

Imaging

F.J. Pinto (Lisbon, PT)



WORLD HEART
FEDERATION

Highlight Session
World Congress of Cardiology 2006
2-6 September - **Barcelona, Spain**



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Imaging 2006

- MSCT
- CMR
- Echocardiography



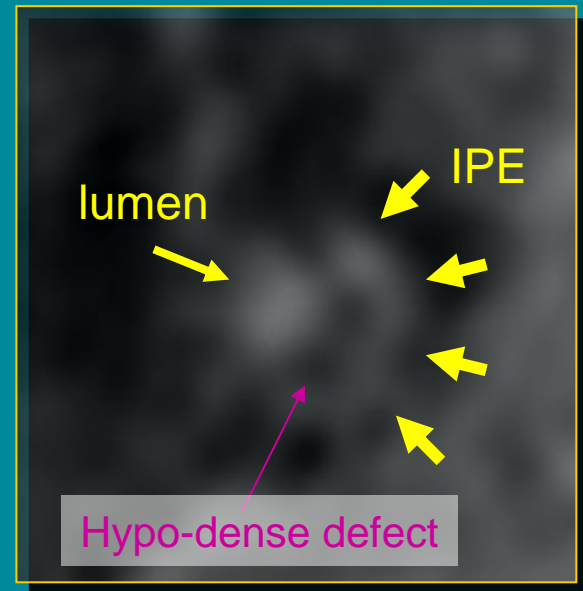
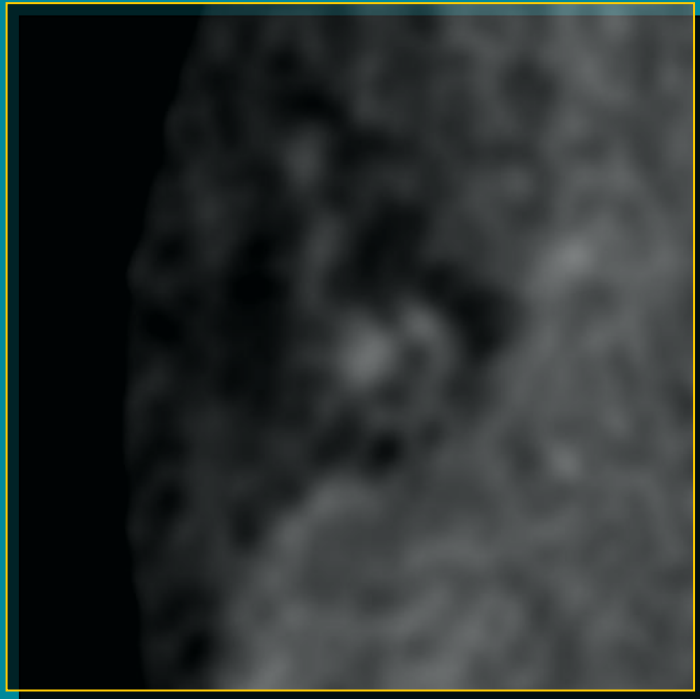
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Intra Plaque Enhancement (IPE) by MSCT in ACS

Intra-plaque enhancement



IPE was defined as an enhancement at adventitial side of coronary plaque with low CT density area at luminal side in cross-sectional images of MSCT

