

# Study of COVID-19 Associated Cutaneous Manifestations, Its Causality Assessments and Future Implications Owing to Lifestyle Changes

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**Abstract:** COVID-19 primarily affects the respiratory system but dermatological involvement was noted in many. COVID-19 is a ssRNA virus, composing of 16 nonstructural proteins (NSP), through which it replicates and affects the immune system of host. Various pathophysiological mechanisms involving these antigens are hypothesised in the development of cutaneous manifestations. In the COVID pandemic era cutaneous manifestations were not only noted in infected and vaccinated subjects but also in the healthcare workers serving in the wards. The impact of COVID-19 exists till today in the form of lifestyle changes affecting healthcare workers and even common population. The study briefly studies and summarises the dermatological aspects related to COVID-19 and associated lifestyle changes.

**Keywords:** Covid dermatology Maskne Acral erythema Frictional acne

## 1. Background

- COVID-19 syndrome is caused by severe acute respiratory corona virus 2 (SARSCoV2).
- The disease was 1<sup>st</sup> seen in Wuhan in December 2019 and it spread throughout the world, affecting millions of people.
- It primarily affects the respiratory system but dermatological involvement was noted in many.
- COVID-19 is a ssRNA virus, composing of 16 non structural proteins (NSP), through which it replicates and affects the immune system of host. Various pathophysiological mechanisms involving these antigens are hypothesized in the development of cutaneous manifestations.
- In the COVID pandemic era cutaneous manifestations were not only noted in infected and vaccinated subjects but also in the health care workers serving in the wards.
- The impact of COVID-19 exists till today in the form of lifestyle changes affecting health care workers and even common population.
- The study briefly studies and summarises the dermatological aspects related to COVID-19 and associated lifestyle changes.

## 2. Aims and Objectives

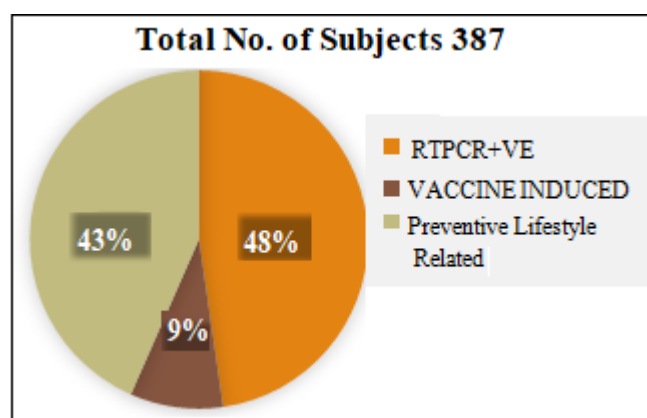
To identify the cutaneous manifestations present among COVID-19 infected patients, vaccinated patients and covid lifestyle related patients.

## 3. Materials and Methods

- A descriptive observational study was conducted at a dedicated Covid centre with attached tertiary care centre in rural area of northern Maharashtra from a period of 2 years (July 2020 to July 2022)

- Study population consisted of patients RT PCR positive for SARS Covid19 or vaccinated and health care workers working in covid centre having dermatological manifestations referred to dermatology department
- The study patients were photographed, detailed clinical history with clinic epidemiological details was noted and through clinical examination was done.
- All images were taken with patient's consent
- Variables assessed were age gender, presence of pre existing dermatological condition comorbidities, immune compromised status, COVID-19 severity, muco cutaneous signs symptoms with evolution of the manifestations.
- History of medication, vaccination and blood investigations were recorded
- Examination findings of all the patients were documented
- The data was analysed using SPSS SOFTWARE VERSION 25.0

## 4. Results and Discussion



Diagnosis	No. of patients	%	Severity of covid	On set wrt symptoms
<b>Pruritus</b>	35	18.6	Mild/moderate	After>before
<b>Urticaria</b>	22	11.7	Mild	After>before
<b>Maculopapular rash</b>	8	4.3	Mild/moderate	After
<b>Vesicular</b>	9	4.8	Mild/moderate	After
Acral erythema	3	1.6	Mild	After
Aphthousulcer	11	5.9	Mild/moderate/severe	After/before
<b>Herpeszoster</b>	7	3.7	severe	After
Herpesgingivomatitis	2	1	Moderate	After
<b>Oralthrush</b>	11	5.9	Moderate/severe	After
Purpura	7	3.7	severe	After
<b>Telogen effluvium</b>	17	9	Mild/moderate	After
Purpura fulminans	2	1	Severe	After
Pityriasisversi colour	9	4.8	Mild/moderate	After/ before
Pityriasis rosea	9	4.8	Mild/moderate	After
Tinea corporis	16	8.5	All	After/ recurred
Xerosis	11	5.9	All moderate > sev > mild	After
Mucormycosis	4	2.1	Severe	After
Psoriasis	2	1	Severe	Aggravate dafter
Lichenplanus	2	1	Moderate/mild	Aggravated after
Pemphigusfoliaceous	1	0.5	Severe	Aggravated after



