

Type 1 diabetes: islet-cells transplant term paper sample

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Type 1 Diabetes: the Islet Cells Transplant

Diabetes is a metabolic disorder in the endocrine system. The pancreas produce insulin hormone to control the level of blood sugar. The amount of insulin needed depends on the blood sugar levels that center the body's cells. Thus, for a person that has diabetes, the pancreas produce either inadequate amount of insulin or no insulin at all. There are two main forms of diabetes, known type 1 and type 2. Type 1 diabetes or Juvenile-onset diabetes develops early in life, usually in children or young adults. Type 1 diabetes yields either slight or no insulin, so it is called insulin dependent diabetes. Type 1 is not an inherited disease, but still there is some genetic factor (American Diabetes Association, 2013). In contrast, type 2 diabetes is called non-insulin dependent diabetes because people with diabetes Type 2 are resistant to insulin. Both type 1 and type 2 diabetes are serious diseases as they can lead to multi organs and system damage if a high level of blood sugar is not controlled properly (American Diabetes Association, 2013).

The Pancreas have cell clusters called islets of Langerhans. The cell clusters consist of different types of cells including beta cells. The pancreas manufacture insulin for the body to use (National Diabetes Information Clearinghouse, 2012). The advanced islet cells transplantation experiment aims at finding the cure for type 1 diabetes, but it is still in trail stage. The process of islet cell transplantation includes; identification of the beta islet cells first, isolating them and taking it for donor pancreases. It then follows injection into the main vein that links to the liver. The " injected" islets cells

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make their way to tiny blood vessels and become fixed and surrounded by liver tissue. Once it is placed in the recipient' cells, it starts to produce insulin, which effectively turn the liver into a substitute pancreas (Osterweil, 2013).

When processing the islet cells transplantation, careful screening and selection of donors as well as recipients are very important because of the associated risks such as induced diabetes or even death from the donor. Thus, a deceased person is the best donor. In order to do the islet cells transplantation, the donor and recipient must be matched genetically, and organ should not be damaged to work successfully. In addition, the recipient must be in good health apart from having diabetes. Recipients must start taking immunosuppressive drugs because these drugs can prevent possible rejection from foreign cells and keep the transplanted islet cells functioning. Once the immune system recognizes something foreign in the body, the autoimmune response is induced damaging recipient' own islets cells in the first place. It can also attack the transplanted islets cells. This is because the immune system is automatically responsible for destroying viruses, bacteria, organ, and tissues in the foreign body (National Diabetes Information Clearinghouse, 2012).

Once the islet cells transplanted successfully, the glucose level will be controlled without using insulin pumps and daily use of insulin injections attributed to the production of insulin from newly transplanted islet cells. Also, with the newly function transplanted islet cells, long term damage of other organs can be reduced or eliminated (Osterweil, 2013). Nevertheless, even if a recipient' islet cells survives after the procedure, it may not be

completely successful. The success rate of early islet cells transplants showed very low, at just 8%. The success rates have increased with the improvements of immunosuppressive drugs, but not significantly enough (Osterweil, 2013).

References

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