Medical Xpress

'Short-sleepers' may develop blood sugar abnormality that can lead to diabetes

March 11 2009

People who sleep less than six hours a night appear to have a higher risk of developing impaired fasting glucose — a condition that can precede type 2 diabetes, researchers reported at the American Heart Association's 49th Annual Conference on Cardiovascular Disease Epidemiology and Prevention.

Type 2 diabetes, the most common form of diabetes, appears most often in middle-aged adults. Adolescents and young adults, however, are developing type 2 diabetes at an alarming rate. It develops when the body makes relatively too much insulin and doesn't efficiently use the insulin it makes (insulin resistance).

Participants who slept on average less than six hours a night during the work week, when followed over six years, were 4.56 times more likely than those getting six to eight hours of sleep to convert from normal blood sugar levels to impaired fasting glucose, researchers said.

"This study supports growing evidence of the association of inadequate sleep with adverse health issues. Sleep should be assessed in the clinical setting as part of well-care visits throughout the life cycle," said Lisa Rafalson, Ph.D., lead author of the study and National Research Service Award fellow and research assistant professor at the University at Buffalo in New York.

"While previous studies have suggested that there may be many genes that each have a very small effect on the risk of diabetes, there is no

known genetic predisposition to sleep disturbances that could explain our study's results, especially in this limited sample size," Rafalson said. "It is more likely that pathways involving hormones and the nervous system are involved in the impaired-sleep/fasting glucose association."

Researchers conducted a matched, nested case-control study to address whether sleep duration at baseline predicted progression from normal to impaired fasting glucose during six years of follow-up in the Western New York Health Study. From 1,455 participants, the team identified 91 whose fasting blood glucose levels of less than 100 milligrams per deciliter (mg/dL) during baseline exams in 1996 had risen to between 100 mg/dL and 125 mg/dL at follow-up exams in 2003.

The 91 were matched three-to-one with 273 controls whose glucose levels were below 100 mg/dL at baseline and follow-up. Researchers also matched the groups according to gender, race/ethnicity and year of study enrollment.

Sleep duration was self-reported using the Stanford seven-day physical activity recall questionnaire, with patients categorized by their daily work week (Sunday through Thursday) sleep duration: short-sleepers (less than six hours, 25 participants), long-sleepers (more than eight hours, 24 participants) and mid-sleepers (six-to-eight-hour sleepers, 314 participants). Sleep data was unavailable on one person.

After adjusting for age, body mass index, glucose and insulin concentrations, heart rate, high blood pressure, family history of diabetes and symptoms of depression, the researchers found a significantly increased risk of developing impaired fasting glucose among short-sleepers compared to the mid-sleepers. Compared to the mid-sleepers, long-sleepers showed no association with impaired fasting glucose, the researchers report.

"Our findings will hopefully spur additional research into this very complex area of sleep and illness," Rafalson said.

Source: American Heart Association (news : web)