

COVID-19 Infection Manifesting with Maculopapular Rash: A Case Report

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ABSTRACT

COVID-19 commonly manifests with respiratory symptoms but is reported to involve other organs including the skin.

This is a case of a 58-year-old male diagnosed with mild COVID-19 infection via reverse transcriptase-polymerase chain reaction (RT-PCR) nasopharyngeal swab (NPS). He initially presented with symptoms of fever, cough, colds, sore throat, anosmia, ageusia, myalgia, and diarrhea. Maculopapular cutaneous lesions appeared on the extremities on the 3rd day of illness and were described as pruritic and blanching. The patient was managed conservatively with oral hydration and vitamin supplementation. During home isolation, symptoms were monitored via telemedicine. He recovered and was asymptomatic 36 days from the onset of symptoms.

During the early part of the pandemic, further diagnostic testing was challenging due to the restrictions that were implemented. However, careful history, modified physical examination, and monitoring through teleconsultation proved to be very useful. Documenting the course and outcome of COVID-19 patients with skin manifestations would help facilitate timely diagnosis and treatment, as well as anticipate the possible prognosis of patients who present with a similar clinical pattern.

Keywords: COVID-19, maculopapular rash, cutaneous lesion, case report

BACKGROUND

COVID-19 infection has affected 28,637,952 people globally and 257,863 locally in the Philippines as of September 2020.¹ Typical presentation showed predominance of respiratory symptoms such as cough, dyspnea, fever and flu-like symptoms.²⁻⁶ However, extra-respiratory manifestations such as cardiac, gastrointestinal, renal, hepatic, neurological, olfactory, gustatory, ocular, cutaneous, and hematological manifestations were also documented on recent literatures describing multisystem involvement observed among coronavirus infected individuals.^{7,8} The predilection of virus spread is not limited to within the respiratory system, as series of autopsy done on 27 patients resulted to detection of SARS-CoV-2 in multiple organs.⁹ This organ tropism is attributed to the ACE-2 receptors found in the various parts of the body acting as binding sites allowing viral entry.¹⁰

There is a need to document and better understand atypical presentations of COVID-19 infection such as reports of skin manifestations for early detection and containment. A local case study by Co et al. described urticarial plaques and livedoid vasculitis as skin morphology among positive COVID-19 Filipino patients.¹¹ Similarly, this case report features a COVID-19 infected individual with maculopapular rashes. At the time of writing, because of the uniqueness of the clinical presentation, informed



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consent was obtained from the patient to document and present the course of illness.

The cutaneous lesions occurred concomitantly with respiratory, gastrointestinal, olfactory, and gustatory manifestations of COVID-19. Documenting the various forms of dermatologic findings seen in these patients may augment clinical understanding on how coronavirus infection may present atypically among Filipinos. Case reports such as this contribute to the knowledge about the course and outcome of COVID-19 patients with skin manifestations presenting with other organ involvement.

CASE PRESENTATION

A 58-year-old male presented with flu-like symptoms of intermittent high-grade fever reaching 40°C, sore throat, anosmia, ageusia, myalgia, fatigue, and weakness. On the third day of illness, there was appearance of pruritic, erythematous, blanching maculopapular rashes over his extremities, trunk, and neck while sparing the areas of face, palms, and soles (Figure 1).

An informed consent was signed to document the course of illness. Non-productive coughs were experienced followed by episodes of nausea and loose bowel movement. The stool was characterized as watery, non-mucoid, non-bloody occurring four times per day. He did not have vomiting, abdominal pain nor any signs of dehydration. On the 10th day of illness, sore throat and rashes have resolved. He was clinically stable throughout the course of the illness. Other symptoms such as myalgia resolved on day 14, ageusia on day 32, anosmia, cough, and colds resolved on day 36 of illness.

