OUTCOMES WITH COVID-19 ACUTE KIDNEY INJURY WORSE THAN FOR OTHER AKI PATIENTS

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Reuters Health - 11/03/2021 - Among patients who experienced in-hospital acute kidney injury, those with COVID-19 experienced greater kidney function decline and longer time to recovery after discharge, a U.S. study finds.

A retrospective analysis of data from five hospitals in Connecticut and Rhode Island, which included 182 patients with COVID-19-associated acute kidney injury (AKI) and 1,430 patients with AKI not associated with the SARS-CoV-2 virus, revealed that COVID-19 patients had a steeper decline in estimated glomerular filtration rate (eGFR) while hospitalized, even after adjusting for comorbidities, according to the results published in JAMA Network Open.

Among 319 patients whose kidney function hadn't recovered by the time they were discharged, COVID-19 patients also had lower odds (hazard ratio 0.57) of returning to baseline kidney function during nearly six months of outpatient follow-up, the study found.

These data show that "acute kidney injury associated with COVID-19 has a worse prognosis than traditional acute kidney injury," said study coauthor Dr. Francis Perry Wilson, an associate professor of medicine and director of Clinical and Translational Research at the Yale University School of Medicine in New Haven, Connecticut. "So, those with COVID-19 associated acute kidney injuries should probably be monitored more closely than others once they are out of the hospital."

At this point, Dr. Wilson said, no one knows what the future holds for these patients. "It's only been a year with us," he added. "We don't know what will happen long term. We don't know if it will level out and they will be fine. That is our hope. But they will need to be followed. We are in uncharted territory here."

To look at the potential impact of COVID-19 on AKI, Dr. Wilson and his colleagues followed all adults admitted to and discharged from five hospitals within the Yale New Haven Health System network between March 10 and August 31, 2020, and who had received a PCR test for SARS-CoV-2.

Patients were included in the analysis if they developed AKI during hospitalization. Patients were excluded if they had end-stage kidney disease or kidney transplant on a prior encounter or had an initial creatinine level greater than or equal to 4 mg/dL. The researchers extracted patient information on demographics, comorbidities, procedures, and medications from electronic medical records.

Patients with COVID-19-associated AKI were more likely to be Black or Hispanic and had fewer comorbidities than patients with AKI not related to COVID-19, but had similar rates of preexisting chronic kidney disease (CKD) and hypertension. The median follow-up was three months in the COVID group and two months in the non-COVID group, but total follow-up was up to a year, Dr. Wilson said.

In the unadjusted mixed-effects model, the mean rate of eGFR decline was -11.3 mL/min/1.73m2/y faster for patients with COVID-19-associated AKI. The difference in eGFR slope persisted after adjusting for baseline demographic characteristics and comorbidities (-12.4 mL/min/1.73 m2/y). In the fully adjusted model including both baseline patient characteristics and comorbidities as well as peak serum creatinine levels and dialysis requirements, patients with COVID-19-associated AKI continued to show a greater rate of eGFR decrease (-14.0 mL/min/1.73m2/y).

To put the numbers in perspective, Dr. Wilson said, "we measure kidney filtration in ml/min (normal is about 100ml/min). So we can measure the loss per year in ml/min/year. The typical adult loses about 1/ml/min/year. Our study shows that the post-AKI group loses about 2.5ml/min/year, which is not great. The COVID-AKI patients lose 11.3 ml/min/year (unadjusted), and 14ml/min/year (fully adjusted)."

Initial data from China only rarely showed severe acute kidney injury, said Dr. Steven Coca, a nephrologist and associate professor of medicine at the Icahn School of Medicine at Mount Sinai in New York City.

"It was not until the surge in New York City, New Orleans and Seattle that we really started to recognize the tremendous impact COVID was having on the kidneys, resulting in a significant proportion of acute kidney injuries," said Dr. Coca, who was not involved in the new research. "Ours was 35% to 40% to some degree. It was severe in both the rising of serum creatinine and in the number of days it was elevated - longer again, than in non COVID settings."

Internationally, autopsy reports and kidney biopsy reports suggested that the amount of kidney injury on histopathology was also quite severe and supported what was being seen clinically, Dr. Coca said.

"The big question, and this group is one of the first to tackle it, is what happens after acute kidney injury," Dr. Coca said. "This paper goes out to three-to-six months' time period - the longest I've seen any paper go out."

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