

CARDIAC MAGNETIC RESONANCE IMAGING ASSESSING STUNNED MYOCARDIUM IN POST-MYOCARDIAL INFARCTION PATIENTS. META-ANALYSIS OF PROSPECTIVE TRIALS

ACC Moderated Poster Contributions McCormick Place South, Hall A Saturday, March 24, 2012, 11:00 a.m.-Noon

Session Title: Imaging: MRI in Evaluation of Anatomy, Perfusion and Vasculature Abstract Category: 21. Imaging: MRI Presentation Number: 1089-175

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Background: Stunned myocardium is defined as a transient post-ischemic dysfunction. Myocardial stunning can lead to heart failure and cardiogenic shock if not properly detected and it changes physician management with regards to prognosis and treatment.

Objectives: To evaluate the sensitivity, specificity, negative and positive predictive values (PPV/NPV) of cardiac magnetic resonance imaging (CMR) assessing stunning myocardium. Two different techniques were evaluated: 1) Low dose dobutamine (LDD), and 2) Contrast delayed-enhancement (DE).

Methods: A systematic review of Medline, Cochrane, and Embase for all the prospective trials assessing myocardial stunning in subjects suffering an acute myocardial infarction (AMI) using CMR was performed using a hierarchical meta-analytical model.

Results: A total of 20 studies of CMR with 940 patients fulfilled the inclusion criteria. First MRI was performed 5±2 days post-AMI. The DE CMR studies used 50% a cut-off to determine recovery. The mean sensitivity and specificity were 82.6% (95% Cl 81-84) and 83.3% (95% Cl 82-85), whereas the PPV and NPV were 73% and 80.2%. LDD CMR used a 2mm change in LV wall motion as a cut-off. In these studies the mean sensitivity and specificity were 60% (95% Cl 55-61), and 88% (95% Cl 86-89), whereas the PPV and NPV were 81% and 73% respectively.

Conclusion: DE CMR provides the highest sensitivity and NPV of the two techniques in detecting stunned myocardium after AMI. Conversely, LDD CMR provides the highest specificity and PPV.

DE MRI studies.									
Study	т	P	FP I	FN T	N	Sensitivity	Specificity	Sensitivity	Specificity
Bodi et al 2005	13	0	23 (61 30	5 0.	.68 [0.61, 0.75	0.93 [0.90, 0.96]	•	
Bodi et al 2006	11	1	47 -	42 43	6 0.	.73 [0.65, 0.79	0.90 [0.87, 0.93]	•	
Choi et al 2006	11	0	33 2	23 8	9 0.	.83 [0.75, 0.89	0.73 [0.64, 0.81]	•	-
Dall Armellina et al 2010	10	8	25	31 26	4 0.	.78 [0.70, 0.84	0.91 [0.87, 0.94]	-	•
Engblom et al 2008	21	4 1	95 4	49 17	0 0.	.81 [0.76, 0.86	0.47 [0.41, 0.52]	•	
Gerber et al 2002	17			40 10			0.64 [0.56, 0.71]		-
Ibrahim et al 2010	15	5	25	13 11	3 0.	.92 [0.87, 0.96	0.82 [0.74, 0.88]	•	-
Kaandorp et al 2007	- 4		14	0 9	9 1.	.00 [0.93, 1.00	0.88 [0.80, 0.93]) -4	-
Kim et al 2007	10			66 25	0 0.	.61 [0.53, 0.69	0.90 [0.86, 0.93]	•	•
Kitagawa et al 2007	- 4			17 13			0.89 [0.83, 0.93]		•
Motoyasu et al. 2003	14		30 .	29 7			0.71 [0.61, 0.80]		
Nowosielski et al 2009	37		8	8 43			0.98 [0.96, 0.99]		
Shapiro et al 2007	19	7	70 3	27 38	60.	1.88 [0.83, 0.92	0.85 [0.81, 0.88]	0 0.2 0.4 0.6 0.8 1	0 0.2 0.4 0.6 0.8 1
LDD MRI Studies									
Study	ТР	FP	FN	TN		Sensitivity	Specificity	Sensitivity	Specificity
Barmeyer et al 2008	53	44	33	91	0.62	2 [0.51, 0.72]	0.67 [0.59, 0.75]		-
Bodi et al 2005	119	34	165	447	0.42		0.93 [0.90, 0.95]		
Dendale et al 1998	128	23	249	528	0.34	4 [0.29, 0.39]	0.96 [0.94, 0.97]	•	
Gerbaud et al 2009	128	46	21	119			0.72 [0.65, 0.79]		+
Kramer et al 2001	77	36	17	80	0.82	2 [0.73, 0.89]	0.69 [0.60, 0.77]	-	-
Motoyasu et al. 2003	156	19	21	82	0.8	8 [0.82, 0.93]	0.81 [0.72, 0.88]		
Sayad et al 1998	41	2	5	78	0.8	9 [0.76, 0.96]	0.97 [0.91, 1.00]	0 0.2 0.4 0.6 0.8 1	0 0.2 0.4 0.6 0.8 1