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NEW LAB TEST HELPS PREDICT KIDNEY DAMAGE

'Urine NGAL' Gives Clues to Kidney Injury in ICU Patients and HIV-Related Kidney Disease

Washington, DC (July 17, 2009)—Acute kidney injury (AKI) is a frequent complication in patients in intensive care. A new laboratory test called urine neutrophil gelatinase associated lipocalin (NGAL) helps predict if patients will develop acute kidney injury, reports an upcoming study in the *Journal of the American Society of Nephrology* (JASN). "As a stand-alone marker, urine NGAL performed moderately well in predicting ongoing and subsequent AKI," comments T. Alp Ikizler, MD (Vanderbilt University).

Another study, also in JASN, indicates that urine NGAL may also help in diagnosing HIV-related kidney disease affecting African Americans and black Africans. "NGAL was very specifically expressed in renal cysts—generating the new idea that NGAL may control the development of cysts in HIV-associated nephropathy," says Jonathan Barasch, MD, PhD (Columbia University, New York). He adds, "We and Prasad Devarajan, MD, identified NGAL in the kidney 10 years ago and its translation into a clinical entity in such a short time is quite a story. Almost every paper is positive for the association of NGAL and renal dysfunction/disease."

In the ICU study, patients with higher urine NGAL levels were more likely to develop acute kidney injury, even after adjustment for other factors. The rise in NGAL was present before any change in the standard test for AKI (serum creatinine level). Without other information, however, urine NGAL was no more effective in predicting AKI than clinical risk factors. Ikizler notes the study was limited by a lack of information on incidence of death or the need for dialysis, and by a lack of information on the patients' initial kidney function level.

In the HIV study, levels of urine NGAL were much higher in patients with HIV-associated nephropathy (HIVAN) than in patients with other forms of kidney disease, with or without HIV. HIVAN is an important complication of HIV, occurring mainly in patients of African descent.

Studies in mice suggested that NGAL may play an important role in the development of tubular disease and microcysts, which are specific features of HIVAN. Barasch notes that the human component of their study was limited by its small size but highlights the need for larger studies that definitively measure the NGAL monomer. He adds, "If our results are confirmed, measuring urine NGAL might help triage patients into different risk categories."

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Other authors of the ICU study included Edward Siew, MD, and Lorraine B. Ware, MD (also of Vanderbilt University). The study was supported by NIH Grant UO1 HL081332 National Heart, Lung and Blood Institute, K24 DK62849 from the National Institute of Diabetes, Digestive and Kidney Diseases and Clinical Translational Science Award 1UL-1RR024975 from the National Center for Research Resources. E. Siew was partially supported by the National Kidney Foundation Research Fellowship Award and the Vanderbilt Mentored Clinical Research Scholar Program 5KL2 RR024977-02.

Other authors of the HIV study included Thomas Nickolas, MD, and Neal Paragas, MD (also of Columbia University); Christina Wyatt, MD, and Paul Klotman, MD (The Mount Sinai School of Medicine, New York); and Landino Allegri, MD (University of Parma, Italy). The co-authors report no disclosures. The study was supported by grants from the Emerald Foundation, the March of Dimes and the NIDDK (Grants DK-55388 and DK-58872) to J. Barasch. Columbia University and Cincinnati Children's have received licensing fees from Biosite and Abbott Diagnostics. The collection of patient specimens was supported by NIH grants R24MH59724 and U01MH083501 (The Manhattan HIV Brain Bank), P01DK56492, and by the Clinical Research Center of the Mount Sinai School of Medicine (M01-RR-00071).

The studies will appear online at <http://jasn.asnjournals.org/> on July 23, 2009. Dr. Barasch's study is entitled, "Urinary NGAL Marks Cystic Disease in HIV-Associated Nephropathy," doi 10.1681/ASN.2009010065. Dr. Ikizler's study is entitled, "Urine Neutrophil Gelatinase-Associated Lipocalin Moderately Predicts Acute Kidney Injury in Critically Ill Adults," doi 10.1681/ASN.2008070673.

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