MCG diabetes study includes babies

It begins subtly in the cells but eventually builds to an attack that destroys a child's ability to make insulin years later. Jin-Xiong She is hoping a study will pinpoint who is likely to develop type 1 diabetes and eventually show him how to prevent it. Thousands of Georgia children will be enlisted to help.

Dr. She, the director of the Center for Biotechnology and Genomic Medicine at the Medical College of Georgia, is hoping to screen 10,000 babies a year for two genes he believes put them at high risk for type 1 diabetes, which usually is diagnosed years later in children and young adults. Dr. She hopes to follow up with the at-risk children and learn how the genes and other forces conspire to persuade the child's immune system to attack its own insulin-producing cells.

The study, called Prospective Assessment in Newborns for Diabetes Autoimmunity, or PANDA, will probably involve all Augusta hospitals and might include Northside Hospital in Atlanta, Dr. She said. The five-year study is funded by a $4 million grant from the National Institute of Child Health and Human Development. Another international study Dr. She is taking part in will seek to screen 50,000 babies a year for four years.

Type 1 diabetes is an autoimmune disease in which the immune system mistakenly attacks and destroys other cells in the body. In this case, the target is the islet cells in the pancreas that produce insulin, which the body needs to break down glucose for fuel. Five percent to 10 percent of the estimated 17 million diabetics in the United States have type 1, according to the American Diabetes Association.

A previous screening program of 10,000 newborns, begun at his previous position at the University of Florida, helped Dr. She and his team focus on two particular genes, known as HLA-DQB1 and HLA-DRB1, that seem to place the baby at higher risk for the disease, he said. It is not the genes alone but other things, such as diet, that might play a role, Dr. She said.

"We have a number of suspects, but we don't know which ones are the true triggers because the triggers can be different in different patients," Dr. She said. "It's very difficult to pinpoint them."

That will be the focus of the follow-up studies - taking blood from the children as they develop to look at the molecular changes in the body, to see how proteins and genes and immune cells are altered over time.

"If you look at the whole disease progression process, the proteins, the genes will be changed as the disease develops," Dr. She said. "But finally what we are looking at is the outcome of the interaction between genes and environment and one's immune system. They have to work together."

That could allow the researchers to study intermediate forms of the disease, before it develops, that might suggest ways to halt or reverse the disease's progress, Dr. She said. Studies in mice have identified more than 100 ways of preventing type 1 diabetes, he said.

"There are many, many potential prevention strategies," Dr. She said. "But one day, hopefully soon, we will find one or several that will work in children. That's the challenge."

Right now, states test for some other disorders, such as phenylketonuria, an enzyme disorder that can be treated with diet if caught early enough. Georgia tests for nine disorders now and will add a 10th early next year, said Mary Ann Henson, the genetics program manager in the Office of Infant and Child Health Services at the Georgia Department of Human Resources. Because there is no effective intervention at this point, Dr. She said he is not pushing for states to adopt the type-1 test yet. But the Centers for Disease Control and Prevention are working with Dr. She to put together a screening program for the future, anticipating that prevention might be possible in years to come, Dr. She said.

"In the next five years or so, I believe we'll have very good reasons to include diabetes as a screening disease," Dr. She said. "Once we have a prevention, the states will jump at it. We don't need to convince them it's important."

Nor do parents need much convincing to embrace PANDA, said Annette Repko, the nurse manager for family-focused childbirth at St. Joseph Hospital.

"The staff love doing it. The patients are real receptive, and our physicians and our hospital administration are extremely supportive of it," Mrs. Repko said.

And naming it after the universally beloved panda probably didn't hurt, she said.

"I'm sure that does help some," Mrs. Repko said, laughing.

Even with no family history of type-1 diabetes, Shawnee Kelehan still wanted her new daughter, Joicelynn Grace, to take part in PANDA.

"It might help someone else in the future to prevent diabetes," she said.

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