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POSTER

Increasing dose of intravenous human adipose-derived stem cells improves the pancreatic function of diabetic mice

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Abstract

Mesenchymal tem cell transplantation is a novel treatment for diabetes mellitus, especially type 1 diabetes. Many publications have proved the effect of MSC therapy on reducing blood glucose and improving insulin production in type 1 diabetic animal as well as in clinic trials. However, there is no conclusion that how many cells are effective for diabetes. Thus, this study has investigated that different adipose-derived MSC doses affected glucose metabolism in diabetic mice. STZ-induced diabetic mice were intravenous transfused with human MSCs with dose either 106 (treated group A) or 2x106 cells/mouse (treated group B). Both treated and untreated mice were monitored the blood glucose levels, glucose and insulin tolerance test, pancreatic structure change and insulin production every week until 56 days after transplantation. The results showed that the higher dose of MSC could reduce death rate (66% vs. 0% death in group A vs. group B after 56 days of treatment, respectively) and remarkably lower blood glucose levels while the mice treated with 1x106 cells/dose remaining hyperglycemia. Moreover, the glucose tolerance and insulin tolerance as well as insulin production were improved in group B at 28 days after transplantation. The histochemical imaging further demonstrated the decrease of inflammatory cells in the islets and the restoration of pancreatic structures in higher-dose-MSCs-treated mice. Thus, the dose 2x106 cells of MSCs may be an effective strategy for diabetes mellitus concerning hyperglycemia, impaired glucose metabolism and islet destruction

Keywords

Diabetes, streptozotocin, dose, stem cell

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