



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



## Erythema nodosum-like rash in a COVID-19 patient: A case report

Nicole Sipfle DO<sup>\*</sup>, Rachel E. Bridwell MD, Jamie Roper DO

Department of Emergency Medicine, San Antonio, Uniformed Services Health Education Consortium, 3551 Roger Brooke Dr, Fort Sam Houston, TX 78234, United States

### ARTICLE INFO

#### Article history:

Received 19 July 2020

Accepted 22 July 2020

#### Keywords:

Erythema nodosum

COVID-19

Dermatology

Rash

### ABSTRACT

Coronavirus 2019 (COVID-19) is a viral disease first described in Wuhan, China, which has quickly emerged as a global pandemic with a myriad of manifestations including dermatologic (Li My et al., n.d.; Gottlieb and Long, 2020 [1,2]). A variety of cutaneous symptoms have presented throughout various stages of the disease (Marzano, 2020; Recalcati, n.d.; Henry et al., n.d.; Fernandez-Nieto et al., n.d.; Quintana-Castanedo et al., n.d. [3–5,7,8]). We describe a case of a female patient who presented with an Erythema Nodosum-like exanthema likely secondary to COVID-19. The patient described tested positive for COVID-19 three days prior to presentation for the rash with minimal other symptoms of COVID-19. Given the high infectivity rate as well as multisystem presentation, it is important to continue to report on novel presentations of the virus for early identification and treatment of complications.

Published by Elsevier Inc.

Guarantor: Nicole Sipfle.

### Introduction

Erythema nodosum (EN) is a delayed-type hypersensitivity reaction that can be triggered by a variety of conditions, including infection, drugs, pregnancy, malignancy, and inflammatory processes. While its pathophysiology is not fully elucidated, EN is most commonly associated with infection, particularly *Streptococcus* species [6]. It occurs in both sexes and all age ranges, although more often in women [6]. On exam, classic presentation involves the lower extremities with patients presenting with tender, erythematous nodules on bilateral shins. Nodules typically resolve on their own without intervention within eight weeks of onset [6]. The diagnosis of EN is primarily clinical based on history and physical examination. Laboratory studies and skin biopsy may be considered in atypical presentations to confirm diagnosis. The condition typically resolves spontaneously and therefore treatment targets symptom control [6].

Coronavirus 2019 (COVID-19) is a novel virus thought to infect cells through angiotensin-converting enzyme 2 (ACE2) receptors which can be found on multiple organ systems, including skin [1]. There have been multiple reports of cutaneous manifestations of the disease ranging from pernio (chilblain)-like lesions to urticarial rashes [2]. Below, the authors discuss a case of COVID-19 triggered EN.

#### Case presentation:

A 54-year-old female with history of hypothyroidism and hypertension presented to the Emergency Department with chief complaint of

new rash developing over the last 24 h. This erythematous, painful and pruritic rash was diffusely spread over the bilateral upper extremities, chest, neck, back, and face. The patient was confirmed positive by nasopharyngeal Polymerase Chain Reaction (PCR) for COVID-19 72 h prior to rash onset. The patient's review of systems was unremarkable.

The patient's initial vital signs were blood pressure of 149/78 mmHg, heart rate of 81 beats per minute, respiratory rate of 20 breaths per minute, oxygen saturation of 96% on room air with a temperature of 97.9 degrees Fahrenheit. On exam the patient had erythematous, non-blanching, circular, raised, tender nodules located on bilateral upper extremities, chest, back, neck, and face consistent with EN (Figs. 1–3). Ulceration and weeping were not noted on exam.

The patient was discharged with strict return precautions and advised to quarantine per Center for Disease Control guidelines. To reduce the spread of COVID-19 to healthcare workers, Dermatology was not consulted during the patient's Emergency Department visit based on her clinically stable exam. She was prescribed naproxen and hydroxyzine for symptom control.

### Discussion

With the continued rise in COVID-19 cases globally, recognizing the multitude of disease presentations is key in both treatment of individuals and containment of viral spread. The true frequency of cutaneous manifestations is unknown but is estimated to be up to 20.4% of cases [4]. There have been multiple case reports and case series outlining dermatologic manifestations of COVID-19. The previously described exanthems include vesicular, pernio (chilblain)-like lesions, livedo reticularis, urticarial, petechial, and maculopapular [2,5,7–11]. These viral exanthems have been described to occur throughout various stages of the disease and do not correlate well with severity of illness

<sup>\*</sup> Corresponding author.

E-mail address: [sipfleni@gmail.com](mailto:sipfleni@gmail.com) (N. Sipfle DO).



Fig. 1. Image demonstrating Erythema nodosum-like rash on lower back.



Fig. 2. Image demonstrating Erythema nodosum-like rash on upper extremities.



Fig. 3. Image demonstrating erythema nodosum-like rash on patient's face.

