**MRI EVALUATION OF LEFT VENTRICULAR FUNCTION POST CORONARY OCCLUSION/REPERFUSION AND EMBOLIZATION IN SWINE MODEL**

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Objective: To characterize and compare the deleterious effects of major coronary artery occlusion/reperfusion and micro-vessel occlusion on left ventricular (LV) function using MRI.

Background: Microembolization effects on LV function has been under-estimated and under-diagnosed because:

1) the pathology is invisible,

2) volume of microemboli is unknown in patients post PCI

3) biopsy was not an option.

Methods: Pigs (24) were divided equally into 3 groups and subjected to: no-infarct (control), 90min of the LAD occlusion/reperfusion or delivery of known volume and sizes of microemboli (16cubic-mm, 40-120micron) into the LAD using X-ray guidance. At 3 days after intervention, cine and viability MRI were acquired to measure LV volumes, ejection fraction, radial strain and large homogeneous and heterogeneous myocardial infarcts, respectively. A semi-automatic threshold method was used to measure infarcts.

Results: There was significant difference in radial strain in the LAD territory of control animals (40±6%) and large homogeneous infarct (-1±1%) and microinfarct (-2±1%). The table summarizes the effects of the interventions on global LV function compared with controls. LAD occlusion/reperfusion and micro-vessel occlusion produced significantly different infarct sizes (17±1% vs. 6.2±0.6% LV mass), but not on ejection fraction, suggesting different mechanisms govern LV dysfunction.

EDV(ml) ESV(ml) Ejection fraction(%)

Control 77±3 35±2 52±1

Large infarct 75±2 44±1\* 41±1+

Microinfarct 76±2 47±1\* 39±1+

\*P<0.05, +P<0.01

Conclusion: MRI detects acute micro/macroinfarct and LV dysfunction. The effect of micro-vessel occlusion was disproportionally large compared with major coronary vessel occlusion/reperfusion, suggesting that infarct size is not the sole factor for acute LV dysfunction post-PCI.