Urticaria seen in a 58 year, 3days after testing positive for covid



30 year old woman showing Telogeneffluvium with central parting seen 2 month after recovering from covid



Herpes gingivostomatitis in 65 old covid positive h/o DM



52 yr old covid positive showing deposition of whitish plaques over the tongue and erythema over the buccalmusosa and palate, oral thrush



Purpura fulminans in 51yr old covid positive pt



Aphthous ulcers seen in 30yr old, covid positive 4th day



Acral erythema seen on 5th day in covid positive 25yr old male



Mucormycosis in severe covid positive, 60 yr old. Nasal involvement was also seen on MRI



Herpes labialis in 38yr old covid positive pt



Herpes zoster seen on 7<sup>th</sup> day post covid positive in 59yr old male



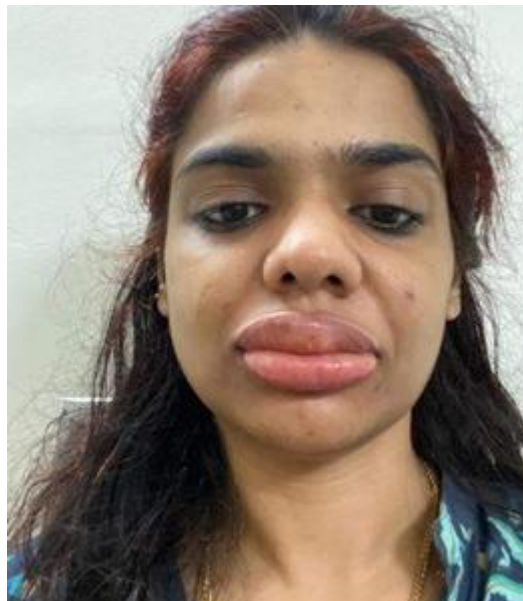
Exacerbation of psoriasis in the 48yr old covid positive pt, had history of psoriasis in remission since past 3 to 4 years



Pemphigus foliaceus in 40yr old male 14 days after testing positive for covid



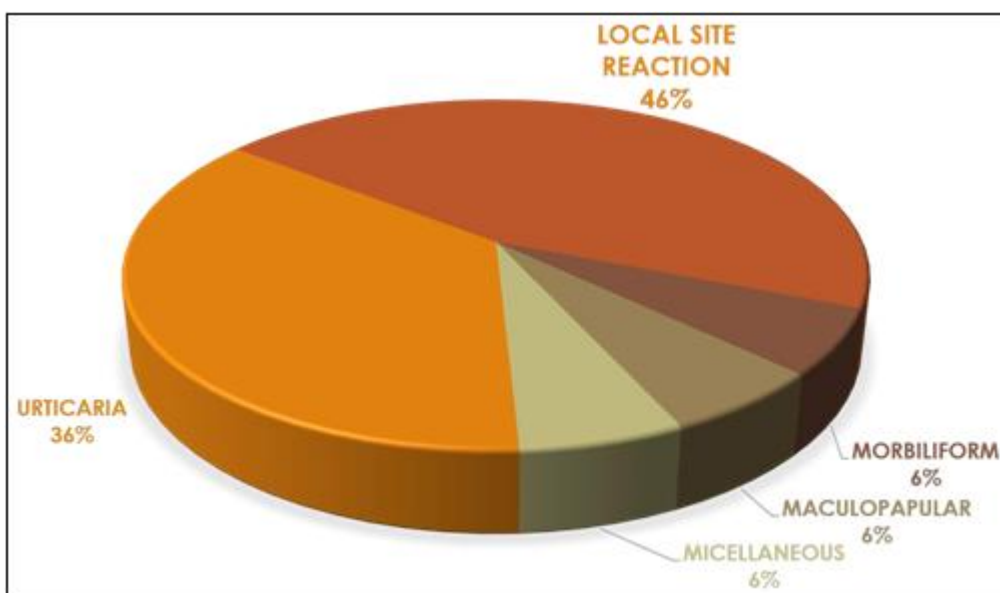
Maculopapular rash on 3rd day of covishield vaccine

