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Commentary

COVID-19 and Immunosuppressive Treatment after Renal Transplantation, that is the Question!

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ABSTRACT

Infectious diseases cause potential contributing risk factors for high mortality rate in end-stage renal disease patients who requiring hemodialysis initiation. High rate of renal involvement in COVID-19 is confirmed. Immunosuppression therapy in transplant patients with COVID-19 infection cause higher risks and immunosuppression administration in these patients is challenging and should consider age, associated comorbidities, severity of COVID-19 infection and time of surgery. The management of immunosuppressive therapy and infection control precautions are essential for prevention viral diseases such as COVID-19.

Keywords: COVID-19; Renal transplantation; Infectious diseases; Immunity system

INTRODUCTION

Infectious diseases cause potential contributing risk factors for high mortality rate in end-stage renal disease patients who requiring hemodialysis initiation. There are two immunity system in the body. The innate immunity system involves pathogens recognition and phagocytosis that create inflammation, whereas the adaptive immunity system includes production of antibodies, associated with a memory of immune responses. It is well diagnosed that immunodeficiency is induced by the uremic milieu resulted from disease. So, any disturbance of innate and adaptive immunity can be an important reason for many infectious complications [1].

In December 2019, an unexplained pneumonia originated from wild animals in the Wuhan market occurred in the world with exponentially increasing as a public health emergency in international dimension. COVID-19 rapid spread has attracted scientific attention, and World Health Organization has identified it. COVID-19 begins with upper respiratory symptoms such as fever, expectoration, dyspnea, general malaise and cough [2,3].

Although all of the patients may be susceptible to the COVID-19, individuals with conditions including heart disease, diabetes, older adults, developing chronic or critical illness have a greater number of mortality rates and poor outcomes. Most of patients on dialysis or after renal transplantation are more susceptible to clinical characteristics of COVID-19 with immune responses and multi-organ dysfunction as the main cause of death, too [4].

High rate of renal involvement in COVID-19 is confirmed. Two common symptoms in chronic renal failure patients are proteinuria and hematuria on impaired renal function. These symptoms can be life-threatening, especially for the patients with severe comorbidities. For this reason, vulnerable patients to COVID-19, such as infants, the elderly, immunocompromised patients, diabetes mellitus patients, hypertensive and cardiovascular disease patients and pregnant women who are more to be infected by COVID-19 should be hospitalized at the intensive care unit [5].

As a safe therapy for end-stage renal failure, kidney transplantation may cause many side effects that interacts with other medical therapies and interventions and the patients undergoing immunosuppressive treatment after surgery may suffer from several complications such as viral infections due to immunosuppressive treatment for their illness as a critical procedure that increases the patient's susceptibility to all kinds of viral infections by impairing polymorphonuclear leukocyte, many blood transfusion sessions, the potential for exposure to contaminated equipment and infected patients and nosocomial transmission [6].

Immunosuppression therapy in transplant patients with COVID-19 infection cause higher risks and immunosuppression administration in these patients is challenging and should consider age, associated comorbidities, severity of COVID-19 infection and time of surgery. In patients with mild to moderate infections, the main practice is to decrease on continue the dose of immunosuppressive drugs, but this method might favor high mortality in COVID-19 patients admitted. An obvious concern is risk of rejection with immunosuppression depletion in hospitalized patients that may resulted in high mortality rate of COVID-19 infection [7].

The management of immunosuppressive therapy and infection control precautions are essential for prevention viral diseases such as COVID-19. Clinicians should keep their patients alive with a careful assessment of benefits versus risks of continuing immunosuppression. Isolation of positive patients in a special room or section with a special staff; disinfecting hands and changing gowns and gloves and disinfecting all equipment and surfaces after each procedure; preparing intravascular medications outside the patient's room; using each of items, instruments and medications, for use only for each patient are important. Health care staff must also lead their practices in order to reduce viral transmission [8].

Kidney transplantation is a high-risk procedure during COVID-19 pandemic due to recipient severe disease under adherence of immunosuppression and transmitting infection from donor to recipient. Health care providers should keep their patients alive with a case-by-case assessment of benefits versus risks of continuing immunosuppression. At last, suspending kidney transplantation during the pandemic particularly for high-risk older recipients with comorbidities is recommendable [9]. However, it is imperative to consider the donor-derived infection possibility by asymptomatic people and during the incubation. Due to their status of immunosuppression in kidney transplant recipients, the clinical manifestations, prognosis and treatment, of COVID-19 may differ from the general population, therefore, it is essential this type of immunosuppressed patients be evaluated to early detection disease by rapid and appropriate diagnostic test and early hospitalization in case of infection [10].

CONCLUSION

In conclusion, risk of severe infection caused by immunosuppressive treatment is higher in patients undergoing kidney transplantation and health care providers and hospital managers should be aware about the probability of viral infection in order to make necessary efforts to prevent any viral infection by management of immunosuppressive protocols. The COVID-19 registry to record all cases of renal transplant patients with COVID-19 infection will help specialists make informed decisions about these complex patients in rapidly and uncertain situations. To learn with detail about epidemiological characteristics of infection and educational programs about effective infection control measures and surveillance

systems may cause a reduction in prevalence of infection pandemic among the vulnerable patients. Health care settings have to develop their connections with infection prevention professionals to report new suspected cases for contingency against COVID-19 in patients with special diseases, including kidney transplant patients.

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