The patient was previously diagnosed with urolithiasis and gouty arthritis with no maintenance medications and has not undergone any surgical procedures. During illness, there were no symptomatic complaints associated with the patient's comorbid conditions. He has a familial predisposition to hypertension, cardiovascular disease, and asthma. He occasionally drinks alcohol and smokes 10 cigarette sticks per day (19.5 pack years).

The isolation precautions have limited the conduct of actual physical examination. Assessment via teleconsultation showed that the skin is dry with lesions that are generalized, maculopapular, and erythematous spreading over the trunk and extremities. There were no excoriations, crusting, or scaling (Figure 1).

INVESTIGATION

The reverse transcriptase-polymerase chain reaction (RT-PCR) nasopharyngeal swab (NPS) done on day four of illness was positive. He was diagnosed with mild COVID-19 infection. Histopathological examination on the skin lesion was not done and no additional diagnostic tests were requested.

DIFFERENTIAL DIAGNOSIS

Maculopapular rash is a common symptom that can occur due to drugs or infections.¹² There was no history of high-risk drug use that can predispose to both drug reaction with eosinophilia and systemic symptoms (DRESS) and morbilliform drug eruptions, thus, ruling out differentials.



Figure 1. Image showing maculopapular rash (red arrows) on the upper extremities.

Bacterial and viral infections usually occur with respiratory symptoms and may be differentiated according to distribution of rashes. In this case, cutaneous lesions were distributed peripherally primarily located on the trunk and extremities with sparing of the face, palms, and soles. Exanthems of viral infections such as rubeola and rubella have central distribution spreading cephalocaudally and are associated with fever followed by cough, coryza, and conjunctivitis. Peripherally distributed rashes may include erythema multiforme, secondary syphilis, meningococemia, dengue fever, and atypically, influenza.¹³ Erythema multiforme and secondary syphilis both have palmoplantar distribution which is not evident in this case. Meningococemia presents with purpuric lesions and follows a severe course accompanied by tachypnea, tachycardia, and hypotension.¹² Dengue fever follows a similar course of rashes preceded by fever.¹² Respiratory symptoms such as cough, sore throat, and colds, however, were not common presentations of dengue.¹⁴ There are case studies that documented the appearance of rashes among those affected with influenza.¹⁵⁻¹⁷ In a case report of an adult male with H1N1 infection, erythematous maculopapular rashes appeared on the abdomen spreading to extremities sparing face, palms, and soles.¹⁵ Although influenza may also present with respiratory symptoms with rash, the rash only occurs atypically.

A high index of suspicion was given for COVID-19 infection since the patient was presented with usual presentations of the disease such as fever and respiratory symptoms accompanied by anosmia, ageusia, and diarrhea. Furthermore, cutaneous manifestations such as rashes have also been documented in studies with COVID-19 patients.^{7,8} The diagnosis was eventually confirmed by a positive RT-PCR NPS result.

TREATMENT

The patient was treated conservatively with oral hydration, rest, and supplementation with Vitamin C 500 mg and Zinc 15 mg for two weeks, without reported adverse reactions. He continued home isolation and remained clinically stable throughout the course until recovery.

Outcome and Follow-up

The course of the illness lasted for 36 days. Skin rashes spontaneously resolved seven days from the onset. There was no repeat nasopharyngeal swabbing done. He was medically cleared and was able to resume regular work. There was no recurrence of rashes on follow-up.

DISCUSSION

Dermatologic lesions are also common presentations among COVID-19 positive patients with a prevalence rate of 4.9% to 20.4%.¹⁸⁻²⁴ The exact pathogenesis of skin lesions in COVID-19, however, has not been clearly established.²²

SARS-CoV-2 has been known to bind to ACE-2 by the protein S and allows the virus to enter and infect cells.²⁴ Some possible mechanisms postulated include possible direct inoculation of the virus, dissemination or reactivation of the virus from another site, or interaction of the virus with the immune system in general, and related cellular and humoral immune responses including virus-specific lymphocytes and antibodies.²⁵

