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GLOBAL INTRACORONARY INFUSION OF ALLOGENEIC CARDIOSPHERE-DERIVED CELLS IMMEDIATELY AFTER CORONARY REPERFUSION IMPROVES EJECTION FRACTION AND REMOTE ZONE FUNCTION INDEPENDENT OF CHANGES IN INFARCT VOLUME

Poster Contributions
Poster Hall B1
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Session Title: Pharmacotherapy and Complex Coronary Interventions
Abstract Category: 38. TCT@ACC-i2: Translation and Pre-clinical Research
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Background: Regional intracoronary administration of cardiosphere-derived cells (icCDCs) to healed infarcts reduces infarct volume but does not improve left ventricular ejection fraction (LVEF). We tested the hypothesis that this reflects the failure to prevent remote zone remodeling and determined whether this could be overcome by global administration of CDCs immediately after reperfusion.

Methods: Using blinded methodology, immunosuppressed swine (cyclosporine 100mg/day, n=15) underwent a 60 minute LAD occlusion. After 30 minutes of reperfusion, they were randomized to receive vehicle or 20 x 106 allogeneic CDCs infused into the 3 major coronary arteries at 106 cells/min under continuous flow. Infarct volume and LV function were assessed with serial contrast MDCT.

Results: Two days after MI, LVEF and regional LV function were similarly reduced in both groups. One month later, LVEF increased in CDC-treated but not vehicle-treated animals (Table). This reflected improved segmental function in the infarct as well as remote myocardium. Functional improvement was independent of infarct volume, which declined by a similar extent in each group (Vehicle: 2.5 ± 0.7 g vs. CDCs: 2.4 ± 1.5 g).

Conclusion: Global delivery of icCDCs immediately after reperfusion improves LV function throughout the heart without affecting infarct size. Strategies to prevent remote zone myocyte loss following an infarct may more effectively ameliorate adverse ventricular remodeling and improve global systolic function.

	Vehicle (n=7)			Allogeneic CDCs (n=8)		
	Baseline	2 days post-MI	1 month post-MI	Baseline	2 days post-MI	1 month post-MI
LV Ejection Fraction (%)	63.8 ± 0.9	53.0 ± 2.2†	50.7 ± 4.1†	65.1 ± 2.4	53.2 ± 3.0†	57.7 ± 2.7*
Infarct Segmental Wall Thickening (%)	54.0 ± 4.8	4.4 ± 6.4†	15.6 ± 8.1†	60.5 ± 6.0	9.1 ± 6.5†	30.5 ± 9.2†*
Remote Segmental Wall Thickening (%)	52.6 ± 3.6	38.2 ± 2.2†	38.6 ± 3.7†	50.0 ± 2.6	36.1 ± 4.6†	47.9 ± 4.2†*
Infarct Size (% of LV Mass)	---	12.6 ± 2.3	8.6 ± 1.6*	---	11.2 ± 2.3	7.6 ± 1.5*

Values are mean ± SEM; †p<0.05 vs. Baseline; *p<0.05 vs. 2 days post-MI