

COVID CONCEPT

Erythema Gyratum Repens: A Delayed Manifestation of COVID-19 Infection

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ABSTRACT

A man in his mid 50's with a history of recent COVID-19 infection presented to the emergency department (ED) with a cough, chest pain, shortness of breath, and a new rash. Workup included a complete blood count and computed tomography (CT) scan of the thorax, which showed neutrophilic leukocytosis and multiple cavitory lesions in the right lung and superior segment of the left upper lobe. Physical examination showed serpiginous, erythematous plaques on the lower extremities, upper extremities, abdomen, and back. Initially, erythema gyratum repens (EGR) secondary to tuberculosis was considered. However, QuantiFERON-TB Gold testing was negative and bronchiolar lavage fluid grew methicillin-resistant staph aureus (MRSA). Further testing for other etiologies was unremarkable. Due to the characteristic pattern of the rash and resolution shortly after COVID-19 symptoms subsided, a diagnosis of EGR secondary to COVID-19 infection was made.

INTRODUCTION

Erythema gyratum repens (EGR) is a rare dermatologic disease manifesting as erythematous, scaling bands that take on a distinct serpiginous pattern.¹ Here, we present a case of EGR secondary to COVID-19 infection.

CASE REPORT

A 56-year-old man with a known history of hypertension, type II diabetes mellitus, and recent COVID-19 infection presented from a homeless shelter to the emergency department (ED) for a worsening cough, shortness of breath, pleuritic chest pain, and a new rash. Two days prior, he had been

discharged after a two-week stay for COVID-19 pneumonia after testing positive for SARS-CoV-2 with reverse transcription-polymerase chain reaction (RT-PCR) by nasopharyngeal swab testing.

In the ED, a complete blood count showed neutrophilic leukocytosis, and a computed tomography (CT) thorax showed multiple cavitory lesions in the right lung and in the superior segment of the left upper lobe, concerning for infection, given they were not present on his CT thorax from two weeks prior.

Physical exam showed serpiginous, erythematous plaques with a “rings within rings” pattern and fine trailing scale, most pronounced on the bilateral lower extremities but also noted on the upper extremities,

January 2024 Volume 8 Issue 1



Figure 1. Bilateral lower extremities with serpiginous, erythematous plaques with a “rings within rings” pattern and fine trailing scale.



Figure 2. Thighs with pronounced serpiginous, erythematous plaques.

Table 1. Reported Cases of COVID-19-Induced Erythema Gydatum Repens.

| | Onset of Rash relative to COVID-19 | Symptoms | Time to Resolution of Rash | COVID-19 Symptoms and Severity |
|----------------------------------|---|-----------------------------|---|--|
| Castro Silva et al. ⁴ | Approximately 2 weeks after positive RT-PCR | Burning, pruritis, pain | 14 days after initial presentation with rash | Mild/moderately severe Cough, fatigue, myalgias, muscle weakness, headache, fever, dysgeusia, anosmia Not hospitalized |
| Peres et al. ⁵ | 30 days after infection | Pain, paresthesia, pruritis | 60 days after initial presentation with rash | Moderately severe Symptoms, hospitalization, and ventilation Status not specified |
| Present case | Approximately 2 weeks after positive RT-PCR | Pruritus | 10 days after initial presentation with rash' | Moderately severe Cough, fevers, diaphoresis, tachycardia, hypotension, dyspnea, chest pain Hospitalized, not ventilated |

abdomen, and back (**Figures 1 and 2**). His palms, soles, and mucosal surfaces were spared. There was no palpable lymphadenopathy.

EGR secondary to tuberculosis was considered due to known association,² given cavitory lung lesions and a history of homelessness. QuantiFERON-TB Gold testing was negative. He underwent bronchoscopy, and culture of bronchiolar lavage fluid grew methicillin-resistant staph aureus (MRSA). Bronchial lavage was negative for malignant cells. Three sputum acid-fast bacillus (AFB) smears had no organisms. Blood and lung tissue cultures were negative. The respiratory viral panel and Legionella culture were negative. Aspergillus, mycoplasma pneumoniae, blastomycosis, and histoplasma antigens and serology for antinuclear antibody, syphilis, hepatitis B and C viruses, and HIV were unremarkable.

By day 10, the rash had resolved with only residual hyperpigmentation. The patient was discharged on doxycycline to treat MRSA pneumonia.

DISCUSSION

EGR is a rare dermatologic disease with a distinct appearance characterized by wavy, erythematous bands that classically start on the trunk and proximal extremities, spreading in a centrifugal pattern. There is sparing of the hands, feet, and face, with patients commonly complaining of intense pruritis.¹ Histologic examination typically yields non-specific findings of spongiosis and parakeratosis.³

EGR is frequently associated with internal malignancy, with neoplasms of the lung, esophagus, and breast being most common.⁴ A recent review elucidated that a significant number of cases are non-neoplastic in nature, with some cases associated with concomitant skin disease (e.g. pityriasis rubra pilaris, ichthyosis), tuberculosis, connective tissue disease, azathioprine use, and hypereosinophilic syndrome.¹ The most effective treatment for EGR is identifying and treating the underlying cause.⁵

To our knowledge, this is the third reported case of EGR secondary to COVID-19 infection (**Table 1**).^{6,7} Although the exact pathogenesis of EGR is unknown, an immunological mechanism has been proposed.¹ COVID-19 is transmitted via aerosol or droplet infection and induces a systemic inflammatory response, leading to an increase in inflammatory cytokines, including IL-2, -8, -10, TNF- α , and IFN- γ .^{8,9} Formation and deposition of immune complexes likely play a role in the development of EGR.¹⁰ Chiquito et al. reported a case of EGR 24 hours after receiving a first dose of the AstraZeneca COVID-19 vaccine.¹¹ This provides additional evidence to the immunological mechanism underlying EGR.

Conflict of Interest Disclosures: None

Funding: None

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