Urine protein test might help diagnose kidney damage from lupus

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Simple urine tests for four proteins might be able to detect early kidney disease in people with lupus, researchers at UT Southwestern Medical Center have found in an animal study.

Although it might take years before such tests could be used clinically, the findings suggest they could pinpoint kidney disease better than tests currently in use, the researchers said.

"Our goal was to accurately detect something in the urine that appears only in disease," said Dr. Chandra Mohan, professor of internal medicine and immunology at UT Southwestern and senior author of the study, available online and in today's issue of *The Journal of Immunology.*

"If this testing regimen proves effective in humans, physicians might be able to predict and diagnose kidney damage noninvasively, as well as monitor whether treatments are working."

Kidney disease is the major cause of death and disability in lupus patients, Dr. Mohan said. Early detection and treatment lead to a longer and better-quality life.

The researchers found that in mice, four proteins - protease, PGDS, SAP and SOD - show up in larger quantities in urine as kidney damage progresses. Each of these proteins is either present in humans or has a human equivalent. The researchers currently are studying whether the same correlation between urinary protein levels and disease occurs in

humans.

Lupus is one of many autoimmune diseases that attack internal organs, tissues, joints and other parts of the body. The researchers focused on systemic lupus erythematosus affecting the kidneys, the most common and serious form of lupus.

Currently, kidney damage in humans is detected by performing a kidney biopsy, Dr. Mohan said. A kidney biopsy involves taking a tissue sample with a needle, a process that is invasive and can be stressful to patients.

In the current study, the researchers used mice that have a condition similar to human lupus. They screened urine for proteins both before and after the mice showed symptoms of kidney disease and found that 71 proteins appeared in urine after the illness became physically evident.

The researchers then focused on four proteins that were present in high levels after symptoms appeared. These proteins or their analogs had not previously been known to be present in the urine of patients or mice with lupus kidney disease.

Dr. Mohan said monitoring urinary levels of these four proteins might also reveal more about the mechanisms of lupus. Each protein is involved in a different biochemical process, so the stage of the disease at which each appears in urine might prove informative, he said.

Testing for these proteins might also have the potential to monitor kidney damage that results from diabetes, hypertension and other conditions, said Dr. Mohan.

Provided by UT Southwestern Medical Center