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Cutaneous manifestations in covid positive patients in a tertiary hospital

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Abstract
Background: On March 11th, 2020, the World Health Organization (WHO) declared the novel coronavirus disease (COVID-19) a global pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV 2 virus). The patterns of dermatological manifestations associated with SARS-CoV 2 infection could be classified into four categories: exanthema (varicella-like, papulo-vesicular and morbilliform rash), vascular (chilblain-like, purpuric/petechial and livedoid lesions), urticarial and acro-papular eruption. Other skin manifestations are cutaneous adverse reactions to the drugs prescribed for the treatment of COVID-19. Whether SARS-CoV-2 infection can directly cause a worsening of chronic inflammatory diseases such as psoriasis or atopic dermatitis remains to be determined.
Objectives: The aim is to review the cutaneous findings by studying the presentation and frequency of cutaneous manifestations in COVID-19 patients and to play a pertinent role in the early diagnosis and management of COVID-19 positive patients.
Method of Collection of Data: All proven COVID positive patients admitted to KVG medical college and hospital were selected for the study. A detailed history was elicited from the case files.
Results: In the study, 100 positive patients were included where 6 patients were found to have cutaneous manifestations, 3 had purpura, 2 had erythematous rash and 1 had urticarial lesion. Extremities was commonly affected. There was no palm or sole involvement, no mucosal involvement or any pre-existing dermatoses.
Conclusion: All 6 patients developed cutaneous involvement after hospitalization. Itching was low or absent and the lesions usually healed in a few days. Mild-to-moderate disease may show nonspecific and elusive cutaneous manifestations.

Keywords: COVID-19, Purpura, Erythematous, Urticarial

Introduction

On March 11th, 2020, the World Health Organization (WHO) declared the novel coronavirus disease (COVID-19) a global pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV 2 virus). The patterns of dermatological manifestations associated with SARS-CoV 2 infection could be classified into four categories exanthema (varicella-like, papulo-vesicular and morbilliform rash), vascular (chilblain-like, purpuric/ petechial and livedoid lesions), urticarial and acro-papular eruption. Other skin manifestations to be considered are the cutaneous adverse reactions to the drugs prescribed for the treatment of COVID-19. Whether SARS-CoV-2 infection can directly cause a worsening of chronic inflammatory diseases such as psoriasis or atopic dermatitis remains to be determined. Dermatology's outlook in the COVID-19 pandemic is multidimensional [1].

As of April 20th, 2020, COVID-19 (severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2] or, previously called 2019-nCoV) initially reported in Wuhan, China has been diagnosed in more than 2.4 million people worldwide. The high rate of infectivity, low virulence and asymptomatic transmission have resulted in its rapid spread across geographic boundaries, leading to a pandemic. SARS-CoV 2 is an enveloped virus composed of positive sense single-stranded RNA and belongs to the coronavirus family. The virus enters cells through the angiotensin converting enzyme 2 (ACE2) receptor, found on the surface of cells. The lungs are the primary site of infection for COVID-19, with patients presenting symptoms ranging from a mild flu-like symptoms to fulminant pneumonia and potentially lethal respiratory distress. Interestingly, there have been many COVID-19 cases reporting cutaneous manifestations [2]. Cutaneous manifestations, a well-known effect of viral infections, are beginning to be reported in patients with COVID-19 disease. These manifestations most often are morbilliform rash, urticaria, vesicular eruptions, acral lesions, and livedoid eruptions. Some of these cutaneous manifestations arise before the signs and symptoms more commonly associated with COVID-19, suggesting that it could be presenting signs of COVID-19 [3].

The outbreak of novel coronavirus disease (COVID-19) in Wuhan, Hubei province of China has now spread all across the world. The clinical spectrum of SARS-CoV-2 infection appears to be wide, encompassing asymptomatic infection, mild upper respiratory tract illness, and severe viral pneumonia with respiratory failure and even death [4-6]. Besides the systemic manifestations, skin involvement has also been reported as a part of this viral infection [7-9]. Dermatological manifestations in COVID-19 can occur either as a direct implication of the SARS-CoV-2 or as a consequence of prolonged wearing of personal protective equipment (PPE) [7-13].

In this study, we aim to review the cutaneous findings that have been associated with COVID-19 for early diagnosis and management.

Material and Methods

The study was approved by the institutional ethical committee (IEC). The study was conducted for 3 months

and all consecutive patients, who were found to be SARS-CoV-2 positive after RT-PCR test report and admitted in KVG Medical College and Hospital, were enrolled for the study.

