Size of fat cells and waist size predict type 2 diabetes in women

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When it comes to assessing risk for type 2 diabetes, not only do waistlines matter to women, but so does the size of their fat cells. This new discovery by a team of Swedish researchers was just published online in the *FASEB Journal* (www.fasebj.org) and helps explain why some women of normal weight develop type 2 diabetes, despite not having any known risk factors.

"Increased knowledge of the link between enlarged fat cells and the development of type 2 diabetes may give rise to new preventive and therapeutic alternatives," said Malin Lönn, co-author of the study and associate professor in the department of clinical chemistry at Sahlgrenska University Hospital in Gothenburg, Sweden. "Our research also identifies the ratio waist-to-height, waist circumference divided by body height, as a simple tool that can be used to identify women at risk of developing type 2 diabetes."

The data for this discovery were obtained as part of the "Prospective Study of Women in Gothenburg," performed in Sweden and started in 1968 by Professor Emeritus Calle Bengtsson. For this study, a team of Swedish researchers invited women to free health examinations over the course of 25 years. In 1974-1975, scientists collected abdominal fat biopsies from some of the women and tracked who developed type 2 diabetes. They found that the number of abdominal fat cells remained relatively constant in women after adolescence, but the size of fat cells could change considerably throughout life and were larger in women with type 2 diabetes. In addition, they found that waist-to-height ratio may also be a good indicator of diabetes risk.

"Despite notions to the contrary, size does matter to women—at least when it comes to her fat cells, her waist-to-height-ratio and her risk for type 2 diabetes," said Gerald Weissmann, M.D., Editor-in-Chief of the FASEB Journal. "This is a remarkable study that should lead to preventive measures for this most common of serious diseases."

According to the U.S. Centers for Disease Control and Prevention, type 2 diabetes may account for 90 to 95 percent of all diagnosed cases of diabetes. The disease begins as insulin resistance, and as the need for insulin rises, the pancreas gradually loses its ability to produce insulin. Type 2 diabetes often is associated with older age, but is increasingly being diagnosed in children. Obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity also play a role in whether or not someone develops the disease. In particular, African Americans, Hispanic/Latino Americans, American Indians/Native Americans, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at high risk for type 2 diabetes.

More information: Malin Lönn, Kirsten Mehlig, Calle Bengtsson, and Lauren Lissner. Adipocyte size predicts incidence of type 2 diabetes in women. *FASEB J.*, doi:10.1096/fj.09-133058

Source: Federation of American Societies for Experimental Biology (news : web)