

Human coronavirus OC43 simulating COVID-19 pneumonia

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ABSTRACT

Human coronavirus OC43 is a common cause of respiratory illness, especially in immunocompromised persons, including children and elderly adults. We report a 42-year-old immunocompetent woman with acute hypoxemic respiratory failure and positive results on OC43 coronavirus testing. This case indicates the need to consider other viral pathogens during this COVID-19 pandemic.

Keywords: OC43 Coronavirus, COVID-19, pneumonia

INTRODUCTION

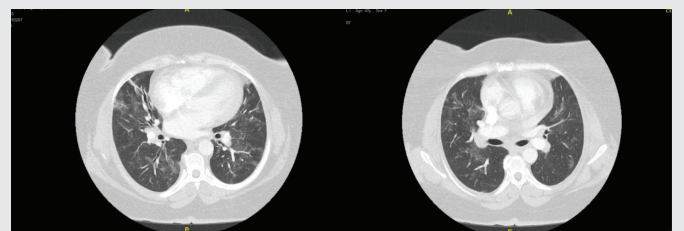
Human coronavirus OC43 (HCoV-OC43) causes respiratory tract infections, including bronchitis, bronchiolitis, and pneumonia in children, immunosuppressed patients, and elderly adults, especially those in long term care facilities. In this COVID-19 pandemic, the clinical presentation of OC43 corona infection may be difficult to differentiate from SARS-CoV-2 infections.

CASE

We report a 42-year-old obese woman (BMI > 40 kg/m²) who presented with severe dyspnea, wheezing, and cough with whitish sputum production. Her past medical history was significant for asthma, and she regularly smoked cigarettes and marijuana. She denied any sick contacts, new pets, clothing, or carpet in the house; she lives with her boyfriend and 1 year-old-child, works at a local restaurant, and wears a mask occasionally. She denied fever, chills, sore throat, loss of taste or smell, and myalgias.

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On admission, her oxygen saturation was 88% on room air, and she required 2–3 L per minute nasal cannula oxygen to maintain oxygen saturation >90%. She had bilateral prominent rales, and her chest radiographs showed diffuse bilateral interstitial infiltrates that were confirmed with computed tomography scans showing diffuse bilateral ground glass opacities (Figures 1 and 2). No previous baseline imaging was available for review. Her leukocyte count was 15 K/ μ L with slight lymphopenia (14.5% lymphocyte), and her CRP level was 48 mg/L; COVID-19 antigen and PCR tests using nasopharyngeal (NP) samples were negative. A respiratory panel PCR (NP specimen) was positive for coronavirus OC43 strain and negative for COVID-19 and all other pathogens tested. Her low serum procalcitonin level and negative sputum culture and blood cultures excluded a secondary bacterial



Figures 1 and 2. CT scan showing bilateral ground glass opacities.

infection. Treatment included oxygen supplementation, beta-agonists by nebulizer, azithromycin, and corticosteroids. She was weaned off oxygen, all her symptoms resolved in 1 week, and she was discharged. She did not have any follow-up imaging after discharge.

DISCUSSION

There are over 30 different human coronavirus strains that have been identified since 1965; the most notable are HCoV-OC43, HCoV-229E, HCoV-NL63, and HCoV-HKU1. The HCoV-OC43 virus is a positive single-strand enveloped RNA virus; its important structural proteins include the spike (S), envelope (E), membrane (M), and nucleocapsid (N) proteins that are involved in its pathogenesis.¹

HCoV-OC43 usually causes upper respiratory tract infection, including bronchitis and bronchiolitis, mostly in infants, elderly adults, and immunocompromised patients. It can occasionally cause viral pneumonia in these patient groups.² Infections occur mostly in the winter but can occur anytime throughout the year. The incubation period is usually 3 days, but shedding can occur for longer periods, and asymptomatic individuals can cause infections through direct contact with their infected secretions or large aerosol droplets.³ The use of molecular diagnostics and respiratory virus panels has become more common, enabling specific HCoV types to be more easily identified.⁴ However, the management of coronavirus infections, including the HCoV-OC43 strain, remains supportive and is based on symptom treatment.

Outbreaks of both OC43 and NL63 coronaviruses have been reported in patients with multiple co-morbidities,⁵ but the clinical presentation of HCoV-OC43 in a young immunocompetent woman with a COVID-19 like presentation, including pneumonia and respiratory failure, presents concerns, both for the individual patient and the community, since the virus is easily transmissible, has no treatment, and can easily be confused with CoVID-19 infection.

Physicians should suspect OC43 whenever a patient presents with bronchiolitis and a pattern similar to COVID-19 but with a negative PCR for COVID-19. The HCoV-OC43 strain may be clinically more significant than previously thought since it is easily communicable, can cause respiratory failure, and potentially has important public health significance. The inclusion of other coronaviruses in a multivalent vaccine may limit future infections.

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