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EFFECT OF AUTOLOGOUS BONE MARROW MONONUCLEAR CELLS TRANSPLANTATION IN DIABETIC PATIENTS WITH ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION

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Objectives To investigate the efficacy and proposed mechanism of bone marrow mononuclear cells (BMMNCs) transplantation for diabetic and non-diabetic patients with ST-segment elevation myocardial infarction (STEMI).

Methods One hundred and sixteen patients with STEMI who had successfully undergone percutaneous coronary intervention (PCI) were divided into a diabetic group (n=51) and non-diabetic group (n=65). All of the patients received intracoronary injection of BMMNCs.

Results Diabetes down-regulated IGF-1, IGFBP-5, VEGF, SDF-1, IL-6, IL-1 α and TNF- α expression and affected the expression of Bmi-1, Gfi1, Tel and Hox-B4 which could prevent premature senescence and maintain the self-renewal capacity of stem cells. Event-free survival rates were not statistically different between the diabetic and non-diabetic group (80% vs 72.5%, p=0.382). LV ejection fraction (LVEF) and wall motion score index (WMSI) were evaluated by echocardiography and found to be significantly improved in the non-diabetic group compared to the diabetic group over the 4-year

follow-up period. Improved myocardial perfusion and reduced infarct size in the non-diabetic group compared to the diabetic group was verified using single-photon emission computed tomographic (SPECT) imaging. The non-diabetic group also had reduced anginal symptoms as assessed by changes in their Seattle Angina Questionnaire scores and Canadian Cardiovascular Society (CCS) Functional Angina classification. An improvement of 6-min walk distance (6MWD) was also noted to be higher in the non-diabetic group during the follow-up period.

Conclusions This study indicates that the beneficial effect of BMMNCs transplantation for STEMI is less pronounced in diabetic patients. The mechanism is associated with decreased BMMNCs function in diabetic patients.