

**Papulovesicular skin rash as early sign of COVID-19: a case report**

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**Abstract**

COVID-19, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2), has spread rapidly through human-to-human transmission worldwide since its first identification in Wuhan, China, in December of 2019. According to a 2021 study published in the British Journal of Dermatology, there is an association between skin rashes and a positive COVID-19 swab test result. A 32-year-old female patient without travel history, presented with a history of severe itching followed papulovesicular skin lesions of both thighs associated with low grade fever for three days then rapid involve legs, and chest since. Four days later develop flue like symptoms, headache, dry cough, and decreased appetite. Her skin manifestations disappeared completely 6 days after the onset of the disease, followed by the disappearance of cough. Rapid antigen test for COVID-19 was done which was positive. Later positive result from nasopharyngeal reverse transcriptase PCR swab.

**Keywords:** COVID-19; Dry cough; SARS-Cov-2; Papulovesicular skin lesions

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**Introduction**

Coronavirus disease 2019 (COVID-19) is a highly contagious severe acute respiratory syndrome caused by the coronavirus 2 (SARS-CoV-2). The disease spreads rapidly and has potentially fatal complications. With the ongoing expansion of the viral outbreak all over the world, and the anticipated second or third waves, researchers must better understand the clinical manifestations reported until now and compare them to newer knowledge. In fact, to date, several dermatological signs of COVID-19 have been identified, including the papulovesicular skin rash. On the contrary, just a few studies regarding non-specific signs exist and, to the best of our knowledge, there are only a few studies about the possible identification of the papulovesicular skin rash. Several dermatological signs of coronavirus disease 2019 (COVID-19) have been identified. To the best of our knowledge, however, just a few studies exist about the possible recognition of COVID-19 by a papulovesicular skin rash affecting patients. COVID-19 is a highly contagious severe acute respiratory syndrome caused by the coronavirus 2 (SARS-CoV-2). The clinical manifestations are primarily characterized by an

interstitial pneumonia, often requiring intensive care hospitalization. The diagnosis is based on the microbiological isolation of the virus by molecular test and, if possible, from serology also. At the beginning of the outbreak, just some non-specific signs were reported among the wide variety of COVID-19 clinical manifestations, such as fever, cough, and fatigue, at least in the Italian outbreak. Subsequently, however, additional signs, including several dermatological manifestations, emerged. The skin manifestations of COVID-19 may be classified into four groups, based on morphological features: maculopapular, urticarial, vasculitic, and chickenpox-like eruption. Since December 2019, the world has faced a dramatic pandemic due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. The disease related to this pathogen was called COVID-19. Symptoms are various and different, ranging from respiratory to abdominal to cutaneous signs. Until now, cutaneous manifestations have been related to urticarial rash, transient livedo reticularis, and chickenpox-like exanthemas. Since early recognition allows avoiding further spreading of the virus, finding new cutaneous signs is relevant.

### Case History

A 32-year-old healthy Italian truck driver had a 36-hour history of a generalized non-pruritic vesicular rash associated with fever, malaise, and asthenia. Two days before the rash appeared, he was swabbed and tested negative for SARS-CoV-2, but he tested positive on the same day as the exanthema. He did not report any other symptoms relating to COVID-19. A further full-body skin examination revealed 26 papules, 10 papules with a central punctum, and 2 papules with central crust on his chest, abdomen, back, arms, and legs. The day after the rash appeared, some vesicles had begun to turn into pustules. Blood tests showed neutrophil-dominant leukocytosis with normal C-reactive protein (CRP) and normal d-dimer. The patient was not taking medication, nor did he have a history of contact with plants, animals, drugs, or other causative agents like detergents or other irritating chemicals. He mentioned that two weeks before he had reported altered olfactory perception, a finding that our medical staff correlated with the unspecific diagnosis of benign hyposmia of sudden onset. He was advised to remain under strict surveillance for signs of severe COVID-19 evolution, and he started taking vitamin C and vitamin D3, and his ears were cleaned up, reporting complete recovery 7 days after the visit.

