Early indicator of kidney disease may also predict risk of pre-diabetes

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A blood component called cystatin C, used to test for early-stage kidney impairment, also may be a very early marker for those at risk of developing a condition known as pre-diabetes, a study conducted by researchers at the University at Buffalo has shown. Pre-diabetes is diagnosed when the amount of glucose in the bloodstream begins to rise and remain above normal, an indication that glucose is not being absorbed properly by cells.

An estimated 54 million people Americans have been diagnosed with pre-diabetes, which, if not arrested, often develops into full-blown Type 2 diabetes, a serious chronic disease linked to heart disease, stroke, kidney failure, blindness and nerve damage.

UB researchers report in the July 2007 issue of Diabetes Care that high levels of cystatin C were associated with a three-fold risk of progression to pre-diabetes in their study population.

“It’s important to identify people at risk of pre-diabetes very early, because you can prevent this condition from developing by making changes in diet and lifestyle,” said Richard P. Donahue, Ph.D., first author on the study.

“If further studies support our finding, testing for cystatin C could become an important part of a standard physical examination. Preventive measures could be in place before glucose intolerance has a chance to develop and take its toll.”

Donahue is an associate professor of social and preventive medicine in the UB School of Public Health and Health Professions.

The cystatin C investigation is based on the Western New York Health Study, conducted between 1996 and 2001, in which researchers collected baseline information on a number of health indicators, including fasting glucose, in a randomly selected cohort of healthy Erie and Niagara county residents.

The first follow-up to the baseline study took place between 2001 and 2004 and involved 1,455 of the original participants, all of whom had no known heart or kidney disease. Information on health indicators were collected once again. Analysis determined that 91 people who had normal glucose levels in 1996 had developed pre-diabetes since then.

Levels of cystatin C then were measured in the blood samples taken at baseline of these 91 and were compared to cystatin C levels in samples from 273 participants from the original cohort who had not developed pre-diabetes.

Results showed a direct link between those with the highest levels of cystatin C and the development of pre-diabetes, said Donahue. The association didn't change when factors that traditionally are related to development of diabetes such as weight, amount of blood glucose at baseline, smoking history, high blood pressure or alcohol use were considered, he noted.

"Pre-clinical signs of renal impairment may occur before or coincident with pre-diabetes," Donahue said. "These findings may suggest that those who have pre-diabetes also should be screened for early signs of kidney impairment, which itself is a major chronic illness and cause of much morbidity and mortality."

Source: University at Buffalo