Major Medical Breakthrough May Cure Type 1 Diabetes

It is, without a doubt, one of the most exciting discoveries ever made in the search for a cure for Type 1 diabetes. The discovery? Transplanted cells from the spleen appear to develop into insulin-producing pancreatic islet cells in adult mice.

The worldwide announcement of this surprising discovery—which demonstrates the regeneration of the pancreas, and subsequently the reversal of Type 1 diabetes—was made in November 2003. But on March 13, 2004, in a special presentation at A Day of Hope at Eisenhower Medical Center in Rancho Mirage, California, the Desert Diabetes Club will welcome Denise Faustman, MD, PhD, Director of the Massachusetts General Hospital (MGH) Immunobiology Laboratory and Principal Investigator of the study, along with Lee Iacocca, Founder of The Iacocca Foundation, which has provided nearly $6 million during the past seven years to support Dr. Faustman's research. (See Lee Iacocca story, this issue)

According to David M. Nathan, MD, Director of the MGH Diabetes Center, findings from this study suggest that "…patients with fully established diabetes could have their diabetes reversed."

"[These findings were] kind of amazing to us," Dr. Faustman says. "This is one of the few instances in which a major organ in an adult mammal has been enabled to regenerate itself. It is a breakthrough that brings a new respect to the spleen, an organ often dismissed as having no purpose at all."

Several years ago, Dr. Faustman and her team at Massachusetts General Hospital—the oldest and largest teaching hospital of Harvard Medical School—first discovered that when spleen cells from non-diabetic mice were injected into those that were developing Type 1 diabetes, the donor spleen cells "re-educated" the recipient's immune system and stopped the destruction of the islet cells.

Now, their further follow-up study shows that the recipients are not only producing new insulin-secreting islet cells, but that the donor spleen cells are rapidly transforming themselves into insulin-producing cells as well.

"What we have been able to do changes the long-standing belief that adult islet tissue regeneration would not be robust or have a long-lasting impact on blood sugar control," says Dr. Faustman. "We have successfully demonstrated that we can re-grow cells inside the body in a naturally occurring rodent model."

MGH has secured fast-track approval from the Food and Drug Administration to move this science into human clinical trials, and Lee Iacocca and The Iacocca Foundation are working closely with MGH to ensure the $11 million goal is met for this next phase of the research.

Diabetes is a devastating disease. It is the fifth leading cause of death in the United States, contributing to more than 200,000 deaths annually. Over 17 million Americans have diabetes (5.4 million of whom do not know they have the disease), and each year an additional 800,000 people are diagnosed with diabetes.

In addition to the almost two million Americans with Type 1 diabetes, approximately 30,000 more individuals—mostly children—are diagnosed with the disease each year.

"Dr. Faustman's research has significant implications not only to the future of diabetes treatment, but also to other autoimmune diseases," says Kathryn Iacocca Hentz, President of The Iacocca Foundation. "It may someday be possible to apply her technique in reversing rheumatoid arthritis, multiple sclerosis and lupus."

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