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CUTANEOUS MANIFESTATIONS OF COVID-19: CASE SERIES AT A TERTIARY CARE HOSPITAL IN EASTERN INDIA

Pharmacology

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ABSTRACT

Coronavirus disease (COVID-19) pandemic caused by severe acute respiratory syndrome-coronavirus 2 (SARS-CoV2) is primarily a respiratory tract infection, affecting the alveolar epithelium. Cutaneous symptoms gained attention with the increasing involvement of dermatologists in management of this crisis. In this article, three cases of RT-PCR positive COVID 19 pneumonia, presenting with cutaneous signs are being reported. The cutaneous clinical spectrum includes maculopapular, erythematous and petechial rashes. It is important to describe these manifestations till the physiological mechanism is fully understood, that could help identify a typical pattern ensuring judicious clinical suspicion, early diagnosis and triage of patients.

KEYWORDS

INTRODUCTION:

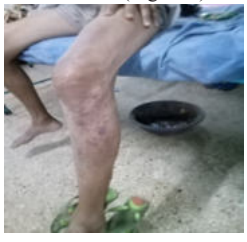
Corona virus disease 2019 (COVID-19) is caused by a novel single-stranded ribonucleic acid (RNA) virus known as severe acute respiratory syndrome coronavirus-2 (SARS-CoV2). It has been recognized by the World Health Organization (WHO) as an international pandemic [1,2,3]. The extrapulmonary clinical presentations of SARS-CoV2 are highly variable making its diagnosis a challenge. Fever, dry cough, dyspnea, myalgia, diarrhea, etc. are the most frequent presentations of the SARS-CoV-2 [4]. The primary target of SARS– CoV2 is the upper respiratory mucosa, and angiotensin converting enzyme 2 (ACE2) receptor is instrumental for binding the viral spikes and eventually viral entry into host cells by transmembrane protease serine 2 (TMPRSS2) that facilitates S protein priming [5-9].

ACE2 receptors are expressed in the lung (principally type II alveolar cells), heart, intestinal epithelium, brain, kidney, vascular endothelium and smooth muscle cells of all organs providing a mechanism for the COVID-19 multi-organ dysfunction [3,10,11,12]. Expression of the ACE2 receptor has also been demonstrated on skin and adipose tissue [13].

With the rising number of cases and various dermatological manifestations, there has been a raised awareness in health care providers to consider COVID-19 infection as a cause of skin complaints of the patients [14]. Patients who have confirmed SARS-CoV2 infection have been reported to develop a wide variety of cutaneous manifestations, including morbilliform eruption, urticaria, petechial purpura, periorbital erythema, livedo reticularis, digitate papulosquamous, erythema multiforme, pernio-like lesions, and androgenic alopecia [15,16,17]. The purpose of this article is to report three cases of cutaneous manifestation in patients with COVID-19 which could furnish assistance in epidemiological control of the disease and early clinical suspicion.

Case 1:

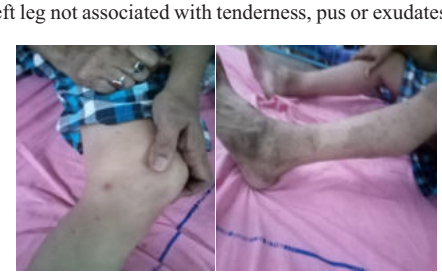
A 55-year-old male patient Mr. X, known hypertensive - on Amlodipine (5 mg) and Losartan (50 mg) was admitted in COVID ward in a tertiary care hospital in Eastern India on 25th September, 2020 with mild fever and respiratory distress. Nasopharyngeal swab for SARS-CoV2 by RT-PCR was positive. The patient was hemodynamically stable with spo_2 94% in room air. He was put on Tab Hydroxychloroquine 400mg once daily, Tab Doxycycline 100mg twice daily, Tab Pantoprazole 40mg, Tab Vit C 500mg, Tab Vit E 400mg, Tab Zinc 50mg- once daily. Routine lab investigations revealed only leucopenia with normal bleeding parameters. On 3rd day of hospital stay, he developed itchy erythematous maculopapular rash on his left leg which was not associated with pain, hemorrhage, tenderness and nerve involvement. (Figure 1)