Rashes among COVID-19 patients usually follow a short course, spontaneously resolving after a few days.²⁶ In a recent review by Marzano et al., severity of COVID-19 infection varied with the type of lesion observed, with acral lesions showing mild course and livedo/necrosis showing a more severe course.²⁷

An approach to the diagnosis and management of patients with skin lesions and are at risk of COVID-19 infection entails a thorough history and a comprehensive physical examination.^{12,13} Limitations of non-face-to-face assessment of lesions as well as the difficulty to conduct diagnostic tests such as viral assays and histopathologic studies, because of isolation protocols, are challenges for accurate diagnosis. Though rashes are reported among COVID-19 positive individuals, a thorough assessment is very important because of the wide array of possible diseases that manifest the same course. Despite the challenges, proper case documentations and continued analysis of clinical courses and symptomatology of patients with coronavirus infection are helpful to better understand the disease and aid in the timely recognition and diagnosis of COVID-19 infection.

Rashes often can be attributed to various etiologies. Though there is still limited data on work-up for skin lesions and those with COVID-19, histopathological tests and RT-PCR analysis may be useful to determine exact etiology and ensure confirmation of diagnosis.²⁸ Histopathological investigations of exanthematous lesions in recent studies showed compatibility with viral exanthems.²⁵ Some studies utilized RT-PCR analysis, however, often yielded negative results.²⁷ To investigate the exact mechanism involved in development of these manifestations, further studies with skin biopsies, serological tests, and RT-PCR analysis may be initiated.²² Measurement of viral loads at varying time points may help to determine the right time for conduct of biopsies.²² However, given economic considerations in resource poor communities, such highly specialized diagnostics may be limited. In such cases, thorough assessments using physical examination and a comprehensive history may prove to be more cost-effective measures in confirmation of diagnosis.

CONCLUSION

This report shows confirmed case of COVID-19 presented with mild respiratory symptoms and dermatologic manifestation that was managed supportively with hydration and vitamin supplementation. At the early year in pandemic, the emerging evidence of documented appearance of

cutaneous lesions supports the need for further investigation of its correlation with COVID-19 infection, outcomes, and prognosis. Whenever available, further diagnostics such as skin biopsies, serology tests, and RT-PCR analysis may also be explored to investigate underlying mechanisms involved. The challenge of conducting tests while adhering to strict isolation and the cost of these procedures, underscores the importance of a comprehensive history and guided physical examination via teleconsultation in ensuring timely diagnosis of COVID-19-related skin lesions.

PATIENT PERSPECTIVE

“I felt stressed upon learning of my diagnosis. I asked myself ‘Why is it so?’ I had difficulty sleeping thinking about my condition and thought to myself that this could be my last day. Being personnel who worked in a hospital, my family sometimes experienced discrimination from our neighbors. When I got diagnosed, I advised my children to take precautions and to not mind the talk around the neighborhood.”

Although I was in a stressful situation, what helped was the comfort I received from my family. Praying together as a family brought me reassurance while the calls from the physicians I have worked with strengthened my spirits to fight this sickness. I learned a lot of things from this experience. I realized that number one should always be prayer. Prayer was the only thing I could do against this sickness. I also realized it is important to exercise precautions especially when dealing with others. After having gone through this, I have learned to adjust to the new normal. Looking on the bright side, our family became closer because of what happened.”

LEARNING POINTS

- Recognizing COVID-19-related skin problems may be difficult due to the wide array of differentials in patients presenting with rashes.
- Conducting diagnostic workup in COVID-19 patients is challenging given the current restrictions in this pandemic, therefore, proper documentation of COVID-19 positive cases with cutaneous manifestations will aid physicians in timely recognition and diagnosis of the disease.
- Further studies utilizing skin biopsies, serology tests, and RT-PCR analysis may also be explored to investigate underlying mechanisms involved. Given cost restrictions in poor communities, a comprehensive history and physical examination may be a more cost-effective measure in confirming diagnosis.

Statement of Authorship

Both authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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