Yonetsu, 380, JP



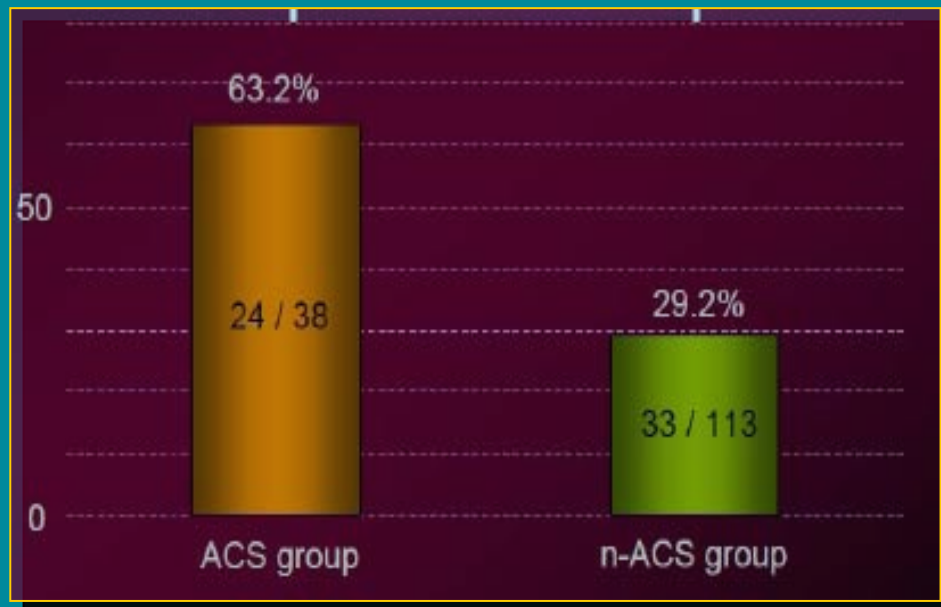
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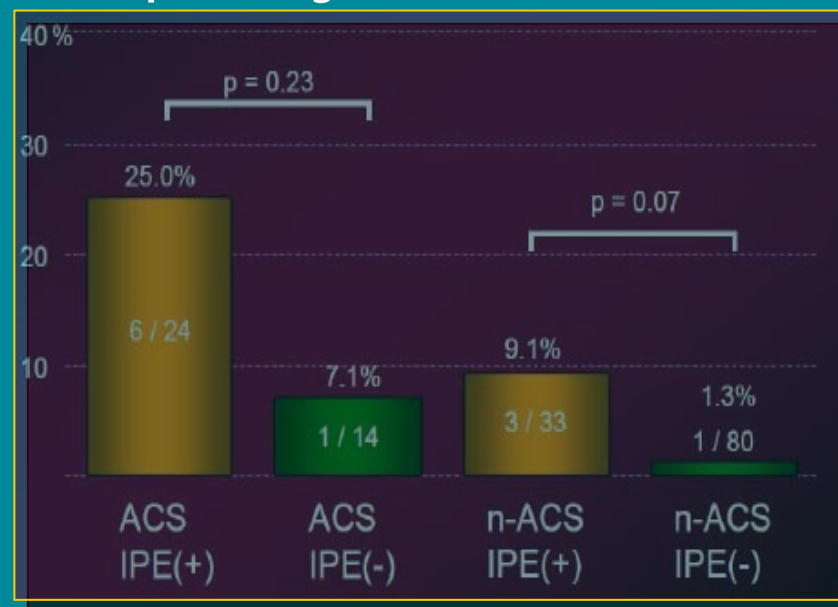
Intra Plaque Enhancement (IPE) by MSCT in ACS

Frequency of IPE



(n=118 pts, 151 lesions)

Frequency of slow flow



Yonetsu, 380, JP

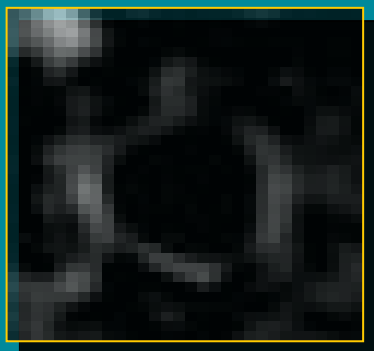


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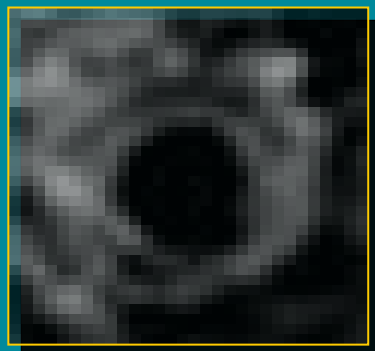


