

Patients with COVID-19 may have higher risk of kidney injury

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Hospitalized patients with COVID-19 may face an increased risk for kidney injury, a dreaded complication for those suffering from infection with the novel 2019 coronavirus, an observational study led by University of Michigan researchers has found.

According to Jochen Reiser, MD, Ph.D., the Ralph C Brown MD professor and chairperson of Rush's Department of Internal Medicine, [patients](#) with COVID-19 experience elevated levels of soluble urokinase receptor (suPAR), an immune-derived pathogenic protein that is strongly predictive of [kidney injury](#).

"SuPAR is a circulating factor we've seen contribute to kidney [injury](#) in thousands of patients," Reiser said. "RNA viruses such as HIV and SARS-CoV-2 (the virus that causes COVID-19) elicit a suPAR response of the innate immune system, leading to a rise in blood suPAR levels. If there is a hyperinflammatory suPAR response, kidney cells may be damaged."

Reiser is an author of the multicenter study led by Salim Hayek MD, an assistant professor of

cardiology at University of Michigan, "Soluble Urokinase Receptor in COVID-19 related Acute Kidney Injury." Published online in the *Journal of the American Society of Nephrology* on Sept. 22, the study results show that more than a third patients with COVID-19 end up in need of dialysis and are also at much higher risk of death.

The research team tested suPAR levels of 352 study participants when they were admitted to the hospital for COVID-19 infection. A quarter of the participants developed acute kidney injury while hospitalized, and their median suPAR levels were more than 60% higher than those of the rest of the participants.

The risk of needing dialysis was increased 20-fold in patients with the highest suPAR levels. Overall, median suPAR levels for these study participants hospitalized with severe COVID-19 were almost three times higher than levels of healthy people.

"Certainly, a suPAR level at time of hospitalization of COVID-19 patients will provide an important risk stratification tool with respect to patient outcomes such as intubation or [kidney](#) failure," Hayek said. "This will help hospitals by providing proper surveillance of patients at higher risk of a severe COVID-19 course."

"Now that we know the epidemiological link of suPAR to COVID-19-associated [acute kidney injury](#) (AKI), we must study if suPAR is a cause of COVID-19 associated AKI," Reiser said. "In other words, can AKI in COVID-19 infected patients be prevented by keeping plasma suPAR levels low? This hypothesis is supported by the findings of the paper showing that COVID-19 infected study patients with a suPAR level below 4.6 ng/ml never needed dialysis. A newly developed and specific suPAR apheresis device is about to enter a clinical pilot trial where this scenario is tested."

More information: Tariq U. Azam et al, Soluble

Urokinase Receptor (SuPAR) in COVID-19–Related
AKI, *JASN* September 2020, ASN.2020060829;
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