

HEART DISEASE

AUTOLOGOUS MSC INFUSION IMPROVES EJECTION FRACTION AND WALL THICKNESS IN SEVERE ISCHEMIC CARDIOMYOPATHY: RESULTS FROM A CLINICAL MULTICENTRE PHASE II/III RANDOMIZED CONTROLLED TRIAL

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Background: We have previously demonstrated that mesenchymal stromal cell (MSC) may improve cardiac function and reduce scar tissue in end-stage cardiomyopathy when administered concurrently with revascularization (either cardiac bypass operation or coronary angioplasty). In this study we compared the effects of MSC with concurrent revascularization (Group A), MSC only (Group B) and revascularization only (Group C).

Methods: Twenty-seven patients were recruited. All patients had anterior myocardial infarction previously and baseline cardiac function (left ventricular ejection fraction, LVEF) less than 40%. Patients who were suitable for revascularization were divided into Group A or C. Patients who have had revascularization previously or were unsuitable for revascularization were allocated to receive MSC by intracoronary infusion (Group B). Patients received between 50-100x10⁶ autologous bone-marrow MSC. The LVEF, LV end diastolic diameter (LVEDD) and interventricular septum thickness (IVST) were estimated at baseline, 3 months, 6 months and 12 months follow-up. Magnitude of change in LVEF (Δ EF) was calculated as percentage of baseline value.

Results: All patients tolerated the procedure well with no proarrhythmia, calcification or tumor formation. There was no difference in baseline parameters between Groups A, B and C including LVEF (27.5 \pm 5.6 vs. 32.0 \pm 4.5 vs. 28.0 \pm 8.3%; p=0.26). LVEF improved in groups A and B during follow-up. The improvements were statistically significant compared to baseline for Group B at 3 months and for Groups A and C at 6 months. The Δ EF was largest in Group A compared to Groups B and C at 12 months (130 \pm 83 vs. 46 \pm 37 vs. 31 \pm 29%; ANOVA p=0.02).

Conclusions: MSC significantly improves cardiac function. Concurrent MSC administration with revascularization appeared to be superior to either procedure alone for patients with ischemic cardiomyopathy.



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