

A patient with COVID-19 and co-infection with cytomegalovirus: A warning to COVID-19 therapists

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ABSTRACT

The COVID-19 pandemic created by SARS-COV2 is a public health concern. Numerous articles have been published about bacterial and fungal superinfections in patients with COVID-19 pneumonia. In this case report, we introduce the patient with coinfection of COVID-19 and cytomegalovirus..

Keywords : COVID-19, Cytomegalovirus, Coinfection

Introduction

The COVID-19 pandemic is still going on, and we see thousands of infections and deaths caused by SARS-COV2 every day. Bacterial and fungal superinfections are important complication of COVID-19 and may be associated with worse outcomes in patients (1). Up to now, several cases of coinfection with COVID-19 and cytomegalovirus have been reported (2-5).

We describe a patient with COVID-19 pneumonia complicated by CMV (cytomegalovirus) infection.

Case presentation:

A 67-year-old man complained of recent dyspnea, myalgia, and fever for two weeks, admitted to the emergency department of Imam Khomeini Esfarayen Hospital in North Khorasan Province. The patient had no history of any medical problems. In the family history, he mentioned that all his family members were infected with COVID-19, which PCR test for SARS-COV2 had confirmed it. Subsequently, the patient also had the disease. Highlights of the patient's examination at the first visit included respiratory distress, 75% oxygen saturation in room air, with diffuse crackle in the lungs. The nasopharyngeal swab sample was positive for SARS-COV2. A CT scan of the lungs showed bilateral patchy ground-glass infiltration. (Figure 1)

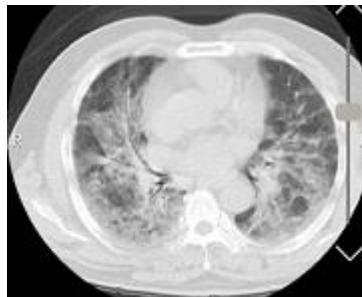


Figure 1. Patchy ground-glass infiltration on CT scan of the patient's lung

On the second day of hospitalization, the patient underwent NIV (non-invasive ventilation) due to decrease in the blood oxygen level. Corticosteroid and Remdesivir were prescribed for ten days due to the need for oxygen support. During the hospitalization, the patient developed fever and leukocytosis, with the possibility of ventilator-associated pneumonia. He was treated with broad-spectrum antibiotics empirically. The patient's fever and leukocytosis resolved, but respiratory status did not improve. On the chest CT scan, the progression of bilateral ground-glass infiltration was seen (Figure 2). The arterial blood gas analysis showed respiratory acidosis and evidence of respiratory failure.

Therefore, the patient was intubated. According to the lung CT scan pattern and the possibility of coinfection with PCP (pneumocystis pneumonia), empirical treatment effective on this pathogen was also prescribed.

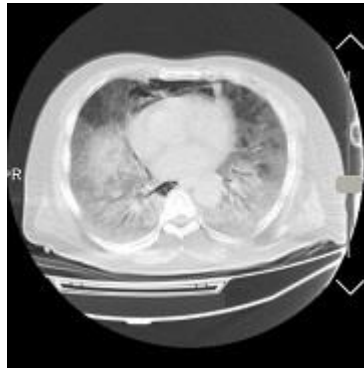


Figure 2: Progression of ground-glass infiltration

On the 16th day of hospitalization, the patient developed melena, which resolved within a day. Two days later, he developed septic shock with oliguric renal failure. As a result, the patient was on dialysis. Concurrent PCR studies showed CMV-positive in peripheral blood with a viral load of 7500 copies per ml. So, the patient was treated with Ganciclovir, which significantly improved oxygen saturation and increased it up to 95%, as well as a relative improvement in pulmonary infiltration on CT scan. (Picture 3)



Figure 3: Lung CT scan after treatment with Ganciclovir

After five days, the patient again developed fever and hypotension with evidence of DIC. Despite supportive treatment, his clinical condition deteriorated and he died on the 24th day of hospitalization.

Discussion

Patients with COVID-19 may have a deteriorated immune system due to the presence of lymphopenia. Some medications used to treat these patients can suppress the function of their immune system, such as corticosteroids and biological agents like IL-6 inhibitors. So far, cases of co-infection with cytomegalovirus and COVID-19 have been reported, even in immunocompetent patients (2-4). The patient we introduced had no previous history of immune deficiency, but according to the studies, the patient's critical condition and mechanical ventilation may be a predisposing factor for CMV infection (6).

Conclusion

Although most patients with COVID-19 are asymptomatic or experience mild symptoms, a significant number of patients develop severe disease and are admitted to the ICU due to critical condition. Mechanical ventilation and treatment with certain medications predispose them to some co-infections, especially fungal and bacterial superinfections. Physicians should always consider the possibility of coinfection with pathogens such as CMV in critically ill patients whose clinical condition is deteriorating.

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