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Therapeutic efficacy of differentiated versus undifferentiated mesenchymal stem cells in experimental type I diabetes in rat

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Selective MSCs differentiation protocol into pancreatic beta cells was conducted in the present study using exendin-4 and TGF-beta. Differentiated and undifferentiated MSCs were assessed in experimental type I diabetes in rats. Ninety female white albino rats were included in the study and divided equally (n=15/ group) into 6 groups: healthy control, healthy control rats received acellular tissue culture medium, diabetic rats, diabetic rats received acellular tissue culture medium, diabetic rats received undifferentiated MSCs and diabetic rats received differentiated MSCs. Therapeutic efficacy of undifferentiated versus differentiated MSCs was evaluated via assessment of quantitative gene expressions of insulin1, insulin 2, Smad-2, Smad-3, PDX-1, PAX-4, neuro D. Blood glucose and insulin hormone levels were also assessed. Results showed that quantitative gene expressions of all studied genes showed significant decrease in diabetic rat groups. Use of undifferentiated and differentiated MSCs led to a significant elevation of expression levels of all genes with more superior effect with differentiated MSCs except smad-2 gene. As regards insulin hormone levels, use of either undifferentiated or differentiated MSCs led to a significant elevation of its levels with more therapeutic effect with differentiated MSCs. Blood glucose levels were significantly decreased with both undifferentiated and differentiated MSCs in comparison to diabetic groups but its levels were only normalized 3 months after injection of differentiated MSCs. In conclusion, use of undifferentiated or differentiated MSCs exhibited significant therapeutic effect with the use of differentiated MSCs.

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Factors influencing failure of glycemic control among adult type 2 diabetic patients in Bangladesh

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The cross sectional study was conducted in the out-patient departments of 4 diabetes care centres in Bangladesh among adult type 2 diabetic patients with the aim to explore the factors which influence poor glycemic control of adult type 2 diabetic patients in Bangladesh. Data were recorded in a semi-structured questionnaire and Diabetes Knowledge (DK) Questionnaire, Diabetes Self-efficacy (SE) score, Hospital Anxiety and Depression (HAD) scales were used. Of the 1158 type 2 diabetes respondents, schooling ranged from primary to post graduation levels. Most of female respondents were housewives and majority of males were service holders, around 19% were smoker and 27.1% smokeless tobacco consumer. In terms of fasting sugar level, 39.8% had their diabetes controlled but based on HbA1C, 18.8% had their diabetes controlled. Smokeless tobacco use, socioeconomic score and age of onset seems to have significant relation with FBS control status adjusting for all possible confounders. For HbA1c control sex, educational attainment, SE scores and age of onset of diabetes seem to have significant association with postprandial glucose control. Women are found to have better HbA1C control than men (OR 0.53). Educational attainment (OR 0.95), SE score (OR 0.98) and age of onset (OR 0.98,) showed to have protective effect on HbA1C control.

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