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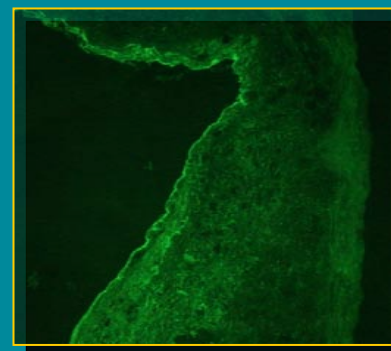
Activity of matrix metalloproteinases in aortic atherosclerotic plaques of hypercholesterolemic rabbits with contrast agent P947 and MRI



MRI before injection

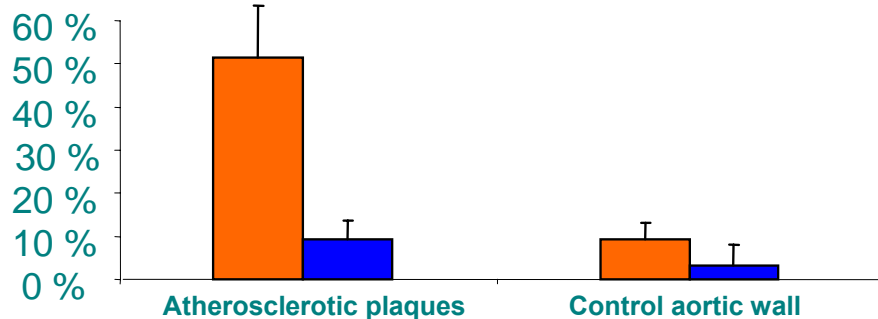


MRI 90 mn after P947



In situ zymography

Enhancement of the aortic wall *



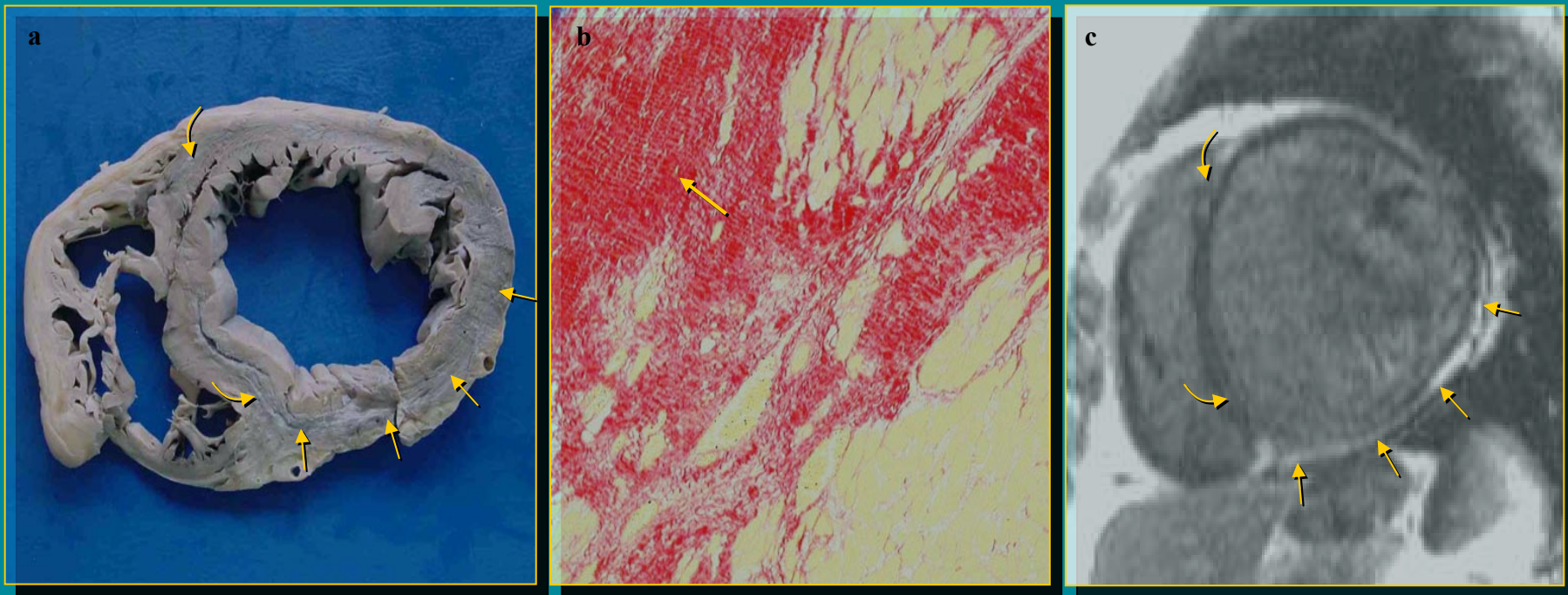
- MMP-specific contrast agent (P947)
- Non-specific contrast agent (Gd-DOTA)

