Abstract

Background: Diabetes mellitus has become the third human killer following cancer and cardiovascular disease. Millions of patients, often children, suffer from type 1 diabetes (T1D). Stem cells created hopes to regenerate damaged body tissues and restore their function. **Aim:** This work aimed at clarifying and comparing the therapeutic potential of differentiated and non-differentiated mesenchymal stem cells (MSCs) as a new line of therapy for T1D. **Methods:** 40 female albino rats divided into Group I (control): 10 rats and group II (diabetic), III and IV, 10 rats in each, were injected with streptozotocin (50mg/kg body weight). Group III (MSCs) were transplanted with bone marrow derived MSCs from male rats and group IV (IPCs) with differentiated insulin producing cells. Blood and pancreatic tissue samples were taken from all rats for biochemical and histological studies. **Results:** MSCs reduced hyperglycemia in diabetic rats on day 15 while IPCs normalizes blood glucose level on day 7. Histological and morphometric analysis of pancreas of experimental diabetic rats showed improvement in MSCs-treated group but in IPCs-treated group, β-cells insulin immunoreactions were obviously returned to normal, with normal distribution of β-cells in the centre and other cells at the periphery. Meanwhile, most of the pathological lesions were still detected in diabetic rats. **Conclusion:** MSCs transplantation can reduce blood glucose level in recipient diabetic rats. IPCs initiate endogenous pancreatic regeneration by neogenesis of islets. IPCs are better than MSCs in regeneration of β-cells. So, IPCs therapy can be considered clinically to offer a hope for patients suffering from T1D.

Biography

I completed my MD-PhD at age of 36 from **Basel University, Switzerland**. I'm an assistant professor of Medical Biochemistry and Molecular Biology at Zagazig University School of Medicine, Egypt. I'm the director of Molecular Biology and Cell Culture Lab at the department, Head of Cell culture unit of Scientific and Medical Research centre, the director of Project Management Unit, the admin of Institutional Review Board and a member of Scientific research council at Zagazig University School of Medicine, Egypt. I've published more than 30 papers in reputed journals and participated in more than 30 in ternational conferences

References

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