News
Office of Medical Information
The University of Texas Southwestern Medical Center at Dallas
5323 Harry Hines Boulevard Dallas, Texas 75235-9060 214/688-3404

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CONTACT: Ann Harrell
Office: 214/688-3404
Home: 214/520-7509
Fax: 214/688-8252

****UT Southwestern researchers look at possible cause of immune reaction in juvenile diabetes

Researchers at The University of Texas Southwestern Medical Center at Dallas report in the March 8 The New England Journal of Medicine that they may have identified the glucose transporter on pancreatic islet beta cells as a target that is attacked by the body's own immune system in diabetes mellitus. The study indicates that these glucose transporters may be selectively singled out for demolition in a classic antigen/antibody reaction.

Principal investigators for the study, which deals with insulin-dependent Type I (juvenile) diabetes, are John H. "Wick" Johnson, Ph.D., and Roger Unger, M.D., a Banting Award holder and professor of internal medicine at UT Southwestern. The head of the Gifford Laboratories at UT Southwestern, Dr. Unger is an internationally recognized investigator in the field of diabetes mellitus.

The study was carried out by Unger's co-investigator, Dr. Johnson, at Dallas Veterans Administration Medical Center as a part of the Gifford Laboratories' ongoing studies into the causes and possible interventions in the disease. Johnson is an assistant professor of internal medicine at UT Southwestern.

"Juvenile diabetes is known to be an autoimmune disease," Dr. Johnson said. "The cells that produce insulin are attacked and destroyed during the progress of the disease. However, by the time diabetes can be detected, over 90 percent of the insulin-producing cells have been destroyed, and physicians must put the child on insulin therapy."

Type I diabetes affects between two and five children out of every 1,000.

The study is looking at two questions, said the researcher.

(More)

"First, we want to discover what it is that the immune system recognizes on the insulin-producing cell that's 'non-self' and thus sets out to destroy. Also--and maybe more important--we want to know what causes the initial insult that signals for the attack to begin."

The study used blood samples from volunteers provided by Marilyn Alford, RN, MSN,C, clinical coordinator for the Diabetes Registry program at Southwestern. Purified antibodies in blood plasma from 27 newly diagnosed patients with insulin-dependent diabetes were mixed with pancreatic islet cells from rats. The mixture of the rat cells with the human plasma was then monitored for glucose uptake. The glucose absorption in the cell mixtures from the insulin-dependent diabetic patients was greatly inhibited. This was not so with islet cells mixed with the plasma serum from five non-insulin-dependent diabetic patients or from 28 normal controls.

Johnson said that these results indicate that the transporter protein may be an antigen that is attacked by antibodies before the insulin can be dispersed to the pancreatic cells. Therefore the presence of these antibodies in the blood might serve as an early indicator of the onset of the disease.

If further tests in animals and humans verify these conclusions, the end result might be a safe, easy and inexpensive test to diagnose Type I diabetes at an early stage, said Johnson.

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Note: The University of Texas Southwestern Medical Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences and Southwestern Allied Health Sciences School.