Possibilities of stem cells in the treatment of patients with diabetes

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BACKGROUND. The group of stem cells includes a heterogeneous group of cells of different origins, united by two key properties: 1) the ability to self-renew through division and 2) the ability to differentiate into mature specialized cell types. Stem cell therapy has demonstrated clinical potential in the treatment of diseases such as spinal cord injury, cardiovascular disease, degenerative disorders, and endocrine disorders. Stem cells are also used in the treatment of diabetes mellitus to potentially regenerate damaged pancreatic beta cells and restore insulin production. This review analyzes the possibilities of stem cells in the treatment of diabetes and its complications.

RESULTS. The presented results of numerous studies show that the use of stem cells in the complex treatment of patients with diabetes mellitus leads to the potential regeneration of damaged beta cells of the pancreas, reduces the need for insulin and the level of HbA1c, improves glycemic and immunological indicators. Treatment with stem cells in patients with established diabetes was associated with a reduction in the incidence of long-term and chronic complications of diabetes (diabetic retinopathy, diabetic kidney disease, and diabetic foot syndrome). Stem cell therapy is well tolerated by patients. There were no serious adverse events, hypoglycemia, or discontinuation due to adverse events or complications.

KEY WORDS: stem cells, diabetes, retinopathy, diabetic kidney disease, diabetic foot syndrome.