[4]. While many cases have reported dermatologic symptoms prior to respiratory symptoms, the majority of studies have suggested onset a few days after other symptoms [2].

However, the above case describes a novel cutaneous presentation of COVID-19 as well as a unique presentation of EN. This particular patient did not warrant hospitalization at the time of presentation, though further cases outlining the presentation of similar exanthems would be helpful in elucidating timing and severity of illness associated with EN-like eruptions in COVID-19. It is crucial for emergency physicians to recognize the variety of COVID-19 manifestations, including dermatologic, to aid in earlier identification of this highly communicable world-wide disease.

## Conclusion

Erythema nodosum is a self-limiting rash that has been implicated with many known triggers including infection, malignancy, and drugs. Its identification as possible dermatologic exanthema for COVID-19 is important for early identification, treatment, and quarantine of this disease. Earlier identification and recognition of the virus by emergency physicians will help improve outcomes and mitigate transmission.

Presentations: None.

Publications (Print and Online): None.

Funding/COI: None.

Acknowledgements: None.

Disclaimer: The view(s) expressed herein are those of the author (s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Army Medical Department, the U.S. Army Office of the Surgeon General, the Department of the Army, the Department of the Air Force and Department of Defense or the U.S. Government.

## References

- [1] Li My, LIL, Zhang Y, Wang XS. Expression of the SARS-CoV-2 cell receptor gene ACE2 in a wide variety of human tissues. *Infect Dis Poverty*. 2020;9(1):45. Published 2020 Apr 28. Doi:<https://doi.org/10.1186/s40249-020-00662-x>
- [2] Gottlieb M, Long B. Dermatologic manifestations and complications of COVID-19. *American Journal of Emergency Medicine*; 2020. <https://doi.org/10.1016/j.ajem.2020.06.011>.
- [3] Marzano AV. Varicella-like exanthema as a specific COVID-19-associated skin manifestation: multicenter case series of 22 patients. *J of Acad Dermatol*. 2020;83(1):280–5. <https://doi.org/10.1016/j.jaad.1010.04.044>.
- [4] Recalcati S. Cutaneous manifestations in COVID-19: a first perspective [published online ahead of print, 2020 Mar 26]. *J Eur Acad Dermatol Venereol*. 2020;<https://doi.org/10.1111/jdv.16387>.doi:10.1111/jdv.16387
- [5] Henry D, Ackerman M, Sancelme E, Finon A, Esteve E. Urticarial eruption in COVID-19 infection [published online ahead of print, 2020 Apr 15]. *J Eur Acad Dermatol Venereol*.2020;<https://doi.org/10.1111/jdv.16472>.doi:10.1111/jdv.16472
- [6] Schwartz RA, Nervi SJ. Erythema Nodosum: a sign of systemic disease. *Am Fam Physician*. 2007 Mar 1;75(5):695–700.
- [7] Fernandez-Nieto D, Ortega-Quijano D, Segurado-Miravalles G, Pindado-Ortega C, Prieto-Barrios M, Jimenez-Cauhe J. Comment on: Cutaneous manifestations in COVID-19: a first perspective. Safety concerns of clinical images and skin biopsies [published online ahead of print, 2020 Apr 15]. *J Eur Acad Dermatol Venereol*. 2020;10.1111/jdv.16470.
- [8] Quintana-Castanedo L, Feito-Rodriguez M, Valero-Lopez I, Chiloeches-Fernandez C, Sendagorta-Cudos E, Herranz-Pinto P. Urticarial exanthema as early diagnostic clue for COVID-19 infection [published online ahead of print, 2020 Apr 29]. *JAAD Case Rep*. 2020;<https://doi.org/10.1016/j.jdc.2020.04.026>.doi:10.1016/j.jdc.2020.04.026
- [9] Sanchez A, Sohler P, Benghanem S, et al. Digitate Papulosquamous Eruption Associated with Severe Acute Respiratory Syndrome Coronavirus 2 Infection [published online ahead of print, 2020 Apr 30]. *JAMA Dermatol*. 2020;<https://doi.org/10.1001/jamadermatol.2020.1704>. doi:<https://doi.org/10.1001/jamadermatol.2020.1704>
- [10] Joob B, Wiwanitkit V. COVID-19 can present with a rash and be mistaken for dengue. *J Am Acad Dermatol*. 2020;82(5):e177.doi:<https://doi.org/10.1016/j.jaad.2020.03.036>
- [11] Galvan Casas C, Catala A, Carretero Hernandez G, et al. Classification of the cutaneous manifestations of COVID-19: a rapid prospective nationwide consensus study in Spain with 375 cases [published online ahead of print, 2020 Apr 29]. *Br J Dermatol*. 2020;<https://doi.org/10.1111/bjd.19163>. doi:<https://doi.org/10.1111/bjd.19163>