



COVID-19 Dermatologic Manifestations: Issues More Than Skin-Deep

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ABSTRACT

Dermatologic manifestations of COVID-19 have become increasingly more common. These dermatoses can either precede, accompany, or follow respiratory symptoms of COVID-19, and some may even correlate with the severity of the disease. Although COVID-19-related skin changes are relatively rare, there is an even greater lack of such data in individuals with skin of colour. While research into the pathophysiology of this phenomenon is in its nascency, it is paramount to recognize the need for diversification, especially considering the racial disparities of COVID-19. The present discussion is a call-to-action to improve diversity in our teaching of dermatologic conditions and advance our understanding of skin of colour dermatology in the medical profession.

RÉSUMÉ

Les manifestations dermatologiques du COVID-19 sont de plus en plus fréquentes. Ces dermatoses peuvent précéder, accompagner ou suivre les symptômes respiratoires du COVID-19, et certaines peuvent même être en corrélation avec la gravité de la maladie. Bien que les modifications cutanées liées au COVID-19 soient relativement rares, on manque encore plus de données à ce sujet chez les personnes ayant une peau de couleur. Alors que la recherche sur la physiopathologie de ce phénomène n'en est qu'à ses débuts, il est primordial de reconnaître la nécessité d'une diversification, surtout si l'on considère les disparités raciales de la maladie de COVID-19. La présente discussion est un appel à l'action pour améliorer la diversité dans notre enseignement des affections dermatologiques et faire progresser notre compréhension de la dermatologie de la peau de couleur au sein de la profession médicale.

The coronavirus disease 2019 (COVID-19) global pandemic continues to leave a devastating footprint on our society. According to the most recent epidemiological report from the World Health Organization, over 468 million cases have been reported worldwide, with over 6 million deaths.¹ The most common clinical manifestations of COVID-19 are fever, cough, chills, and dyspnea, however, there is an increasing emergence of documented cutaneous manifestations that may precede the onset of respiratory symptoms.^{2,3} Unfortunately, the publications citing skin manifestations related to COVID-19 are almost exclusively described in patients with lighter skin, despite evidence they are also present in skin of colour (SOC).^{4,5} This not only potentially impacts early recognition and diagnosis of COVID-19 in patients with SOC but also casts light on a deeper issue of the under-representation of SOC in medicine. Importantly Black, Hispanic, Latino, Native American, Indigenous Peoples, Asian, and Pacific Islander communities have been shown to be at a disproportionately increased risk of morbidity and mortality due to COVID-19.⁶⁻¹⁰ Public policy should address the racial disparities in health outcomes precipitated by the COVID-19 pandemic and improve the diverse representation of dermatologic manifestations in medical literature, training, and care provision.

A systematic review demonstrated that the overall frequency of dermatologic manifestations in COVID-19 infections was 5.95%, though this finding did not examine data by race.² The most common skin lesions reported were maculopapular rashes, vesicular lesions, urticaria-like lesions, vascular lesions, and chilblain-like lesions, yet there is an absence of classification of these lesions related to race and ethnicity.^{2,11-13} The exact relationship between COVID-19 cutaneous manifestations and disease severity has yet to be elucidated; however, chilblain-like and vascular lesions have been described as opposite ends of a spectrum of increasing disease severity.² Additionally, urticaria-like lesions co-occurred with common, extracutaneous COVID-19 symptoms in 47% of patients and the authors postulated urticaria-like lesions to be potentially useful in raising the level of suspicion towards COVID-19 as opposed to other respiratory illnesses.² Moreover, patients with chilblain-like lesions were most likely to be otherwise asymptomatic at presentation. These findings present a challenge for patients with darker skin as it is an established fact that dermatoses vary morphologically between different racial groups.^{14,15} As such, without more data, it is unclear if differences also exist in the appearance

of COVID-19 dermatoses in SOC, as well as whether they differentially impact clinical prognosis. Provided that COVID-19 variants can be highly virulent, transmissible, and have a long asymptomatic latency period,¹⁶ it is imperative to expand our knowledge of the various physical findings in the COVID-19 clinical gestalt. Particularly, such knowledge would potentially allow for the identification of asymptomatic or mildly symptomatic patients and guide care appropriately. Importantly, in communities of people with SOC, awareness about COVID-19 dermatoses could lead to fewer diagnostic delays and improve outcomes through earlier interventions.¹⁷ Additionally, patients with SOC are disproportionately affected by post-inflammatory hyperpigmentation (PIH) which can follow active dermatoses.¹⁸ PIH can persist for many years and has been shown to have a significant impact on patients' quality of life, often requiring nuanced and challenging treatment.¹⁹ Thus, recognition of COVID-19 dermatoses in patients with SOC could also aid in the earlier treatment of and/or prevention of associated PIH. Though reporting bias could explain the scarcity of cases, it is also possible that dermatologic manifestations of COVID-19 may be uncommon in SOC.^{20,21} Nevertheless, in addition to encouraging the scientific community to report on such data, it would also be beneficial to create international photo registries of SOC dermatoses that clinicians can virtually access, as suggested by Akuffo-Addo et al.¹⁷ An example of such an initiative is Project IMPACT by VisualDx, which is an international medical resource platform that includes the largest online library of SOC pathology to date.^{22,23} Efforts should be made to further investigate COVID-19-related dermatologic manifestations in SOC to potentially provide an additional way for healthcare practitioners to care for under-represented populations through earlier recognition and proper treatment of such patients.

