

Covid 19 and dermatological manifestations

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Abstract

Background and Aim: Since the onset of the 2019-nCoV disease (COVID-19), many skin manifestations have been reported in COVID-19 patients. This study aims to analysis of various skin manifestations among patients with COVID-19.

Methods: An observational study was conducted in department of dermatology, Bharatpur Medical College & Hospital, Bharatpur.

Results: Among Covid positive patients 47% had maculopapular eruptions, 19%, 19% each had urticarial and pseudo chilblains, 9% had pedicular eruptions and only 6% had necrotic lesions and they present within 1-4 week. There is a significant association between gender and skin lesions, co morbidity and skin lesions.

Conclusion: Infection with 2019-nCoV may lead to skin manifestations with various clinical symptoms. These clinical features combined with clinical symptoms of COVID-19 may aid in the timely diagnosis of patients with COVID-19.

Keywords: Covid-19, dermatological manifestation, comorbidity

Introduction

The first reports of people infected with 2019 novel coronavirus (2019-nCoV) were published in December 2019 in Wuhan, China. Afterwards, the pandemic spread rapidly across the world ^[1-3]. The symptoms of 2019-nCoV disease (COVID-19) vary from person to person, and it covers a wide range of clinical manifestations ^[4]. However, most of the patients presented mild or no symptoms ^[5-7]. Older people and those who suffer from underlying medical conditions such as high blood pressure, heart disease or diabetes seem to be at higher risk for developing more serious complications of COVID-19 ^[8]. According to studies, the most common symptoms of COVID-19 are fever, tiredness and dry cough. Also, some patients may experience muscle pains, runny or stuffy nose, sore throat, gastrointestinal symptoms, and loss of smell and taste ^[9-11]. In addition to these symptoms and according to the results of studies on COVID-19 patients, different types of skin manifestations have been seen in a number of patients ^[12, 13]. The skin involvement in patients with COVID-19 was not noticed at the early stages of this pandemic, but it has received much more attention recently ^[14]. The most important skin

manifestations in people with COVID-19 are red spots on the hands, blisters on the trunk and itchy hives [14]. In some COVID-19 patients, red patches of itchy skin, associated with skin inflammation, have been observed as well. These lesions affect the hands and feet and may look like small, swollen, itchy blisters [15]. Despite the observation of skin manifestations in patients with COVID-19, researchers are still looking for answers to the question of whether this skin presentations are directly related to the virus itself or are complications of the infection [16]. In addition, in many cases, skin problems in COVID-19 patients may be due to drug side effects and the virus may not be the cause [17, 18]. Therefore, it seems that finding out the potential relationship between COVID-19 and skin manifestations can assist in better understanding the pathogenesis of the disease and adoption of better infection control policies. The present study aimed to investigate the distribution, types, and the most prevalent skin manifestations among patients with COVID-19 based on case reports/case series and prevalence studies around the world.

Methods

- **Study design:** Cross Sectional Observational study.
- **Place of study:** Department of dermatology, MGM College, Jaipur.
- **Study population:** Patients presenting with skin manifestation within 1-4 weeks after the onset of COVID-19 symptoms.
- **Sample size:** Sample size estimation was done in epi info considering the frequency of skin manifestation from study performed by Parnian Jamshidi *et al.*³⁰, which was 5.9%. At 95% confidence limit the calculated sample size was 85.
- **Consent:** Written informed consent from patient for study.
- **Study duration:** 6 months from 1 July 2021 to 31st Dec 2021.
- **Inclusion criteria:** All patients presented with skin manifestation within 1-4 weeks after the onset of COVID-19 symptoms and who gave written consent.

Exclusion criteria

1. Patients having autoimmune diseases.

Sample size

- Sample size was taken 85 who visited the dermatology OPD from 1 July 2021 to 31st Dec 2021 with skin manifestation within 1-4 weeks after the onset of COVID-19 symptoms.

Results analysis and statistical Evaluation

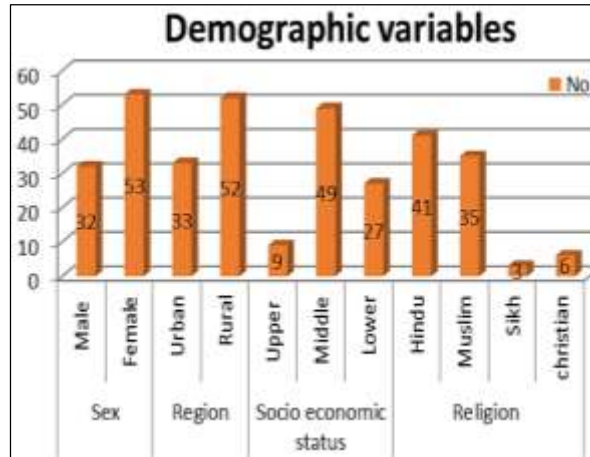
All the data was entered in MS excel and was analysed using statistical package for social sciences {SPSS} version 23.0.

