CASE REPORT

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Urticarial manifestation in COVID-19 infection: A case report

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ABSTRACT

Background: The COVID-19 pandemic outbreak causes a worldwide health concern. As the epidemic progressed, several cutaneous manifestations are increasingly noticed; therefore, the authors hope this report will provide additional information that may benefit fellow healthcare professionals.

Case report: A 45 years old Javanese female patient complained of fatigue, dry cough, dyspepsia, and reddish pruritic swelling on her face for one day. There was no fever, dyspnea, anosmia, diarrhea, or uvula, tongue, vocal cords, and the airway problem. She had no history of food or drug allergy, urticaria, other comorbidities, or any medicine consumption in the last 15 days. Facial dermatological status showed circumscribed, raised, erythematous areas of edema, slightly pruritic. Normal vital signs. Blood laboratory results: leucocyte 5.760/mL, decreased ALC 818/mL, increased NLR 5.0. Chest X-ray showed an increase in bronchovascular pattern and slight opacity on the peripheral, basal part of both hemithorax. COVID-19 rapid test was positive for IgM, and her PCR of upper-airway secretions revealed positive COVID-19 infection. The diagnoses were COVID-19 infection, dyspepsia, and urticaria. The treatments were levofloxacin, isoprinosine, chloroquine sulfate, omeprazole, fluimucyl, vitamin C, and diphenhydramine. Within three days of treatment, the urticaria started to fade off, and her overall condition improved.

Conclusion: The COVID-19 poses a global challenge in the health sector, and one of its various manifestations is cutaneous symptoms. Further research is necessary to elucidate how COVID-19 triggers dermatological symptoms.

Keywords:coronavirus, COVID-19, urticaria, cutaneous manifestation

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INTRODUCTION

The pandemic outbreak of novel coronavirus disease (COVID-19) started in China, causing a global health concern. The RNA virus belonging to the *Coronaviridae* family was the etiologic agent. At first, the signs that were primarily observed were fever, upper respiratory symptoms, malaise, and diarrhea.[1] As the epidemic progressed, healthcare professionals around the world noticed several cutaneous manifestations of COVID-19.[2]

There are still, however, not many reports around this issue; therefore, the authors hereby present a case of an urticarial eruption in a patient with positive COVID-19 infection with the hope of providing additional information that may benefit fellow healthcare professionals.

CASE REPORT

A 45 years old Javanese female patient came to the emergency room with a complaint of fatigue, dry cough, dyspepsia, as well as reddish pruritic swelling on her face for the past one day. She did not experience fever, dyspnea, anosmia, diarrhea, or the tongue, uvula, vocal cords, and the airway problem. History of food allergy, drug allergy, urticaria, or other comorbidities was denied. There was no history of consuming any medicine in the last 15 days prior to coming to the hospital. Dermatologic status on her facial region showed circumscribed, raised, erythematous areas of edema that were slightly pruritic (**Figure 1**). Vital signs evaluation were normal (blood pressure 110/70 mmHg, pulse rate 110 times/minute, respiratory rate 18 times/minute, temperature 36.0°C, and SpO_2 98% (without oxygen supplementation). Her blood laboratory results were as followed: leucocyte 5.760/mL, decreased absolute lymphocyte count (ALC) 818/mL, increased neutrophil-lymphocyte ratio (NLR) 5.0. Her chest X-ray examination showed an increase in bronchovascular pattern and slight opacity on the peripheral, basal part of both hemithorax (**Figure 2**). Her COVID-19 rapid test was positive for IgM. She was immediately admitted into the isolation ward while waiting for upper-airway secretions evaluation using polymerase chain reaction (PCR) (by oropharyngeal and nasopharyngeal swab) examination the next day,

Figure 1. Dermatologic status on her facial region showed circumscribed, raised, erythematous areas of edema that were slightly pruritic