Unfamiliarity with the presentation of dermatologic concerns in SOC has detrimental consequences that long predated the COVID-19 pandemic. Dawes et al. demonstrated significantly lower survival of Black patients compared to white patients diagnosed with malignant melanoma.²⁴ Black patients have also been shown to present at later stages of skin cancer and have significantly longer time-to-treatment compared to white patients.²⁵ In fact, disparities for individuals with SOC have been described across many dermatologic outcomes and in research.²⁶ The reasons for this are multifactorial, but awareness of and education about SOC on behalf of medical professionals were cited as contributing factors. Gaps in the literature

impact the awareness and understanding of dermatoses in SOC as well as limit the applicability of therapies, preventative measures, and clinical trials. For example, studies show that skin cancer prevention and sunscreen use have significantly less attention in Black and Hispanic communities.²⁷ As medical professionals, it is prudent that we emphasize the importance of sun safety in individuals of all skin colours. Importantly, medical professionals must recognize the unique attributes of SOC and presentation of disorders thereof to improve patient outcomes. In fact, physicians' familiarity with SOC has been shown to favourably impact patient-doctor relationships. One study demonstrated that Black patients ranked knowledge of disorders of Black skin and hair as one of the fundamental factors to the rapport with their dermatologist.²⁸ The same study also assessed patients' satisfaction using a 5-point Likert scale and found that Black patients (n=19) treated by dermatologists in a SOC clinic were significantly more satisfied with cultural sensitivity to Black skin (mean score 4.43, p=0.01) and knowledge of Black skin (mean score 4.36, p=0.02) compared to those treated in a non-SOC clinic (mean scores 2.96 and 2.82, respectively). Healthcare providers' knowledge of SOC and its dermatoses not only improves patient outcomes, but fosters culturally competent, patient-centered relationships.

Awareness and knowledge surrounding SOC are predicated on the proper training of medical professionals. In one study, 47% of U.S. dermatologists felt that insufficient training and exposure were provided in diagnosing patients with SOC.²⁶ A 2020 survey of U.S. dermatology residents echoed these findings.²⁹ At their core, medical training programs and educational resources should equip their students with the ability to correctly recognize, diagnose, and manage skin diseases in all phototypes. Studies that examined images of different skin phototypes in dermatology textbooks concluded that there is a limited depiction of 'darker skin,' which the authors defined as Fitzpatrick V-VI.^{30,31} The largest proportion of images portraying darker skin in textbooks was found to be 22-32%.³¹ Additionally, textbooks designed for dermatology training were more likely to show images of darker skin than textbooks believed to be read by generalists.³⁰ In other words, primary care physicians may have limited exposure to SOC in their learning and thus be ill-equipped to diagnose skin concerns. Importantly, this type of teaching must be addressed at the foundation of medical education – medical school. When asked to diagnose dermatoses presented on images, medical students showed the greatest gap in recognizing the

following skin diseases between Fitzpatrick IV-VI and Fitzpatrick I-III phototypes, respectively: squamous cell carcinoma (14.9% versus 45.6%; p<0.0001), urticaria (57.5% versus 82.2%; p=0.0003), and atopic dermatitis (74.4% versus 86.2%; p=0.0495).³² The authors theorized these findings to largely be due to reliance on dark pigment and/or erythema as diagnostic features, which may not be pertinent to Fitzpatrick IV-VI phototypes.³³ Medical schools and residency programs must construct curricula that integrate dermatology of darker skin into their teaching. This should not be limited to modules dedicated to unique features of SOC but incorporated into all teaching that presents skin to students and residents. A 2019 in-depth review of dermatology training and practice prepared by the Royal College of Physicians and Surgeons of Canada highlighted the commitment to revise the discipline's standards to address the needs of diverse populations.³⁴ Additionally, national societies of dermatologists, such as the Skin of Colour Society in the United States, have been created to promote awareness of SOC dermatology through education of healthcare providers, the general public as well as through supporting SOC research.³⁵ Ogunyemi and Miller-Monthrope proposed the creation of a national society of dermatologists analogous to the Skin of Colour Society as a future possibility in Canada.³⁶

Approximately 32% of Canadians will belong to non-white ethnic groups by the year 2031.³⁷ The practice of medicine that acknowledges, respects, and acts on commitments to provide equitable care to patients with SOC should be the norm rather than a theoretical ideal. As we continue to learn more about the pathophysiology of COVID-19, dermatologic manifestations should not be omitted from discussions surrounding its recognition and diagnosis. Importantly, knowledge surrounding COVID-19 dermatologic manifestations in SOC would potentially aid in earlier diagnosis, treatment, and management of complications in populations already disproportionately impacted by this pandemic. Above all, the scarcity of SOC teaching in our training will continue to exacerbate existing racial disparities in the field of medicine. We must prioritize a culturally competent system and education of future healthcare professionals to regain the trust of these communities.

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