UT SOUTHWESTERN MEDICAL CENTER NEWS

Media Contact: Erin Prather Stafford
214-648-3404
erin.pratherstafford@utsouthwestern.edu

Researchers investigate ways to detect lupus-associated kidney disease

DALLAS – Nov. 14, 2007 – High urinary levels of certain molecules might have the potential to serve as biomarkers for a potentially life-shortening kidney ailment caused by the autoimmune disease lupus, UT Southwestern Medical Center researchers have found.

"Our studies suggest a quartet of molecules may have potential diagnostic significance," said Dr. Chandra Mohan, professor of internal medicine and senior author of a study available online at the *Journal of Immunology*. "Given that early intervention in lupus nephritis is associated with better treatment outcome, it is imperative that disease activity in the kidney be diagnosed as early as possible."

Lupus is a chronic autoimmune disease in which the immune system attacks the body's cells and tissues. In a normal immune system, foreign intruders are recognized by special immune cells that produce antibodies. In patients with lupus, however, the antibodies created start to attack the body itself. When the antibodies attack the kidneys, nephritis occurs, often shortening a patient's life expectancy.

Dr. Mohan and colleagues screened urine from mice with lupus nephritis for the presence of four compounds – VCAM-1, P-selection, TNFR-1 and CXCL 16. Previous research had suggested that these molecules are elevated in animal models of antibody-mediated nephritis. Dr. Mohan and his research team determined that the mice harbored increased levels of all four molecules in the urine, particularly at the peak of their lupus-associated kidney disease.

The most reliable method now available for monitoring renal disease in lupus patients is to measure the level of protein excreted in urine. As part of their study, the researchers also tested the urine of lupus patients and found that they not only had high protein levels in their urine, but also elevated levels of all four compounds.

"It would be very beneficial to detect the presence of nephritis early in order to administer therapies to stop the immune system from destroying the kidney," said Dr. Mohan. "There is an urgent need for a biomarker that one could potentially use to predict the onset of nephritis. That is what we're trying to discover with this research."

(MORE)

Lupus-associated kidney disease – 2

Dr. Mohan said further studies are in progress to ascertain if checking these molecule levels might be more effective than monitoring protein levels to predict kidney disease in lupus patients.

"The ability to detect these molecules in urine could potentially have tremendous impact on clinical diagnostics. Not only is urine a convenient body fluid to procure; in some clinical settings it may be the only fluid available," he said.

Some of the compounds might play a critical role in deciphering potential drug targets for therapeutic intervention. Although more research is needed, blocking one or more of these molecules might offer relief to patients suffering from lupus nephritis, Dr. Mohan said.

In humans, lupus can cause life-threatening damage not only to the kidneys, but also to the lungs, heart, central nervous system, joints, blood vessels and skin. It can be associated with severe fatigue, joint pain, skin rashes, hair loss and neurological problems. Although treatable symptomatically, there is currently no cure for the disease, which affects up to 1 million people in the U.S.

Other UT Southwestern researchers involved in the study were lead author Dr. Tianfu Wu, assistant instructor of internal medicine; Dr. Xin J. Zhou, professor of pathology; Hong Wang, research associate in pathology; Sergio Calixto, graduate student fellow; and Chun Xie, a former graduate student. Researchers from the Albert Einstein College of Medicine and Columbia University also contributed.

The research was funded by the National Institutes of Health, the Alliance for Lupus Research, the Arthritis Foundation, the Lupus Foundation of America, and the American College of Rheumatology Research and Education Foundation.

###