ACC.17™

863
JACC March 21, 2017
Volume 69, Issue 11

Heart Failure and Cardiomyopathies

THE ROLE OF GENDER ON MESENCHYMAL STEM CELL THERAPY IN NON-ISCHEMIC DILATED CARDIOMYOPATHY: A SUB-ANALYSIS OF THE POSEIDON-DCM TRIAL

Poster Contributions
Poster Hall, Hall C
Saturday, March 18, 2017, 3:45 p.m.-4:30 p.m.

Session Title: Heart Failure and Cardiomyopathies: What Next When All Else Is Failing?
Abstract Category: 14. Heart Failure and Cardiomyopathies: Therapy
Presentation Number: 1248-249

Authors: *Victoria Florea, Ana M. Landin, Angela M. Castellanos, Makoto Natsumeda, Bryon A. Tompkins, Courtney Premer, Darcy Difede, Wayne Balkan, Ivonne H. Schulman, Joshua Hare, University of Miami School of Medicine, Interdisciplinary Stem Cell Institute, Miami, FL, USA*

Background: Gender differences in cardiovascular disease outcomes are partially explained by differences in risk factor profiles and clinical presentation. To date, limited knowledge exists regarding gender differences in the response to mesenchymal stem cell (MSC) therapy. This POSEIDON-DCM substudy investigated the role of gender on the efficacy of MSC treatment for non-ischemic dilated cardiomyopathy (NIDCM).

Methods: Thirty-four NIDCM patients received bone marrow-derived MSC treatment via transendocardial stem cell injection (males: 54.25±10.42 y.o., n=24 and females: 55.10±11.59 y.o., n=10). Cardiac computed tomography and magnetic resonance imaging parameters were analyzed at baseline and 12-months. Immune-biomarkers were measured at baseline and 6-months. Endothelial function was assessed by flow-mediated vasodilation (FMD) and endothelial progenitor cell colony forming units (EPC-CFUs) at baseline and 3-months.

Results: Ejection fraction (EF) increased in males by 6.2 EF units (1.2, 11.1 p=0.01) and in females by 8.6 EF units (-0.3, 17.5 p=0.06), with no difference between groups, p=0.6. End diastolic volume, end systolic volume, and sphericity index were unchanged over time. Serum TNF-α decreased in both groups: males: -7.4 pg/ml (-10.5, -3.4 p<0.0001) and females: -11.7 pg/ml (-14.6, -6.0 p=0.004); between groups p=0.2. Temra T-cells were reduced in males: -13.7% (-16.9, -10.5 p<0.0001) and females: -12.5% (-17.4, -7.7 p=0.0004), between groups p=0.7. Switch Memory B-cells increased at 6 months: males: 6.9% (4.6, 9.1 p<0.0001), females: 8.0% (2.4, 13.6 p=0.01), between groups p=0.7. Finally, late/exhausted B-cells decreased in the male group: -6.7% (-13.1, -4.0 p<0.0001) and female group: -3.9% (-9.2, -1.7 p=0.02), between groups p=0.2. While FMD significantly improved in males (p=0.042) but not in females (p=0.2), EPC-CFUs increased in both groups at 3 months relative to baseline (male: p=0.006, female: p=0.05), with no differences between groups.

Conclusions: The findings demonstrate that MSC therapy improves EF, endothelial function, and inflammatory immune phenotype in NIDCM patients. Importantly, males and females respond similarly to MSC treatment.