

# CYTOTHERAPY

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## INTRAMYOCARDIAL AND INTRACORONARY AUTOLOGOUS BONE MARROW-DERIVED MESENCHYMAL STROMAL CELL TREATMENT IN CHRONIC SEVERE DILATED CARDIOMYOPATHY

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**Background Aims:** Mesenchymal stromal cells (MSC) may improve cardiac function following myocardial infarction. MSC can differentiate into cardiomyocytes and endothelial cells while exerting additional paracrine effects. There is limited information regarding the efficacy of route for MSC treatment of severe dilated cardiomyopathy (DCM). The aim of this study was to demonstrate the clinical safety, feasibility and efficacy of direct intramyocardial and intracoronary administration of autologous bone marrow-derived MSC treatment for no-option patients with chronic severe refractory DCM.

**Methods:** Ten symptomatic patients with DCM and refractory cardiac function, despite maximum medical therapy, were selected. Five had ischemic DCM deemed unlikely to benefit from revascularization alone and underwent bypass operations with concurrent intramyocardial MSC injection (group A). Two patients had previous revascularization and three had non-ischemic DCM and received intracoronary MSC injection (group B).

**Results:** Group A and B patients received  $0.5-1.0 \times 10(6)$  and  $2.0-3.0 \times 10(6)$  MSC/kg body weight, respectively. All patients remained alive at 1 year. There were significant improvements from baseline to 6 and 12 months in left ventricular ejection fraction and other left ventricular parameters. Scar reduction was noted in six patients by 12 months.

**Conclusions:** Autologous bone marrow MSC treatment is safe and feasible for treating chronic severe refractory DCM effectively, via intracoronary or direct intramyocardial administration at prescribed doses.