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Adipose derived autologous mesenchymal stem cells for therapy of type 2 diabetes mellitus patients

Purwati Armand^{1,2}, Sony W¹, Askandar TJ¹, Ari S¹ and Fedik A R²¹Department of Internal Medicine, Faculty of Medicine, Airlangga University –Dr. Soetomo Hospital, Surabaya, Indonesia.²Stem Cell Research and Development Centre Airlangga University, Surabaya, Indonesia.

Introduction: Diabetes Mellitus (DM) is a group of metabolic diseases with hyperglycemic characteristic that occurs due to abnormal insulin secretion, insulin resistance or both. Various kinds therapies of DM, whether it is preventive, pharmacological and life-style changes, have been attempted for managing diabetes, but the prevalence is higher and higher with high mortality and morbidity as well. Therefore, it necessitates the provision of alternative therapies in the management of DM by using Mesenchymal Stem Cells (MSCs) was derived from adipose.

Methods : 40 patients with inclusion criteria of type 2 diabetic with tertiary failure of treatment were given autologous MSCs derived from adipose. MSCs were inserted through catheterization of pancreatic artery, and then was measured the levels of fasting blood sugar, 2 hours postprandial blood sugar, insulin, C peptide, HbA 1c, HOMA- R, HOMA- B pre and post stem cell transplantation in three months later after implantation.

Result : Evaluation in patients receiving stem cell therapy three months after implantation were found the characteristic of the patients dominantly in 50-59 y.o about 40%, with T test, Mean of HbA 1c pre were 8.28, post 6.795 (p= 0.000), mean of fasting glucose pre were 148.77, post were 102.32 (p= 0.000), mean 2 hours post prandial glucose were 252.77, post were 129.12 (p=0.000). with Wilcoxon test was found, mean of c peptide pre were 2.44, post were 2.98 (p=0.000), mean of fasting insulin were 8.79, post 7.19 (p=0.447), mean of HOMA IR pre were 4.85 and post were 2.69 (0.000), and the last mean of HOMA B pre were 52.47 and post were 71.04 (p= 0.000).

Discussion: Three months after stem cell implantation plasma glucose was significantly reduce, pancreatic preservation also insulin resistance were significantly improvement.

Conclusion : Adipose derived MSCs can improve pancreatic function and decrease insulin resistance in diabetic patients with tertiary failure treatment.

purwatipanpan@yahoo.com

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