Disease severity was assessed as per world health organization (WHO) definition and guidelines [9]

Symptoms in mild disease were: fever >38C, sore throat, cough, fatigue and headache and in moderate disease included: Tachypnea and SpO2 < 94%-90%.

Inclusion Criteria

- All COVID positive patients admitted in KVG Medical College and Hospital from 01-06-2020 to 30-08-2020 were selected for the study

Exclusion criteria

- Patients in the intensive care unit (ICU)
- Patients with incomplete case files

Statistical analysis was done using IBM SPSS software, version 21.

Results

A total of 100 positive cases (60 males and 40 females) were included in the study. Five (5%) patients were asymptomatic, Seventy nine (79%) patients presented with mild and sixteen (16%) patients with moderate symptoms. The mean age of the patients was 49.5 ± 24.5 years. Six (6%) patients were found to have dermatological manifestations out of which four were males and two were females. Three patients had purpura, two patients had erythematous rashes and one patient had an urticarial lesion. The upper limbs was the most frequently affected area, followed by the trunk. No palm or sole involvement or mucosal signs and symptoms were detected. The evolution of purpura was on day three of fever in two patients and day four of fever in one patient. Two patients with CORADS-6 had purpura and one patient with CORADS-5 had urticaria. Routine blood investigations of six pts showed two patients with high N/L ratio. All patients, along with symptomatic treatment, were given capsule doxycycline 100mg twice daily for five days, tab Ivermectin 12mg once daily for 3 days with Zinc and Vitamin C preparations.

Table 1

No	Age(yrs)	Sex	Lesion	Site	CORADS	N/L ratio
1	27	M	Erythematous rash	Rt forearm	N	1.2
2	33	F	Erythematous rash	Rt forearm	N	1.6
3	45	M	Purpura	Lt forearm	6	8.4
4	52	M	Urticaria	Trunk	5	2.2
5	66	F	Purpura	Lt forearm	6	6.0
6	74	M	Purpura	Rt arm	N	2.8

Pictures

Fig 1: Purpura in Upper Limb

Fig 2: Erythematous rash in right forearm

Fig 3: Urticaria

Discussion

In our study of a 100 covid positive cases, a total of 6 patients were found to have cutaneous manifestations of which 3 patients had purpura, 2 patients had erythematous rashes and 1 patient had an urticarial lesion. The majority of patients had purpura involving the upper limbs.

Available literature suggests that dermatological manifestations can occur either due to direct implication of the virus on the body or due to personal protective equipment (PPE) [12].

A study by Recalcati et al among 148 patients with COVID-19 showed skin involvement in 18 patients in the form of erythematous rash (14 patients), urticaria (3 patients) and chicken pox like vesicles (1 patient). Trunk was the most common site of involvement. Itching was either mild or absent [7].

Drug reactions such as acute urticaria and urticarial vasculitis have been reported by Zheng et al [9]. Casas et al described pseudo-chilblains or acral areas of erythema [14].

COVID-19 robustly triggers the expression of IFN-inducible genes that assist in the host's antiviral protection. This IFN-I activation of these genes, however, can be deleterious, especially when their expression is delayed. This may exacerbate concurrent hypercytokinemia (the so-called cytokine storm) [15]. Some authors have also reported that COVID-19 elicits a muted cytokine response, lacking a robust induction of IFN-I [16]. However, this muted response is observed in an older patient population.

The IFN-I response, induces microangiopathic changes, producing a chilblain lupus erythematosus–like eruption. Older patients, unfortunately, may have an inadequate or delayed IFN-I response, exacerbating preexisting hypercytokinemia, with subsequent increased morbidity and mortality. Chilblain lupus erythematosus–like lesions in young people should not be confused with the acral ischemia caused by thrombosis that is being observed in severely ill COVID-19 patients. These patients, usually in the intensive care unit, have hypercoagulopathy and elevated D-dimer levels [17]. Thus, the IFN-I response in young patients may be advantageous, whereas the delayed or insufficient IFN-I response in older patients may be disadvantageous. In short, COVID-19 infection–induced chilblains may portend an indolent course and a good prognosis.

In younger age groups, chilblain like lesions occur as a consequence of immune response generating Type-1 interferons (IFN-I), but in older age group, the presentation is due to a delayed or insufficient IFN-I response [18]. Vasculopathy related skin lesions may be more specific for COVID-19 and may indicate severity [19].

Conclusion

Dermatological manifestations in our study was shown by a small number of patients.