* P < 0.05

Hyafil F, P2442, FR, US

Cardiovascular Magnetic Resonance, Fibrosis and Prognosis in Dilated Cardiomyopathy

Histological Validation of Mid-wall Fibrosis



Assomull R, 378, UK

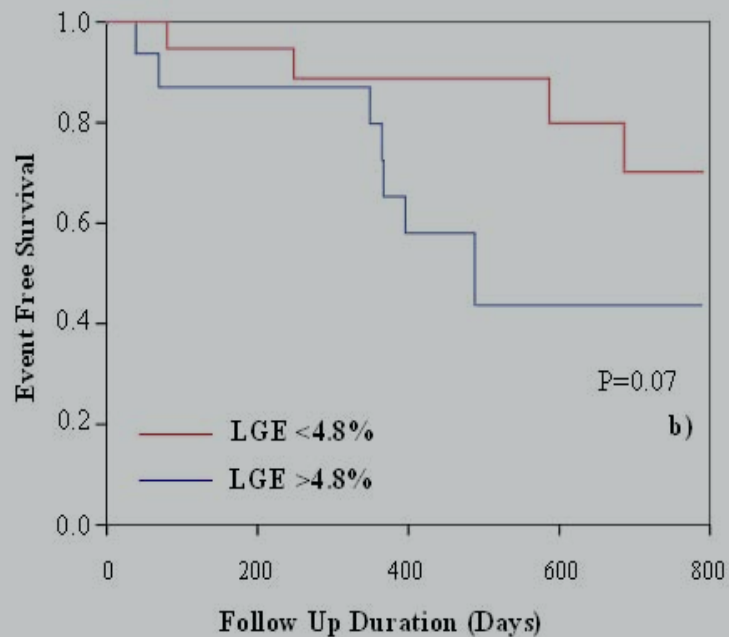


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Is the amount of LGE (Late Gadolinium Enhancement) important?



