

Presentation Abstract

Session: AOS.503.01-Heart Failure: Cell- and Gene-Based Therapies II

Presentation: 3698 - Transcoronary Delivery of Allogenic Bone Marrow-Derived Mesenchymal Stem Cells in a Swine Model of Recent Myocardial Infarction

Pres Time: Tuesday, Nov 17, 2009, 4:00 PM - 4:15 PM

Location: Room W101

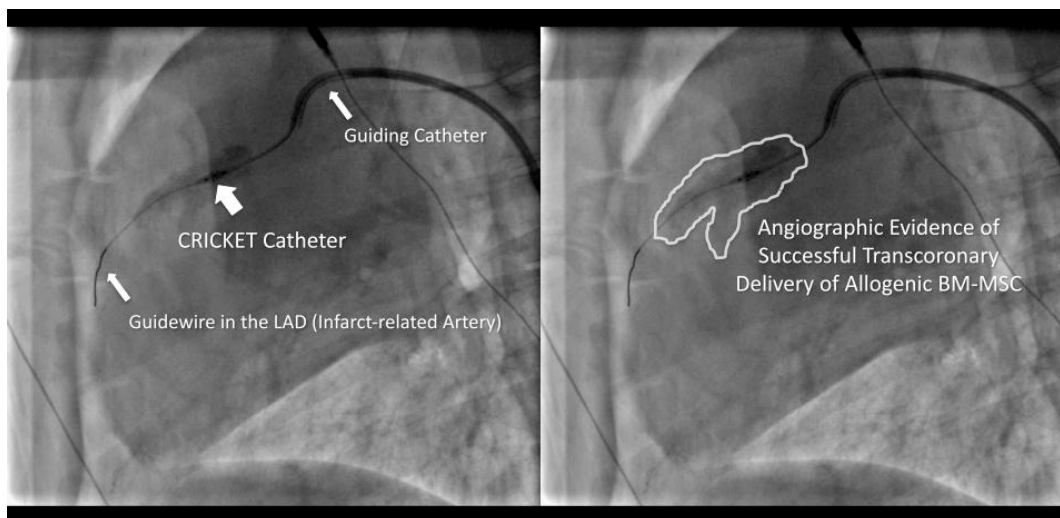
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Specialty: +503. Heart Failure: Cell & Gene Based Therapies (CVSA)

Keywords: Stem/progenitor cells; Myocardial infarction; Interventional cardiology; Magnetic resonance imaging

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Abstract: Background: For cardiac cell therapy, intracoronary delivery remains a delivery method fraught with potential safety concerns, especially for bone-marrow mesenchymal stem cells (BM-MSCs). Study Aim: To investigate the novel transcoronary delivery route (TCD) for BM-MSCs. Methods: Anterior myocardial infarction (MI) was created in Yorkshire-Landrace swine. TCD was performed with the Cricket catheter, which allows delivery to the adventitial space thus circumventing concerns of cell washout or microembolization. Cardiac MRI studies were performed prior to and 1-month after cell injection. Results: Seven swine survived MI creation (BM-MSC group, n=3; control group, n=4). Infarct sizes were comparable (BM-MSC, 35.2±7% vs. Controls, 29.6±5%; p=NS). While all infarcts were transmural, 2/3 BM-MSC swine had evidence of concomitant subendocardial hemorrhage. On day 7 post-MI, in the cell group, 50x10⁶ allogenic BM-MSCs were injected (Figure) whereas medium was injected in control swine. At 1-month, relative to baseline, MRI studies documented adverse LV remodeling in controls (LVEDV: 117.9±8.9ml vs. 153.7±15.5ml, respectively; p=0.02) compared to BM-MSC swine (LVEDV: 114.4±13.2ml vs. 113.4±34.7ml, respectively; p=NS). No complications occurred during TCD. Serial troponins, hs-CRP and pro-NT-BNP did not detect myocardial injury, inflammation or cardiac dysfunction following allogenic BM-MSC TCD. Moreover, post-injection electrophysiological assessment did not detect evidence of proarrhythmia. Conclusion: For cardiac cell therapy, allogenic BM-MSC TCD is both safe and feasible in recently infarcted hearts with potential to impact adverse LV remodeling



Disclosures: **H. Ly**, None; **J. Pressacco**, None; **F. Marcotte**, None; **B. Thibault**, None; **J. Tanguay**, None.