Results

Table 1: Demographic distribution of patients

Variables	No	%	Total
Sex	Male	32	37.6%
	Female	53	62.8%
Region	Urban	33	38.9%
	Rural	52	61.1%
Socio economic status	Upper	9	10.6%

	Middle	49	57.7%	
	Lower	27	31.7%	
Religion	Hindu	41	48.2%	85
	Muslim	35	41.1%	
	Sikh	3	35.3%	
	Christian	6	7%	

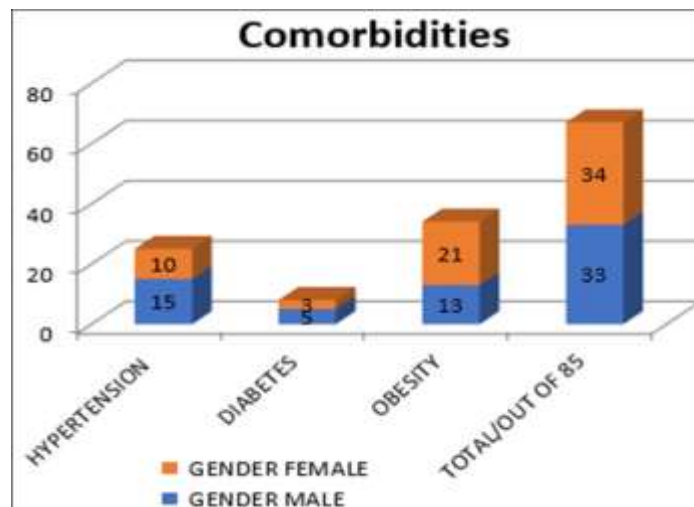


Graph 1

Above table states that majority of Covid + ve patients who had dermatological manifestation were females (62.8%), from rural region (61.1%), middle class (57.7%) and Hindus (48.2%).

Table 2: Comorbidities in patients

Comorbidity	Gender		Total
	Male	Female	
Hypertension	15(60%)	10(40%)	25(29.8%)
Diabetes	5(62.5%)	3(37.5%)	8(9.6%)
Obesity	13(38.2%)	21(61.8%)	34(40.3%)
Total/Out of 85	33(49.2%)	34(50.8%)	67/85(79.7/100%)



Graph 2

Comorbidities in patient's states that 79.7% patients had comorbidities, among whom 40.3% were obese, 29.8% had hypertension and 9.6% had diabetes.

Table 3: Dermatological Manifestations in Patients

Dermatological Manifestations	Comorbidity	Male	Female	Sub Total	Total
Pseudo-chilblains	YES	5	8	13(81.2%)	16(19%) P;0.03
	NO	2	1	3(18.8%)	
Pedicular eruptions	YES	3	4	7(87.5%)	8(9%) P;0.04
	NO	0	1	1(12.5%)	
Urticarial lesions	YES	5	10	15(93.7%)	16(19%) P;0.001
	NO	0	1	1(6.3%)	
Maculopapular eruptions	YES	11	17	28(70%)	40(47%) P;0.02
	NO	3	9	12(30%)	
Livedoid or necrotic lesions	YES	2	2	4(80%)	5(6%) P;0.43
	NO	1	0	1(20%)	
Total		32	53	85	85

Above table states that majority of patients i.e. 47% had maculopapular eruptions, 19%, 19% each had urticarial and pseudo chilblains, 9% had pedicular eruptions and only 6% had necrotic lesions.

Discussion

COVID-19-associated papulovesicular exanthem was first extensively reported in a multicenter Italian case series of 22 patients published in April 2020 [28]. In this article, it was originally described as "varicella-like" due to resemblance of its elementary lesions to those of varicella. However, the authors themselves underlined that the main clinical features of COVID-19-associated papulovesicular exanthem, namely trunk involvement, scattered distribution and mild/absent pruritus, differentiated it from "true" varicella. In this study, skin lesions appeared on average 3 days after systemic symptoms' onset and healed after 8 days, without scarring sequelae [28]. The exact prevalence of papulovesicular exanthems is variable. Indeed, in a cohort of 375 patients with COVID-19-associated cutaneous manifestations [4], patients with papulovesicular exanthem were 34 (9%), while they were 3 out of 52 (5.8%), 1 out of 18 (5.5%) and 2 out of 53 (4%) in the cohorts published by Askin et al. [29], Recalcati [9] and De Giorgi *et al.* [20], respectively. Urticarial eruptions associated with COVID-19 have been first reported by Recalcati [9] in his cohort of hospitalized patients, accounting for 16.7% of total skin manifestations. Urticaria-like eruptions have been subsequently described in other cohort studies. Galván Casas et al. [4] stated that urticarial rash occurred in 19% of their cohort, tended to appear simultaneously with systemic symptoms, lasted approximately 1 week and was associated with medium-high severity of COVID-19. Moreover, itch was almost always present [4].

COVID-19-related chilblain-like acral lesions have been first described in a 13-year-old boy by Italian authors in early March [30]. Since then, several "outbreaks" of chilblain-like acral lesions chiefly involving young adults and children from different countries worldwide have been posted on social media and published in the scientific literature [25-30]. Caucasians seem to be significantly more affected than other ethnic groups [27, 28].

The first COVID-19-associated cutaneous manifestation with purpuric features was reported by Joob et al. [26], who described a petechial rash misdiagnosed as dengue in a COVID-19 patient. Purpuric lesions have been suggested to occur more frequently in elderly patients with severe COVID-19, likely representing the cutaneous manifestations associated with the highest rate of COVID-19-related mortality [4]. This hypothesis is corroborated by the unfavorable prognosis observed in several cases reported in the literature [17, 18].

The purpuric pattern reflects the presence of vasculitic changes probably due to the direct damage of endothelial cells by the virus or dysregulated host inflammatory responses induced by COVID-19.

Conclusion

This study reflects that among covid positive patients 47% had maculopapular eruptions, 19%, 19% each had urticarial and pseudo chilblains, 9% had pedicular eruptions and only 6% had necrotic lesions and they present within 1-4 week. There is a significant association between gender and skin lesions, co morbidity and skin lesions.

The authors have no conflicts of interest to declare.

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