

Special Report

The Status of Transplantation of the Pancreas and Pancreatic Tissues as a Cure for Diabetes

The NIH's National Institute of Arthritis, Metabolism, and Digestive Diseases (NIAMDD) and the American Diabetes Association today warned of a possible "misunderstanding" regarding the status of transplantation of the pancreas and pancreatic tissues as a cure for diabetes.

In a position paper released by the NIAMDD and endorsed by the Association's Scientific Affairs Committee, it was cautioned that success in total or subtotal transplantation of the pancreas in human beings has been "exceedingly limited" and is not to be considered a form of treatment for the disease. Such transplantation is a highly experimental procedure, the statement added, to be carried out only by research teams after review by a review board on human research.

Research on transplantation in animals of only the

insulin-producing cells of the pancreas has indicated effectiveness in animals of the same genetic strain, but such research in human beings is regarded as premature because of serious problems of tissue incompatibility. Much more research on animals is necessary, according to the NIAMDD and the Association.

Currently there is no cure for diabetes, also known as diabetes mellitus or sugar diabetes, which affects more than 4,500,000 Americans. Current means of treating diabetes represent only efforts to control the disease through insulin and diet.

The position paper was released following a Research Symposium on "Transplantation of Pancreatic Islets and the Histocompatibility of Endocrine Tissues," sponsored by the Association and held on October 25 and 26 in Minneapolis.

The complete text of the statement follows:

Position Paper on Pancreatic Islet and Beta Cell Transplantation in Man

Recent publicity has resulted in misunderstanding among both the lay and medical communities with respect to the current status of transplantation of the pancreas (total or subtotal), of pancreatic islets or of cultured beta cells as forms of therapy for diabetes mellitus. With the assistance of a specially convened group of consultants, the National Institute of Arthritis, Metabolism, and Digestive Diseases (NIAMDD) has developed this Position Statement which is endorsed by the Scientific Affairs Committee of the American Diabetes Association.

Diabetes mellitus is a serious chronic disease which affects over 4,500,000 Americans. It ranks high on the list of diseases causing death in the nation and is a major contributor to heart attacks, stroke, kidney failure, peripheral vascular disease and blindness. Current means of treating diabetes represent only efforts to control the disease and at present there is no known

cure. It is essential, therefore, that scientific research continue to be conducted to find a cure for the disease or to identify a means of preventing its devastating complications.

In a limited number of human beings, *transplantation of the total or subtotal pancreas* has been attempted. In most instances, this has been in patients who have received kidney transplants and their immune systems were already suppressed. The success of such procedures has been exceedingly limited and subject to all of the immunological difficulties associated with the transplantation of other organs. Total or subtotal pancreatic transplantation is not to be considered a form of treatment for the disease but rather a highly experimental procedure to be carried out only by research teams consisting of experienced immunologists, diabetologists, and surgeons skilled in such efforts after review by the institution's review

board (or committee) on human research.

With regard to *transplantation of pancreatic islets or beta cells*, it is appropriate at the present time that a limited number of qualified investigators explore the feasibility and potential value of this procedure. Research in this area so far has been limited to diabetic animals of the same genetic strain, thus having a high level of tissue compatibility. Transplanted tissue has been shown to be capable of maintaining body weight and normal blood sugar levels in these animals. This transplantation procedure is subject to all of the immunological problems of tissue incompatibility, and in some animals, transplantation via injection of beta cells into the portal vein has resulted in immediate death.

Appropriate application of transplantation technology is of wide medical interest and is not limited to the area of diabetes. "Progress in medicine depends largely upon the cautious extension to man of a body of carefully integrated knowledge derived from programs of basic and developmental research in laboratories. Extension to man is itself an investigative process. It must meet the same meticulous scientific standards that obtain in laboratories and the extension can be appropriately started only when the total volume of knowledge has reached a certain point." (Statement on Cardiac Transplantation in Man by the Board of Medicine, National Academy of Science, February 28, 1968).

It is clear that at this time transplantation of pancreatic tissues to man must be considered only a highly experimental method for the treatment of diabetes mellitus and further extensive animal ex-

perimentation must be conducted.

Human investigation in this endeavor must be approached with extreme care and expert scientific thought. When human investigation of transplantation of pancreatic islets or beta cells seems appropriate from prior animal research, it must be carried out by qualified teams of experienced scientists consisting of transplant immunologists, clinical investigative diabetologists and skilled surgeons. All research efforts in this field must be carried out according to a carefully written and approved protocol which must include a systematic lifetime follow-up of the recipients. The protocol should be complementary to the efforts of other investigators. This would assure continuous monitoring of each transplant recipient and provide compatible retrospective and cumulative information to other investigators. The NIAMDD is exploring means of establishing such a central protocol registry and an information network.

Clinical research plans must be reviewed by the institution's review board on human research, which recognizes the risks of the surgical, medical, and immunological procedures used and will weigh these risks against the possible benefits to patients with an incurable disease. The institutional review board must be assured that the project has been reviewed by knowledgeable diabetologists and transplant immunologists not affiliated with the project. Informed consent obtained from the patient must clearly state that the procedure is being done as a part of a clinical investigation, that there may be hazards involved and that its effect on the disease and its long-term complications are not known.