Number At Risk	0	200	400	600	800
LGE <4.8%	19	16	13	9	6
LGE >4.8%	16	13	8	5	2

Assomull R, 378, UK



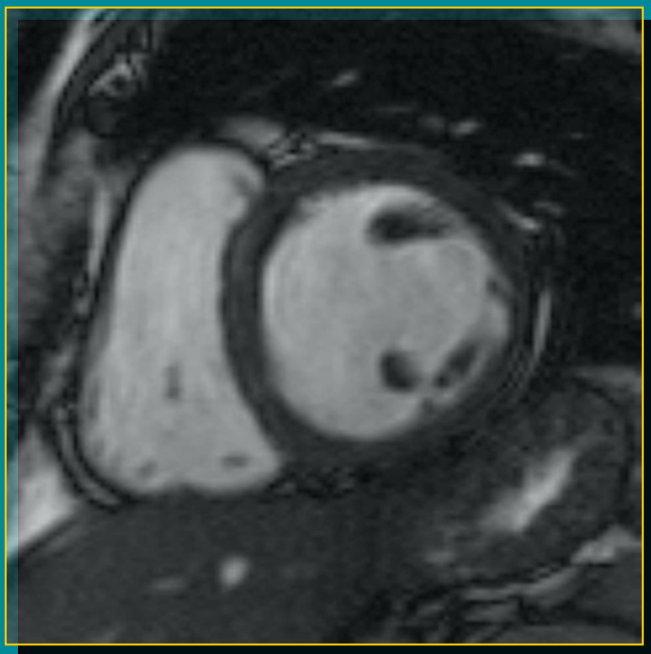
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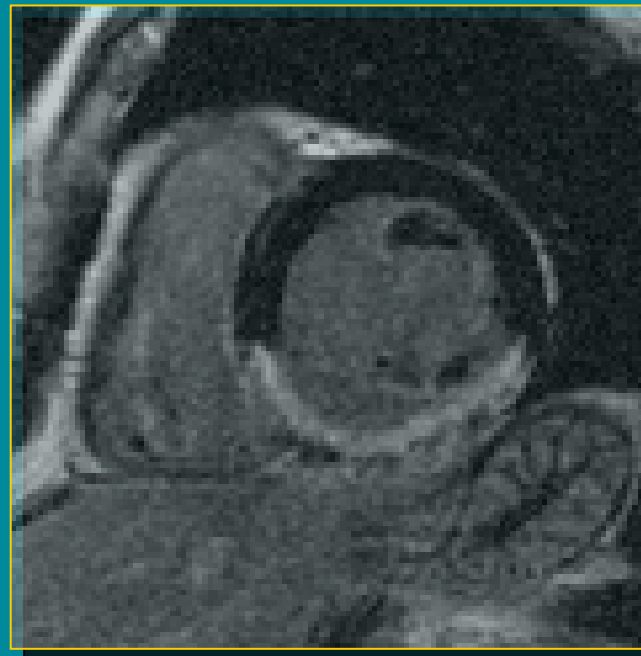
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Prognostic Value of CMR Assessment of LV Function and Scar - A Multicenter Study

Cine CMR



Delayed-enhancement CMR



Gold standard for assessment of myocardial function and scar

Klem I, 379, Multicenter



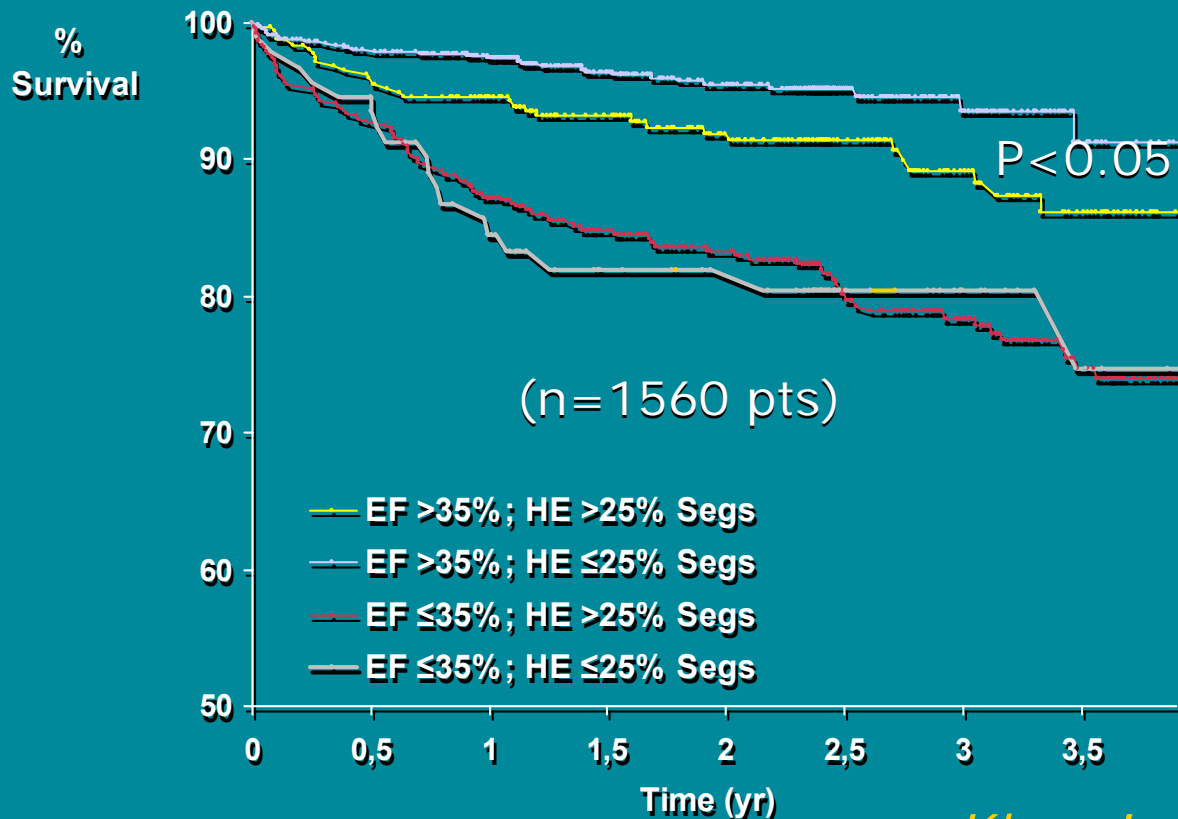
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Prognostic Value of CMR Assessment of LV Function and Scar - A Multicenter Study