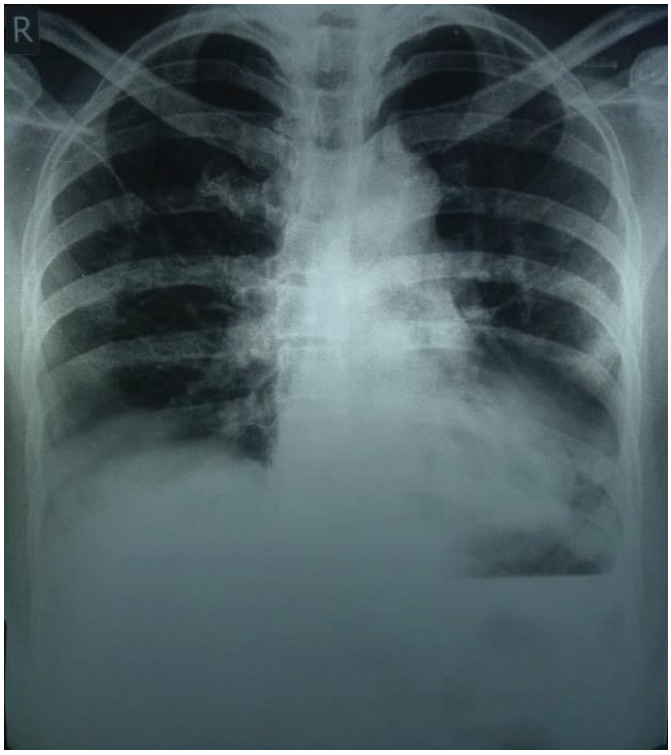

Figure 2. Chest X-ray examination showed an increase in bronchovascular pattern and slight opacity on the peripheral, basal part of both hemithorax

which revealed positive COVID-19 infection. The patient was diagnosed with COVID-19 infection, dyspepsia, and urticaria. She received a treatment of levofloxacin, isoprinosine, chloroquine sulfate, omeprazole, fluimucyl, vitamin C, and diphenhydramine. Within three days of treatment, the urticaria started to fade off, and her overall condition improved.

DISCUSSION

COVID-19 or coronavirus disease 2019, is a great challenge to the health sector globally. The syndromes are diverse, including dermatological manifestations. To date, there is still little known information about cutaneous clinical feature associated with the virus, since there were only a few case reports and review articles.

There are studies reporting various forms of COVID-19 cutaneous symptoms. Some of them are erythematous rash, urticaria, vesicle formation, painful acral red, purple papules, petechiae, and livedo or necrosis.[3,4] In this article, the patient developed urticaria on her face. Consistent with previous studies, the urticaria symptoms improved with the administration of antihistamines.[5,6]

The exact mechanisms of COVID-19 urticarial manifestations are still not fully understood, yet studies are ongoing, and theories are prevalent. The relationship between viral infection and urticaria has been studied before, where the urticarial manifestation cleared up after the viral infection was under control. Herpesviridae (cytomegalovirus and epstein-barr virus), rhinovirus, as well as hepatitis viruses (A, B, and C) are the most common virus group involved in the trigger urticaria.[7] There are multiple hypotheses as to how the urticaria develops. Some authors suggested IgM and IgG cross-reaction with mast cell IgE favoring degranulation of mast cell.[8] Another postulate that the infection of viral triggers nonimmunological urticaria by activation of mast cell through complement activation.[5] Another theory is the process of lymphocytic vasculitis that is triggered by the novel coronavirus particles that exist in the skin blood vessels. Angiotensin-converting enzyme 2 (ACE2) has been recognized as the functional receptor for SARS-CoV (severe acute respiratory syndrome coronavirus), and it is widely distributed in the human body.[9] This might trigger antibody-antigen complex formation, which is further deposited on the vessel wall, followed by activation of complement and degranulation of mast cell, releasing histamine. The histamine release causes vasodilation and leads to urticaria, as occurred in this case.[4,8] However, these are all hypotheses; the specific role of COVID-19 in the triggering

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urticaria is still not fully comprehended.

Scientific understanding of COVID-19 is recently advancing at this stage, but it is strongly suggested that COVID-19 can lead to cutaneous manifestations. Therefore, physicians are urged to be attentive to these manifestations that may support in the timely of COVID-19 diagnosis, helping to reduce its spread. Further research and literature are required to confirm comprehension of related cutaneous manifestations in COVID-19.

CONCLUSION

Coronavirus disease 2019 (COVID-19) poses a global challenge in the health sector, and one of its various manifestations is cutaneous symptoms. There have been many postulations about how COVID-19 triggers dermatological symptoms, but further research is necessary to elucidate these mechanisms.

INFORMED CONSENT

Provided and signed by the patient.

CONFLICTS OF INTERESTS

The authors declare no relevant conflicts of interest.

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AUTHORS CONTRIBUTION

Contributions to the case, literature, and publications have been given by all authors in this publication.

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