Urine protein test detects kidney dysfunction in transplant patients

November 26 2008

A noninvasive test that analyzes proteins in the urine can correctly identify patients whose transplanted kidneys are failing, according to a study appearing in the February 2009 issue of the *Journal of the American Society Nephrology (JASN)*. The results might allow physicians to more accurately monitor transplant patients and to fine-tune the immunosuppressive therapies prescribed to prevent kidney rejection.

While kidney transplantation is the treatment of choice for patients with end-stage renal disease, more than 50 percent of transplants fail over time. This may be because of defects that arise within the kidney or because the kidney is rejected by the recipient's immune system. As examples, patients may develop conditions called interstitial fibrosis and tubular atrophy or chronic antibody-mediated rejection. These two conditions can both lead to kidney dysfunction, but they have very different characteristics and outcomes.

Currently, it is difficult to detect the early stages of kidney dysfunction following transplantation, and detection techniques require invasive biopsies. However, new analytical tools that screen for proteins in body fluids are becoming useful for indicating the presence of various medical conditions. Luis Quintana, MD, of Servicio de Nefrología y Trasplante Renal, Hospital Clinic, in Barcelona, Spain and his colleagues set out to see if this type of screening technique might be applied to the detection of conditions related to kidney dysfunction.

The investigators studied 50 individuals: 14 patients with interstitial

fibrosis and tubular atrophy, 18 patients with chronic antibody-mediated rejection, eight stable kidney transplant recipients, and 10 healthy individuals. They measured various proteins in the urine of these individuals with a laboratory technique called mass spectrometry.

The researchers found significant differences in the urine protein profiles of individuals from the various groups. Importantly, based on 14 different proteins, they were able to correctly identify 100 percent of the patients with interstitial fibrosis and tubular atrophy and 100 percent of the patients with chronic antibody-mediated rejection. "Urine proteomic analysis detected differences among healthy individuals, stable transplant recipients, patients with interstitial fibrosis and tubular atrophy, and chronic antibody-mediated rejection, showing an excellent clinical correlation," the authors wrote.

While additional, larger studies are needed to confirm these results, the findings could have great clinical value. For example, urine protein analyses might be combined with kidney biopsies at different times after transplantation to reveal the mechanisms involved in the development of kidney dysfunction in individual patients. This information could be very helpful not only for an early diagnosis of kidney dysfunction but also for its treatment and prevention.

The article, entitled "Urine Proteomics Profiling as an Initial Approach to Detect Biomarkers in Chronic Allograft Dysfunction," will appear online at jasn.asnjournals.org/ on November 26, 2008, and in the February 2009 print issue of JASN.

Source: American Society of Nephrology

Citation: Urine protein test detects kidney dysfunction in transplant patients (2008, November

26) retrieved 2 May 2024 from https://medicalxpress.com/news/2008-11-urine-protein-kidney-dysfunction-transplant.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.