Survival According to EF & Hyperenhancement



Klem I, 379, Multicenter

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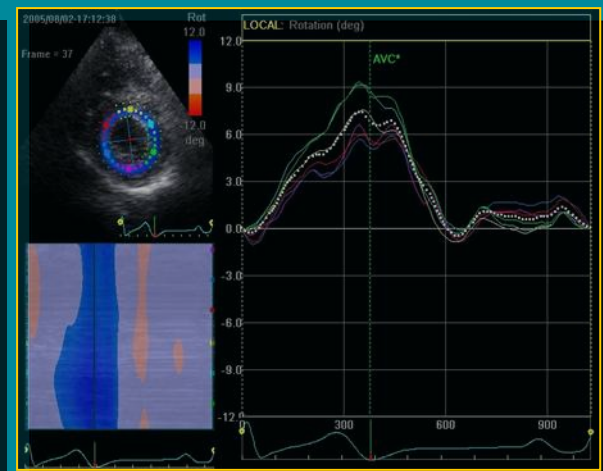
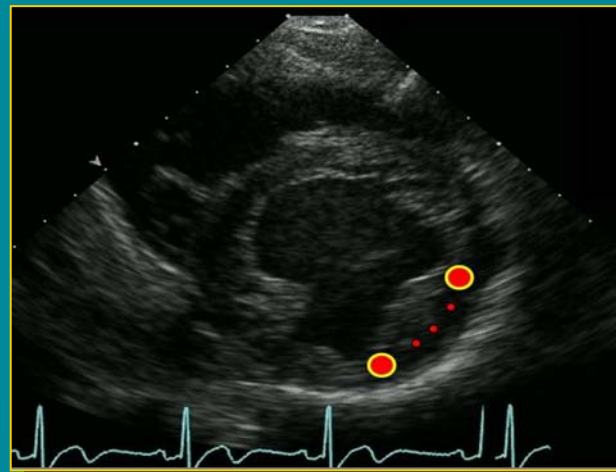
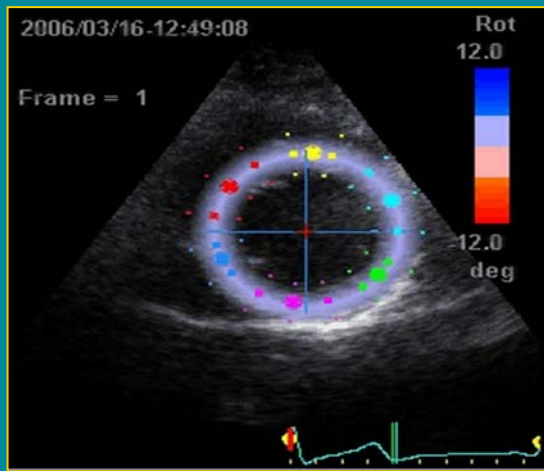


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TORSION vs TVI FOR SUBCLINICAL DYSFUNCTION

Methods – Speckle tracking

- trace endocardium on end-systolic frame, automatic selection of a speckle tracking region of interest with manual adjustment to optimize the width of myocardial ROI
- automatic tracking of grey-scale speckle patterns from frame-to-frame using specific algorithm
- Computation of rotation and rotational velocity profiles
 - LV rotation: angular displacement of the LV centroid in short-axis.
 - Apical torsion = basal rotation – apical rotation



