

Case Report

Coronavirus Disease 2019 in Chronic Kidney Disease: A Case Report

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Abstrak

Pandemi COVID-19 menyebabkan morbiditas dan kematian yang di seluruh dunia. Pasien dengan usia yang lebih tua, laki-laki dan memiliki komorbiditas sebelumnya seperti penyakit ginjal kronis atau *chronic kidney disease* (CKD) dilaporkan lebih mudah terinfeksi SARS CoV-2 dan berisiko lebih tinggi untuk menjadi kasus berat atau bahkan kematian. Dilaporkan seorang laki-laki usia 24 tahun dirawat di rumah sakit dengan keluhan sesak napas, batuk, demam dan pucat. Riwayat kontak dengan kasus terkonfirmasi COVID-19 tidak jelas. Pasien seorang petugas keamanan. Riwayat hipertensi ada. Hasil laboratorium menunjukkan hemoglobin 7 g/dl, ureum 261 mg/dl, dan kreatinin 22,9 mg/dl. Pada hari kedua rawatan, sesak napas meningkat, penurunan kesadaran dan epistaksis. Hasil swab nasofaring didapatkan hasil positif COVID-19 dan diberikan Oseltamivir 75 mg. Pasien dilakukan hemodialisis di ruang isolasi. Setelah hemodialisis, kondisi pasien membaik dengan sesak napas berkurang dan peningkatan kesadaran. Pasien keluar dari ruang isolasi dan dipulangkan dalam kondisi baik. Terapi antivirus pada pasien CKD dengan infeksi COVID-19 membutuhkan penyesuaian dosis. Hemodialisis segera diperlukan pada pasien dengan CKD dan infeksi COVID-19 untuk memperbaiki kondisi pasien. Manajemen yang cepat untuk pasien dengan CKD dan COVID-19 akan mengurangi risiko kematian.

Kata kunci: COVID-19, hemodialisis, penyakit ginjal kronis

Abstract

The COVID-19 pandemic has caused substantial morbidity and mortality worldwide. Older patients, male gender and those with preexisting comorbidities such as chronic kidney disease are reported to be more likely infected with SARS CoV-2 and are at higher risk of severe illness or death. It has been reported a 24 years old male was admitted to the hospital with shortness of breath, coughing, fever and paleness. The history of contact with confirmed COVID-19 cases was unclear. The patient works as a security officer. A history of hypertension is present. Laboratory results showed hemoglobin 7 g/dl, ureum 261 mg/dl, and creatinine 22,9 mg/dl. On the second day of admission, the patient experience increased shortness of breath, decreased consciousness and epistaxis. From the result of the nasopharyngeal swab, the patient tested positive for COVID-19 and was given Oseltamivir 75mg. The patient is prepared for hemodialysis, which was performed in the isolation room. After hemodialysis, the patient's condition improved with decreased shortness of breath and increased of consciousness. The patient comes out from the isolation room and discharges home in good condition. Antiviral therapy in CKD patients with Covid-19 infection requires dose adjustment. Immediate hemodialysis is required in patients with CKD and coexisting COVID-19 infection to improve the patient's condition. Prompt management for patients with CKD and COVID-19 will reduce the risk of mortality.

Keywords: COVID-19, chronic kidney disease, hemodialysis

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INTRODUCTION

In year 2019 in Wuhan, an unknown cause of pneumonia case was reported and it was finally known

as a disease caused by a new virus. It rapidly spread, which resulted an epidemic throughout China, with the sporadic cases reported globally, which caused a global health emergency.¹ In February 2020, the World Health Organization (WHO) named the new virus SARS-CoV-2 and the disease named Coronavirus

Disease 2019 (COVID-19).² The COVID-19 pandemic has caused substantial morbidity and mortality worldwide in an effort to contain the COVID-19 pandemic, an understanding of the epidemiology of the disease is needed. Clinicians need to know which individuals are more at risk of SARS-CoV-2 infection as well as the risk of morbidity and mortality.^{3,4} Although patients of all ages are susceptible to the disease, individuals developing critical illness were older and had a greater number of comorbid conditions with high mortality rates and poor outcomes.⁵

