New data on islet autoantibodies in young children defines early type 1 diabetes development

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A decade-long JDRF-funded study led by the Institute of Diabetes Research in Helmholtz Zentrum München, Germany, is providing a deeper understanding of the link between autoantibodies and the risk of developing type 1 diabetes (T1D), highlighting the importance of pre-diabetes research into possible preventions for the disease. The study, "Seroconversion to Multiple Islet Autoantibodies and Risk of Progression to Diabetes in Children," was published today in *The Journal of the American Medical Association*.

Researchers in Colorado (DAISY study), Finland (DIPP study), and Germany (BABYDIAB) followed children from infancy until as old as three years old, to determine the presence of islet autoantibodies—markers that indicate the activation of the autoimmune attack on insulin-producing beta cells in the pancreas. T1D occurs when these beta cells are destroyed, rendering people with the disease unable to produce their own insulin. The new findings reveal that nearly 70 percent of the 585 young children studied (in all three countries) who had two or more autoantibodies developed T1D within 10 years, with 84 percent developing T1D in 15 years. The study also revealed that 14.5 percent of the 474 children with a single islet autoantibody developed T1D within 10 years, and that progression of the disease was faster for those who showed the presence of antibodies at younger than three years old. The risk for children without autoantibodies was only 0.4 percent by age 15 years.

"This is the first true estimate from when we think the process of type 1 diabetes starts, and the largest dataset that exists, with over 13,000 children followed from birth and over 1,000 children who developed antibodies," said Anette-Gabriele Ziegler, M.D., director of the Institute of Diabetes Research, who led the study in Germany. "I believe that this sort of data should make us consider whether the status of confirmed multiple islet autoantibodies be used in the staging of type 1 diabetes. This will allow more consideration for intervention necessary to stop or delay progression to the full and irreversible metabolic disease."

"These findings will help us to better identify children who are at the highest risk for developing type 1 diabetes, and allow scientists to focus prevention efforts on groups who are most likely to become insulin dependent," said Jessica Dunne, senior scientist at JDRF. "Prevention of type 1 diabetes is a priority for JDRF, and it is work like this that sets the stage for our efforts."

As a next step, JDRF and its partners are advancing research to develop potential vaccines for T1D and to test compounds that may prevent onset of T1D in those at risk for the disease. A critical part of that effort is a study funded by the National Institutes of Health (NIH) through the Special Diabetes Program (SDP) called TEDDY (The Environmental Determinants of Diabetes in the Young), which is testing whether factors such as antibiotics, viruses, gut microbes, cows' milk, deficiency of vitamin D, omega-3s, or other environmental causes are triggers for the onset of the T1D in those at risk. JDRF is a leading advocate for the renewal of the SDP in Congress, which funds $150 million a year in T1D research through the NIH.

Provided by JDRF