Omental engraftment of Neo Islets

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The need for medical innovation has sprouted as technology advances. We are entering an age where data is abundant, and analysis of a large sum of data is the epitome of innovation. With an increase in diabetes type 1 and type 2 around the world, scientists are contently trying to develop a way in which they can tackle the multiple forefronts of diabetes.

Stem cell research can dramatically decrease the need for exogenous insulin. The first successful stem cell transplant was conducted in 1956 by Dr. E. Donnall Thomas. Since then, the possibility has been endless, but Stem cell transplant comes at a cost. The chance of rejection, difficulty in sustaining the graft against antibodies demanded the need for further research.

The latest research published in the journal Stem cell shows a new approach to stem cell transplant. According to the research, stem cell-derived Islets cell transplant producing euglycemic state without any immunosuppression or hypoglycemia1.

Stem cell-derived islet cells were grown, encapsulated by Mesenchymal stem cells, and implanted in the omentum of mice. This approach was designed to tackle a number of problems regarding islet transplants. The biggest problem is the need for pancreatic organ donors (up to 5) with repeated transplants1. Other hurdles include, prolong use of anti-rejection drugs2, the use of encapsulated devices, insuring physiological delivery of insulin into the portal system, and expanding Beta cells in culture3.

Mesenchymal stem cells have potent immune-modulating, anti-inflammatory, pro-survival, and repair- stimulating activities. When coadministered with islets, show improved intrahepatic function and survival. The successful outcome validates this technique on improving islet transplant without the need for immunosuppression and tacking autoimmune diabetes.

This technique is tested on mice, data correlated with studies conducted by the FDA on dogs. It shows the possibility of applying it to humans, and soon clinical trials can start to treat autoimmune diabetes. With the introduction of Artificial inteligence, new horizons appear towards understanding stem cells and cellular behaviors that can change the face of medicine

References

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