Kidney failure is a severe medical condition with a high prevalence of comorbid conditions, including diabetes and heart disease, which disproportionately affect older adults.⁶ Patients with chronic kidney disease (CKD) are expected to be at higher risk of severe disease since their rate of all-type of infections and the prevalence of cardiovascular disease are higher than in the general population.⁷ Marked alterations in the immune system have been reported in CKD patients, leading to an immunosuppressed state and frequent infection complications.^{8,9}

CASE

We report a case of a 24 years old male admitted to the hospital with shortness of breath, coughing, fever and paleness. The history of contact with confirmed COVID-19 cases is unclear. The patient works as a security officer. A history of hypertension is present. Laboratory results showed hemoglobin 7 g/dl, ureum 261 mg/dl, and creatinine 22,9 mg/dl. On the second day of admission, the patient experience increased shortness of breath, decreased consciousness and epistaxis. From the result of the nasopharyngeal swab, the patient tested positive for COVID-19.

The patient was diagnosed with CKD stage 5 with uremic encephalopathy, uremic bleeding and confirmed COVID-19. The patient was given Oseltamivir 75 mg as antiviral therapy. The patient was prepared for hemodialysis, and hemodialysis was performed in the isolation room. After hemodialysis, the patient's condition improved with decreased shortness of breath and increased consciousness. The

patient shifted out of the isolation room and was discharged home in good condition.

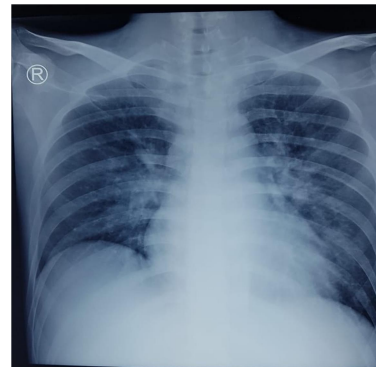


Figure 1. Chest X-ray

DISCUSSION

A 24 years old male patient with CKD stage 5 with uremic encephalopathy, uremic bleeding and confirmed COVID-19. The diagnosis of CKD stage V has been made from creatinine levels and eGFR 2 ml/min/1,73m². COVID-19 was confirmed from the result of the nasopharyngeal swab.

For most patients, COVID-19 will affect mainly the upper and lower respiratory tract. The primary mode of infection is human-to-human transmission through close contact, which occurs via droplets from an infected individual through coughing or sneezing. Additionally, surfaces are thought to retain the virus for variable periods of time, depending on their nature.^{4,10} Other organs might be affected by SARS-CoV-2, including the kidneys, ileum and heart, especially in the presence of viremia. Thus cultured renal proximal tubular epithelial cells and glomerular mesangial cells may represent another target for COVID-19.¹¹ CKD causes marked alterations in the immune system, including persistent systemic inflammation and acquired immunosuppression. Multiple factors contribute to chronic inflammation in CKD, including patient-related factors, oxidative stress, and infections.⁸

Once CKD patients become infected, they should be quarantined and, if on HD, dialyzed by fully protected personnel and separated from non-COVID-19 patients, including transport to the HD facility, while in the facility and back home. Criteria for hospital admission are very variable, depending on whether hospitals are overloaded by COVID-19 cases.^{12,13}

In patients with CKD, dose adjustments of antiviral drugs and side effects to the kidneys need to be considered. Some drugs required dosage adjustments, such as ribavirin, oseltamivir and chloroquine.^{8,14,15} In this particular case, the patient was given Oseltamivir 75mg once daily. Oseltamivir is a neuraminidase inhibitor, which reduces the virus replication in a dose-dependent manner, and prevents the impairment of the epithelial barrier function and cytotoxicity.¹⁶ Oseltamivir is an antiviral used for type A and B influenza therapy. This drug is secreted to the kidneys, therefore, requires dose adjustment in patients with kidney disorders.^{17,18} Thus, dosages and intake frequency have to be altered to reduce complications that could arise due to the poor renal performance of the patients.¹⁹ At the beginning, Oseltamivir was used as empirical therapy for the COVID-19 cases before the discovery of causative therapy for SARS-CoV-2.^{5,20}

CONCLUSION

Prompt management for patients with CKD and COVID-19 will reduce the risk of mortality.

CONFLICT OF INTEREST

None.

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