Mild-to-moderate disease may show nonspecific and elusive cutaneous manifestations.

The presentation and frequency of dermatological manifestations in COVID-19 can vary in different population groups.

References

1. Gisondi P, PIaserico S, Bordin C, Alaibac M, Girolomoni G, Naldi L. Cutaneous manifestations of SARS-CoV-2 infection: a clinical update. J Eur Acad Dermatol Venereol,2020:34(11):2499-2504. doi:10.1111/jdv.16774.
2. Sachdeva M, Gianotti R, Shah M, Bradanini L, Tosi D, Veraldi S, et al. Cutaneous manifestations of COVID-19: Report of three cases and a review of literature. J Dermatol Sci,2020:98(2):75-81. doi: 10.1016/j.jdermsci.2020.04.011.
3. Young S, Fernandez AP. Skin manifestations of COVID-19. Cleve Clin J Med, 2020. 10.3949/ccjm.87a.ccc031. doi:10.3949/ccjm.87a.ccc031
4. WHO. Coronavirus disease 2019 (COVID-19). Situation Report, 2020. https://www.who.int/docs/default source/coronaviruse/situationreports/ 20200319-sitrep-59-covid-19
5. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. J Am Acad Dermatol,2020:323(11):1061-1069.
6. 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,2020:395(10223):497-506. doi: 10.1016/S0140-6736(20)30183-5.
7. Recalcati S. Cutaneous manifestations in COVID-19: a first perspective. J Eur Acad Dermatol Venereol,2020:34:e212-e213. https://doi.org/10.1111/jdv.16387.
8. Joob B, Wiwanitkit V. COVID-19 can present with a rash and be mistaken for dengue. *J Am Acad Dermatol*,2020:82(5):e177.doi:10.1016/j.jaad.2020.03.036
9. Zheng Y, Lai W. Dermatology staff participate in fight against Covid-19 in China. J Eur Acad Dermatol Venereol,2020:34(5):e210-e211. doi: 10.1111/jdv.16390.
10. Lan J, Song Z, Miao X, Li H, Li Y, Dong L, *et al*. Skin damage among health care workers managing coronavirus disease-2019. J Am Acad Dermatol,2020:82(5):1215-1216. doi: 10.1016/j.jaad.2020.03.014.
11. Elston DM. Occupational skin disease among health care workers during the coronavirus (COVID-19) epidemic. J Am Acad Dermatol,2020:82(5):1085-1086. doi: 10.1016/j.jaad.2020.03.012.
12. Clinical management of COVID-19. World Health Organization, 2020. https://www.who.int/publications-detail/clinical-managementof- covid-19.
13. Ordieres-Ortega L, Toledo-Samaniego N, Parra-Virto A, Fernández-Carracedo E, Lavilla-Olleros C, et al. Atypical erythema nodosum in a patient with COVID-19 pneumonia. Dermatol Ther,2020:33(4):e13658. doi: 10.1111/dth.13658.
14. 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,2020:183(1):71-77. doi: 10.1111/bjd.19163.
15. Zhou Z, Ren L, Zhang L, Zhong J, Xiao Y, Jia Z, et al. Heightened Innate Immune Responses in the Respiratory Tract of COVID-19 Patients. Cell Host Microbe,2020:27(6):883-890.e2. doi:10.1016/j.chom.2020.04.017.
16. Blanco-Melo D, Nilsson-Payant B, Liu W. SARS-CoV-2 launches a unique transcriptional signature from in vitro, ex vivo, and in vivo systems. *BioRxiv*, 2020. doi: 10.1101/2020.03.24.004655.
17. Zhang Y, Cao W, Xiao M, Li YJ, Yang Y, Zhao J, et al. [Clinical and coagulation characteristics of 7 patients with critical COVID-2019 pneumonia and acro-ischemia]. Zhonghua Xue Ye Xue Za Zhi,2020:28:41(0):E006. Chinese. doi: 10.3760/cma.j.issn.0253-2727.2020.0006.
18. Kolivras A, Dehavay F, Delplace D, Feoli F, Meiers I, Milone L, et al. Coronavirus (COVID-19) infection-induced chilblains: A case report with histopathologic findings. JAAD Case Rep,2020:18:6(6):489-492. doi: 10.1016/j.jdcr.2020.04.011.
19. Suchonwanit P, Leerunyakul K, Kositkuljorn C. Diagnostic and prognostic values of cutaneous manifestations in COVID-19. Dermatol Ther,2020:33(4):e13650. doi: 10.1111/dth.13650.