COVID-19 – A Kidney Perspective

JIE TANG, MD, MPH, MSc, FASN
GUEST EDITOR

The novel coronavirus disease 2019 (COVID-19) outbreak, first reported on December 8, 2019 in Wuhan, China, was designated as a pandemic by the World Health Organization (WHO) on March 11, 2020. This disease, recognized as an infection by a new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), spread quickly throughout the world. As of August 23, 2020, over 23 million laboratory-confirmed cases had been documented globally, with more than 800,000 deaths worldwide. The mortality rates vary significantly among studies from 0.3% to 10%, partially reflecting the differences in local policy, access to diagnostic testing, and health care resources and response.

Clinical presentations of COVID-19 can range from asymptomatic infection, self-limited influenza-like symptoms, acute pneumonia to severe respiratory failure. COVID-19 has life-threatening effects far beyond its respiratory manifestations. SARS-CoV-2 binds to the angiotensin-converting enzyme 2 receptor, which is highly expressed in the kidney, providing a route for direct infection. Coupled with vascular injury and inflammatory insult, acute kidney injury (AKI) has been found in COVID-19 with cumulative incidences ranging from 0.9% to 29%. However, the epidemiology, management, and associated outcomes have varied greatly between studies and the pathophysiology remains unclear.

Besides AKI, there is a paucity of data on the risk factors and outcome of SARS-CoV-2 infected patients with underlying kidney disease, including those receiving dialysis or underwent kidney transplantation. These groups of patients are unique in view of their immunosuppressed status.

The ongoing COVID-19 pandemic carries serious medical, psychosocial, and economic consequences. Understanding its pathophysiology, clinical course, management strategy and therapeutic response are of paramount importance. Here, we will synthesize the current literature on COVID-19 and provide reviews on COVID-19 testing, acute kidney injury, SARS-CoV-2 infection in patients with end-stage kidney disease, and those who received a kidney transplant.

Author Contributions

This issue of the *Rhode Island Medical Journal* features a series of review articles on the nephrology topics related to the COVID-19 pandemic.

Testing for SARS-CoV-2 (COVID-19): A General Review, written by **ERIC W. TANG**, **APRIL M. BOBENCHIK, PhD**, and **SHAOLEI LU, MD, PhD**, will provide an overview of SARS-CoV-2 testing.

COVID-19 and Kidney Injury, written by **MATTHEW LYNCH, MD**, and **JIE TANG, MD, MPH**, will provide a review of current literature on the topic and discuss the pathophysiology of AKI as well as current knowledge gaps.

COVID-19 and ESKD, written by **NATHAN CALABRO-KAILUKAITIS, MD**, and **ANKUR SHAH, MD**, will review COVID-19 disease presentation, management and outcomes in the dialysis patient population.

Kidney Transplantation and COVID-19, written by **BASMA MERHI, MD**, and **REGINALD GOHH, MD**, will review COVID-19 disease presentation, management and outcomes in the kidney transplant patient population.

Guest Editor

Jie Tang, MD, MPH, MSc, FASN, is an academic nephrologist from Brown Physicians, Inc. He is practicing at Lifespan Hospitals, and the Veteran's Administration Medical Center of Providence. He is an Associate Professor of Medicine at the Alpert Medical School of Brown University. His primary research interest is in the areas of chronic kidney disease and kidney stone.