عنوان مقاله:

Effects of mesenchymal stem cells with injectable scaffold oncardiac function in myocardial infarction in Rabbit

محل انتشار:

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خلاصه مقاله:

BACKGROUND: Bone marrow-derived mesenchymal cells can transdifferentiate into Cardiomyocyte cells and improve heart function after transplantation. Since biomaterials can improve the cell retention in the site, cell survival and differentiation, heart tissue engineering is now being explored as anapplied solution to support cell-based therapies and increase their efficacy for myocardial diseases. Chitosan in combination with Glycerol Phosphate (GP) can produce a thermo sensitive material that in body temperature can form a jellylike material. OBJECTIVES:The aim of this study was to evaluate the effects ofa combination of autologous undifferentiated bone marrow mesenchymal stem cells (MSCs) and injectable scaffold on cardiac function improvement in rabbits after inducing myocardial infarction. METHODS: The Left Anterior Descending (LAD) coronary artery was ligated by No. 6-0 polyamide suturematerial, and autologous MSCs with injectable scaffold were injected into the margins of the infarcted zone at the time of surgery. At 4 weeks after transplantation, the cardiac function and structure was detected using echocardiography. RESULTS:There was no significant difference among the three groups (MI only, MI Scaffold, and MI+Scaffold+MSCs) in the Echocardiographic parameters including, heart rate (HR), Ejection Fraction(EF), Fractional Shortening (FS), Left Ventricular Diameter (LVD) and Left Ventricular Parietal Wall Diameter (LVPW). CONCLUSIONS: A combination of autologous undifferentiated bone marrow MSCs and injectable scaffold made of Chitosan+ Glycerol Phosphate in echocardiographic evaluation did nothave a positive influence on achieving functional improvement.

کلمات کلیدی:

Echocardiography, mesenchymalstem cell, scaffold, ejection fraction,fractional shortening