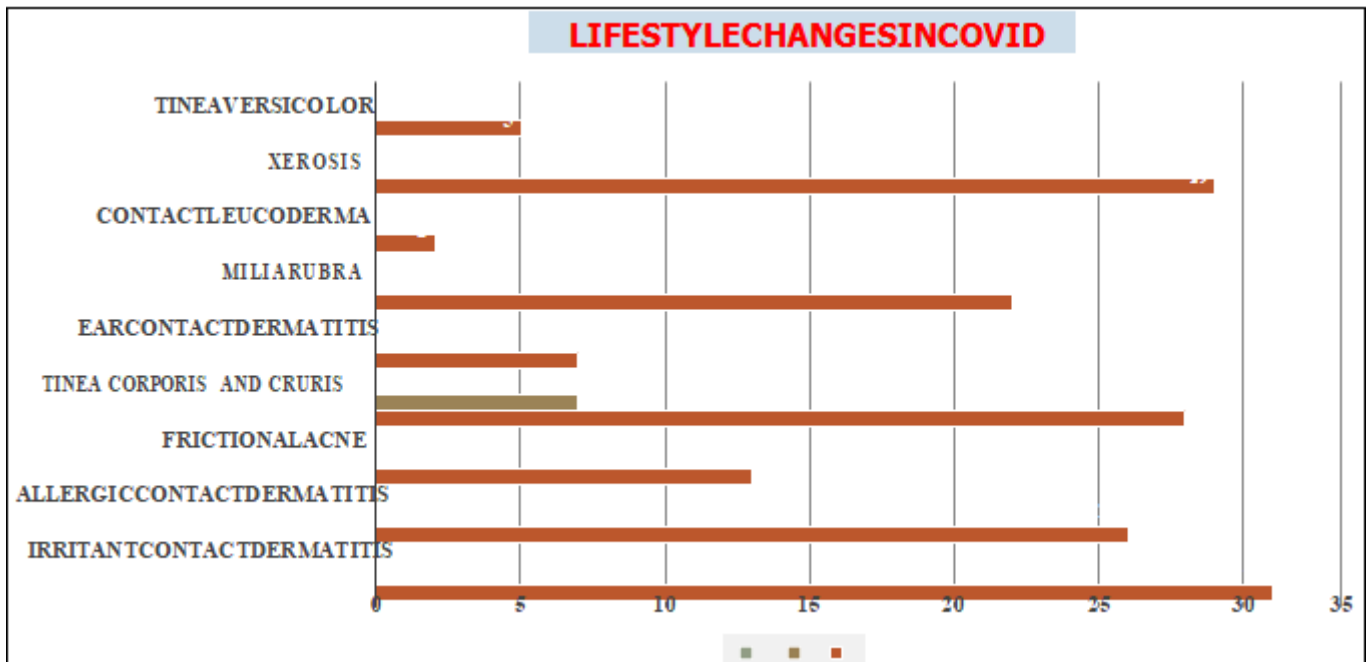


Angioedema, 15hrs after 2<sup>nd</sup> dose of covishield

- Total 387 patients were included in the study of which 188 patients were covid positive. Urticaria and Pruritus were the most common manifestations (27%), followed by maculopapular rash, aphthous ulcer, oral thrush, herpeszoster, purpura, and others. 3% patients showed exacerbation of already existing dermatosis.
- Of the 16 NSP, NSP3 blocks the innate immune response of the host and promotes cytokine expression. NSP5 inhibits interfere on (IFN) signaling and NSP 16 is involved in depressing the innate immunity. Aerosolized uptake of SARS-CoV-2 causes infection of target cells that express angiotensin-converting enzyme type 2 found in the epithelium of respiratory as well as basal keratinocytes. Immuno pathogenesis is also associated with an uncontrolled immune response and cytokine strom. Vascular system affected may lead to hyper coagulation states.

**Vaccine**





Trigger of acral vitiligo seen in 23yr old health care worker posted in covid ward. No previous history of vitiligo



Pompholyx in 30year old nursing staff due to excessive use of sanitizers and detergents



Contact dermatitis below the ear and checks due to mask use



Frictional acne in a 27yr old nursing staff



Eczema of ear in 60yr old lady in covid ward admitted for sever covid and associated complications

## 5. Conclusion

- The skin can serve as a window to study the pathogenesis of SARS-CoV-2 infection as the latter has been detected in skin biopsy samples.
- Studies involving skin and COVID-19 interactions is limited and further experimental pathophysiological studies and clinical data derived from large case series are still needed for shedding light on to this novel, under explored topic.
- Break down of protective skin and mucous membrane barrier, a consequence due to increased protective and personal hygiene measures, should be recognized.
- The use of precautionary measures like barrier creams, and moisturizers, is essential in preventing skin complications aggravated by lifestyle changes in the covid era.

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