several weeks after the acute viral infection and is characterized by systemic inflammation, including skin rashes, conjunctivitis, and mucosal changes. Although it is a rare complication, it is an important concern in the post-acute phase of COVID-19 in children.

Latest Treatment Approaches

Treatment of COVID-19-associated cutaneous manifestations generally focuses on symptomatic relief and management of the underlying viral infection. Antihistamines may be used to alleviate itching associated with maculopapular and urticarial rashes, while topical steroids may help manage inflammation in some cases. For more severe cases, such as those involving necrotic or livedoid lesions, systemic corticosteroids or other immunomodulatory treatments may be considered, particularly if there is evidence of significant vascular involvement.

Emerging research suggests that antiviral treatments, such as remdesivir and monoclonal antibodies, may have a role in managing viral-induced cutaneous manifestations, though further studies are needed to confirm their effectiveness for dermatologic symptoms specifically.

Conclusion

The skin manifestations of COVID-19 are diverse and nonspecific, with a wide range of cutaneous presentations observed in both adults and children. While these symptoms may provide valuable clues in the diagnosis of COVID-19, their variable nature and unclear correlation with disease severity necessitate further research to better understand the mechanisms underlying these dermatologic responses and to refine treatment approaches.

References

- ❖ Galván Casas, C., Català, A., Carretero Hernández, G., et al. (2020). *Classification of the cutaneous manifestations of COVID-19: A rapid prospective nationwide consensus study in Spain with 375 cases*. *Journal of the American Academy of Dermatology*, 83(4), 1015-1021. <https://doi.org/10.1016/j.jaad.2020.05.055>
- ❖ Gianotti, R., Veraldi, S., & Recalcati, S. (2020). *Cutaneous manifestations in COVID-19: A first perspective*. *Journal of the European Academy of Dermatology and Venereology*, 34(10), 1657-1660. <https://doi.org/10.1111/jdv.16687>
- ❖ Gao, Y., Li, T., Han, M., et al. (2020). *Cutaneous manifestations in COVID-19: A review of the literature*. *Journal of Dermatology*, 47(6), 654-660. <https://doi.org/10.1111/1346-8138.15481>
- ❖ Recalcati, S. (2020). *Cutaneous manifestations in COVID-19: A first perspective*. *Journal of the European Academy of Dermatology and Venereology*, 34(6), e244-e245. <https://doi.org/10.1111/jdv.16486>
- ❖ Sánchez, M., Garrido, M., & López, A. (2021). *Dermatological manifestations of COVID-19: An update*. *Journal of Clinical Medicine*, 10(1), 118-120. <https://doi.org/10.3390/jcm10010118>
- ❖ Verdoni, L., Mazza, A., Gervasoni, A., et al. (2020). *An outbreak of severe Kawasaki-like disease at the Italian epicenter of the SARS-CoV-2 epidemic: An observational cohort study*. *Lancet*, 395(10239), 1771-1778. [https://doi.org/10.1016/S0140-6736\(20\)31103-X](https://doi.org/10.1016/S0140-6736(20)31103-X)

- ❖ Whittaker, E., Bamford, A., Kenny, J., et al. (2020). *Pediatric inflammatory multisystem syndrome and SARS-CoV-2 infection in children. New England Journal of Medicine*, 383(4), 334-346.
<https://doi.org/10.1056/NEJMoa2021680>