A Case Report: Covid-19-Associated Nephropathy

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Case presentation: 47 years old African American male presents with confusion. He arrived hemodynamically stable, oxygenation normal, encephalopathic. Laboratories showing acute kidney failure, creatinine 31md/dL, potassium 7.5mmol/L. Electrocardiogram with normal sinus rhythm with peaked T waves. Emergent dialysis started. Coronavirus 2019 (COVID-19) antigen test positive. Urinalysis with protein >500mg/dl, WBC >100/hpf, red blood cells 21-50/hpf. Serology ANCA, ANA, hepatitis panel, HIV negative. Renal biopsy showing collapsing glomerulopathy with severe tubular atrophy, interstitial fibrosis, and dilated tubules filled with hyaline and protein casts. Patient was discharge home on renal replacement therapy.

Discussion: While cases of COVID-19 initially presented with severe respiratory distress, vaccinations and the introduction of variants, have decreased the cases of severe pulmonary disease, however, other complications such renal impairment have arisen.
The collapsing variant of focal segmental glomerulosclerosis is described as segmental and global collapse of the glomerular capillaries, marked hypertrophy, and hyperplasia of podocytes. It is a severe form with high risk of progression to irreversible kidney failure. It was first described in patients with HIV infection, known as HIV-associated nephropathy (HIVAN). Since the introduction of antiretroviral therapy, the incidence of HIVAN has decreased.
The pathology of Covid-19-Associated Nephropathy (COVAN) is not well understood. The activation of the interferon-chemokine pathway and the direct deposition of viral particles in the glomerular membrane have been described by different authors. Something that seems to be consistent in all the COVAN case report, is that the disease affects mostly African American patients, specifically those with APOL1 genotype.
Clinically, patients present with renal dysfunction, nephrotic range proteinuria and minimally respiratory symptoms. The outcome of several of the case reports is permanent renal replacement therapy.
The treatment for COVID-19 have been mainly directed toward acute respiratory failure, with medications such as dexamethasone, remdesevir, baricitinib and tocilizumab indicated based oxygen levels but as mentioned before, most of the COVAN cases presented without hypoxemia and their treatment is mainly supportive.

Conclusion: COVAN has emerged as complication of COVID-19 and in most of the cases the outcome is permanent renal replacement therapy. African American patients with APOL1 genotype are most commonly affected. More clinical trials are needed to better understand the pathophysiology of COVAN and hopefully improve the therapeutic options for these patients.

Biography

Karolina Viquez-Beita is an assistant professor for the University of Indiana, currently working at Ball Memorial Hospital. She is passionate about research and medical literature, she firmly believes that research, case reports and conferences are wonderful and fun ways to gain and share knowledge with collogues around the world. She also enjoys working with students and medical residents.

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