(Figure-1)

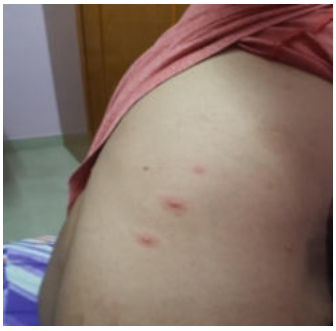
Case 2:

A 50-year-old male patient with no known comorbidities was admitted in COVID ward in a tertiary care hospital in Eastern India on 26th September, 2020 with complaint of fever for 3 days. Nasopharyngeal swab for SARS-CoV2 by RT-PCR was positive. The patient was put on Tab Ivermectin (12mg) once daily, Tab Amoxicillin + Clavulanate (625 mg) thrice daily, Tab Pantoprazole (40 mg), Tab Vit C 500mg, Tab Vit E 400 mg and Tab Zinc 50mg – once daily. Routine blood investigations were within normal limits. On 4th day of hospital stay, the patient developed few erythematous, itchy maculopapular rashes on his left leg not associated with tenderness, pus or exudates. (Figure 2A, 2B)



(Figure-2A and 2B)

Case 3:
A 50-year-old male patient, known diabetic on Vildagliptin 50 mg twice daily for 3 years, attended the Out Patient Department of a tertiary care hospital in Eastern India on 14th October, 2020 with fever and diarrhea for last 4 days along with small monomorphic vesicular, discrete, non-itchy rash on the right upper arm for last 3 days. (Figure 3) Nasopharyngeal swab for SARS-CoV2 by RT-PCR was positive.



(Figure 3)

DISCUSSION:

With the increasing incidence and prevalence of the COVID 19 infection and enhancing knowledge among health care providers about the disease, an increasingly greater number of cutaneous manifestations of the disease are being reported [18-23].

This case series documents rashes in 3 laboratory-confirmed SARS-CoV2 positive patients- maculopapular erythematous in 2 and vesicular in 1 patient.

Maculopapular rash was noted in 47% of COVID-19 patients in Spain; more than half of them reported pruritus. It lasted for about 9 days and was associated with a more severe course of the coronavirus infection. Truncal vesicular lesions were noted in middle-aged COVID-19 patients in up to 9% of cases [16]. Histopathological findings have rarely been reported. In a series of three elderly patients with erythematous rash from Milan, Italy, microthrombi and lymphocytic vasculitis were reported [24].

The mechanism of COVID-19 cutaneous disturbances is yet to be ascertained, but some common theories are prevalent. It is unclear whether cutaneous symptoms are a secondary consequence of respiratory infection, coagulopathy or a primary infection of the skin itself [17]. Pauci-inflammatory thrombogenic vascular disorder with deposition of C5b-9 and C4d was reported by Magro et al [25].

A direct pathogenic effect of the virus in the epidermis via ACE2, leading to acantholysis and dyskeratosis, has been proposed [26]. COVID-19 endothelitis via ACE2 could explain the systemic impaired microcirculatory function in different vascular beds and their clinical sequelae in patients with COVID-19 [27]. These features underline the nature of epidermal and dermal vascular lesions—and in severe cases, microvascular injury and thrombosis—associated with COVID-19 and provide important clues to their pathological mechanisms [28]. Although the relationship between COVID-19 and skin ailments is not yet comprehensively deciphered, a clinical concern exists because skin is the first line of defense for the immune system [3,29].

However, most of the cases reported no correlation between cutaneous presentations and disease severity [30]. Generally, the skin lesions were observed in the active phase of infection and subsided within few days without any treatment [31]. Better understanding of the clinical, histopathological and pathogenetic aspects of COVID-19 in different organs, including skin, will help guide early diagnosis and treatment of this new and fatal human disease with intriguing cutaneous manifestation.

CONCLUSION

The spectrum of COVID-19 manifestations is myriad, thus making its diagnosis in patients with non-respiratory infections a challenge and an epidemiological burden. Cutaneous manifestations may be the only sign and symptom in some laboratory confirmed SARS-COV2 patients. Further research and literature are required to elucidate and validate a more robust understanding and establish a correlation between COVID-19 and cutaneous manifestations.

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