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Bone marrow-derived autologous mesenchymal stem cells for therapy of type 2 diabetes mellitus patients' tertiary failure

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Diabetes Mellitus (DM) is a group of metabolic diseases with hyperglycemic characteristic that occurs due to abnormal insulin secretion, insulin resistance or both. Insulin is a hormone consisting of a series of amino acids produced by the beta cells of the pancreas gland. 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)

Method: Twelve Patients with inclusion criteria of type 2 diabetic with tertiary failure of treatment were given autologous MSCs derived from bone marrow stem cells. MSCs were inserted through catheterization of pancreatic dorsalis artery or gastroduodenal artery, and then the levels of fasting blood sugar was measured, 2 hours postprandial blood sugar, insulin, C peptide, HbA 1C, HOMA- R, HOMA- B pre and post stem cell transplantation in the first, second and third months.

Result: Evaluation in patients receiving stem cell therapy in combination with insulin showed a decrease in fasting glucose levels and glucose levels 2 hours after meals in the first month, and increased levels of C peptide in the second month. Examination of the first month also showed decreased levels of HOMA- IR, which is indicative of insulin resistance, and increased HOMA B.

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

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