RESULTS OF THE AUTOLOGOUS MESENCHYMAL STEM CELL TRANSPLANTATION IN PATIENTS WITH TYPE 1DIABETES MELLITUS

Ulyanova O., Baigenzhin A., Askarov M., Kozina L., Karibekov T., Taubaldieva Zh., Serebrennikova D., Boltanova A.

National Scientific Medical Research Center, Nur-Sultan, Kazakhstan

olgaulyanova1971@gmail.com

Keywords: Autologous bone-marrow derived stem cells, Type1diabetes mellitus, Glycated hemoglobin

Introduction: Type 1diabetes mellitus (T1DM) remains one of the main public healthcare problems worldwide with a tendency to steady growth. T1DM leads to kidney failure, blindness, heart attacks and strokes, which account for high rates of morbidity and mortality among patients with T1DM. A replacement of beta cells is the goal of therapy for T1DM. Recent clinical studies have shown a promising stem cell role in the treatment of T1DM. We evaluated the therapeutic effect of autologous mesenchymal stem cell transplantation (AMSCT) on carbohydrate metabolism markers in T1DM patients.

Methods: We examined 7 patients (5 male, 2female, aged 20-42) with T1DM, who underwent AMSCT (cells were obtained from the patients' iliac crest and cultivated for 3-4 weeks) by intravenous infusion. The quantity of autologous mesenchymal stem cells infused was from 95 to 97 × 106. We analyzed the daily insulin dosages, glycated hemoglobin (HbA1c), glutamic acid decarboxylase (GAD) antibody and Langerhans antibody levels in patients before, 1, 2and 3 months after the AMSCT procedure.

Results: In patients with T1DM, AMSCT led to decrease in daily insulin dosage levels from 58,81± 13,71Units to 47,5± 12,7 Units (p=0,04) with trend to increase leptin levels and decrease HbA1c levels, from 7,73 + 3.5 ng/ml to 16,9 ± 8,31ng/ml (p= 0,046) and 9,59±1,73% to 8,65±0,93 % (p = 0,092) after 1month, respectively. GAD antibody and Langerhans antibody levels didn't change significantly after AMSCT: from 10,79 + 4,52IU/ml to 12,33 ± 3,81IU/ml (p> 0,05) and 14,12+4,26 IU/mL to 18,17+9,03 IU/mL (p=0,485) after 3 months, respectively.

Conclusions: The AMSCT led to decrease of the daily insulin dosage levels with increase of the leptin levels after 1month without increasing of the GAD and Langerhans antibody levels within 3 months in patients with T1DM.