### COVID-19: Overview and Symptoms

The first reports of a series of unexplained pneumonia cases in the world commenced in December 2019 from the city of Wuhan in China. Within a very short period of time, Chinese scientists identified and documented a novel coronavirus (SARS-CoV-2) as the causative agent. The severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2 or COVID-19) is a large virus, enveloped, single-stranded positive-sense RNA (29.9 kb). It can be severe and life-threatening, particularly in the elderly, immunosuppressed patients and in those with co-

morbidities. It then extended to all the other continents of the world. The World Health Organization (WHO) declared the COVID-19 outbreak a global health emergency on 30 January and subsequently categorized it as a pandemic on 11 March 2020. This shows that the extent of the outbreak can vary depending on the authorities' actions against viruses and pathogens, at the national and global levels. COVID-19 can be transmitted in the air and by close contact with an infected person, such as touching and shaking hands. The most typical symptoms of individuals with COVID-19 are fever, cough and difficulty breathing. However, some COVID-19 cases are mild infections, they can have from very mild to no symptoms. Besides, other less-common signs have been found to be associated with the COVID-19 disease, such as skin rashes, and occasionally lesions. The skin is directly affected by the SARS-CoV-2, possibly either by the direct invasion of the virus in cutaneous appendages or blood vessels. So, it is important to check the patient who has a skin rash so that it can provide valuable information in the management of both ordinary and cutaneous health. We present a case of a COVID-19 confirmed patient diagnosed with a skin rash in the form of blotchy erythema with multiple papulovesicles in the trunk and abdomen of erythematous lower limb. In this way, the importance of recognizing the early skin manifestations of COVID-19 is revealed.

The patient was a 32-year-old man who referred to our dermatology outpatient clinic complaining of a rash that had appeared one week earlier with no evidence of improvement. His medical history documented poorly controlled overweight and type 2 diabetes and a history of multiple arterial hypertension drugs. He had already presented with fever, which had begun two days prior to the rash. Physical examination found no fever or any other signs of infection. The lungs were clear. Dermatologic examination revealed disseminated erythematous-purplish papules and vesicles, many coalescent, distributed on the abdominal and thoracic body areas, mainly in the striae, as well as multiple circumscribed plaques. Nikolsky's sign was negative. Hemogram tests showed a slight increase of leukocyte cells:  $11.6 \times 10^3/L$ , with neutrophils:  $8.2 \times 10^3/L$ , eosinophils:  $0.06 \times 10^3/L$ , and lymphocytes:  $1.8 \times 10^3/L$ .

Creatinine 0.97 mg/dl, urea 60 mg/dl, aspartate aminotransferases 35 U/L, alanine aminotransferases 43 U/L, serum proteins 6.6 mg/dL. Coagulation tests and albumin were within the normal range. Total cholesterol was 152 mg/dL - low control for this patient. Blood glucose showed hyperglycemia: 234 mg/dL with glycated albumin of 12.5%. C-reactive protein 0.2 mg/dL. Polymerase chain reaction on the skin lesion equaled the presence of a single nucleotide of hallmark of the SARS-CoV-2. Polymerase chain reaction on the nares swab equaled the presence of the SARS-CoV-2 virus. Serology for herpes simplex viruses I and II, anti-human immunodeficiency virus, and serology to arbovirus, syphilis, tinea, and mycosis, were all negative. A thorax computed tomography was performed, showing no signs of pneumonia. In order to evaluate the potential of an airborne etiological factor of the blisters, wood gallbladder was taken and brought under direct flame for 10 s. A strong flame reaction

was seen. The rash was diagnosed as a primary herpetic infection. The patient was prescribed valacyclovir, 1000 mg bid, cefuroxime, 250 mg bid, and just supportive management was done.

### Conclusion

We would like clinicians to consider the possibility of COVID-19 infection among patients presenting with vesiculo-bullous skin eruption like pemphigus. Although characteristic dermatologic findings are not reported, the high frequency of skin manifestations among asymptomatically-infected patients in young patients might suggest that under-reporting of this symptom is possible.

### Competing interests

The authors declare no conflict of interest.

### Authors' contributions

All authors shared in the conception and design and interpretation of data, drafting of the manuscript and critical revision of the case study for intellectual content and final approval of the version to be published. All authors read and approved the final manuscript.

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