Markers warn of progressive kidney problems after heart surgery

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Blood and urine markers can indicate which patients with an abrupt kidney injury following heart surgery will experience progressive kidney problems, according to a study appearing in an upcoming issue of the *Journal of the American Society Nephrology* (JASN). Testing for these markers soon after surgery could help doctors protect the health of patients' kidneys.

Acute kidney injury (AKI), an abrupt or rapid decline in kidney function, is an increasingly prevalent condition. Sometimes AKI arises following heart surgery because the kidneys are deprived of normal blood flow for extended periods of time during the procedure.

In most cases, AKI after heart surgery resolves quickly, but some cases worsen and can seriously affect patients' health and survival. Until now, doctors have not been able to determine which cases of AKI that develop after heart surgery will worsen.

To see if certain markers in the blood and urine might provide some clues, Chirag Parikh, MD, PhD (Yale University School of Medicine), Jay Koyner, MD (University of Chicago, Pritzker School of Medicine), and their colleagues evaluated the blood and urine of 380 patients who developed AKI after heart surgery.

The investigators found that the presence of certain markers on the day that AKI is diagnosed can indicate structural injury to the kidneys that will likely cause patients to experience progressive problems. High urinary interleukin-18 and a measure called the albumin-to-creatinine ratio increased patients' risk of experiencing persistent AKI by approximately three-fold, while high blood levels of a protein called neutrophil gelatinase-associated lipocalin increased their risk by more than seven-fold.

"Our multi-center study is the largest acute kidney injury biomarker study performed to date in adults, and it strengthens the new paradigm that assessing structural injury at the time of clinical diagnosis with urine or blood markers of kidney injury can yield important prognostic information," said Dr. Parikh. "Future studies can build on this work and use these markers to enroll patients who are at a high risk for AKI and its associated complications into clinical trials of promising therapies," he added.

More information: The article, entitled "Biomarkers Predict Progression of Acute Kidney Injury following Cardiac Surgery," will appear online on March 1, 2012, doi: 10.1681/ASN.2011090907

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