Wong C, 4983, AU



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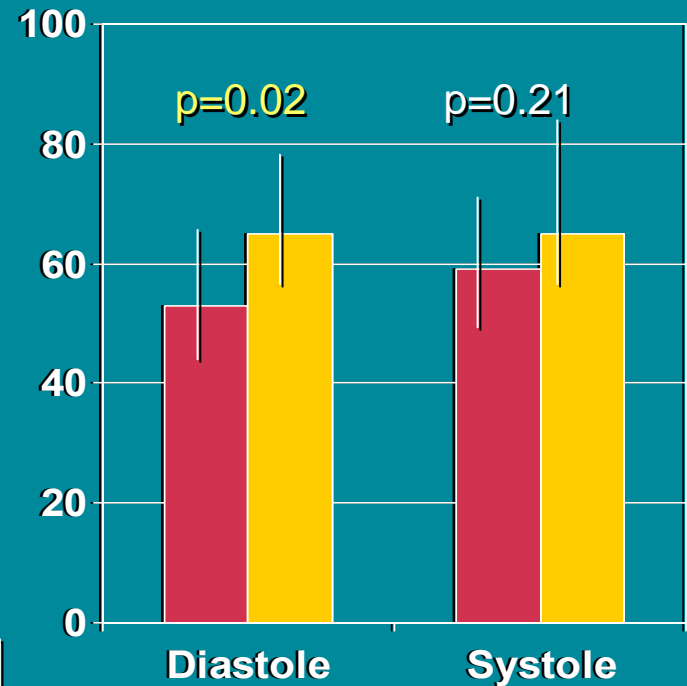
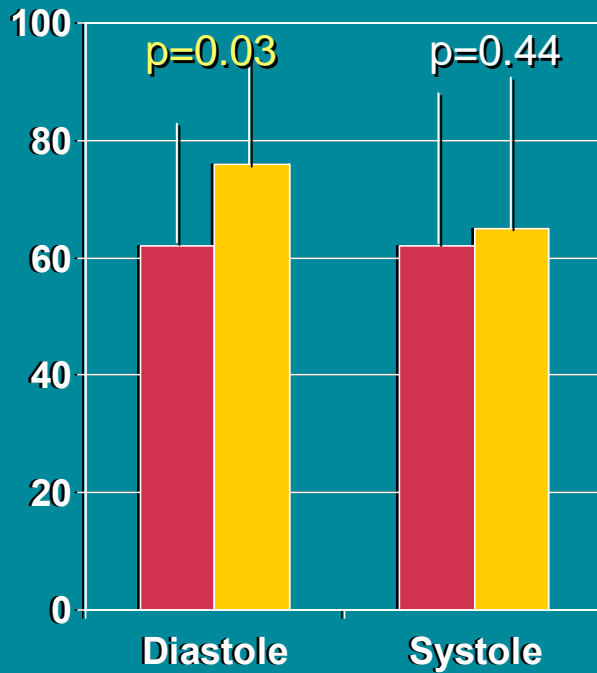
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TORSION vs TVI FOR SUBCLINICAL DYSFUNCTION

Basal & apical rotational velocities

LV basal rotation (degree)

LV apical rotation (degree)



■ Obese
■ Control

Wong C, 4983, AU



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Extent of Myocardial Viability by MCE (Myocardial Contrast Echocardiography) Early after AMI: Independent Predictor of Hard Cardiac Events (n=99 pts)

	Cardiac Death	Cardiac Death or MI	Cardiac Death or MI or Emergency revascularisation
Uni-variable Predictors			
CPI	p=0.006	p=0.003	p=0.002
Revascularisation	p=0.04		p=0.008
SWTI		p=0.01	p=0.01
Anterior MI		p=0.03	
Hypercholesterolaemia			p=0.04
Multi-variable Predictors			
CPI (Contrast Perfusion Index)	p=0.004	p=0.003	p=0.003
Age	p=0.05		

Dwivedi G, 384, UK

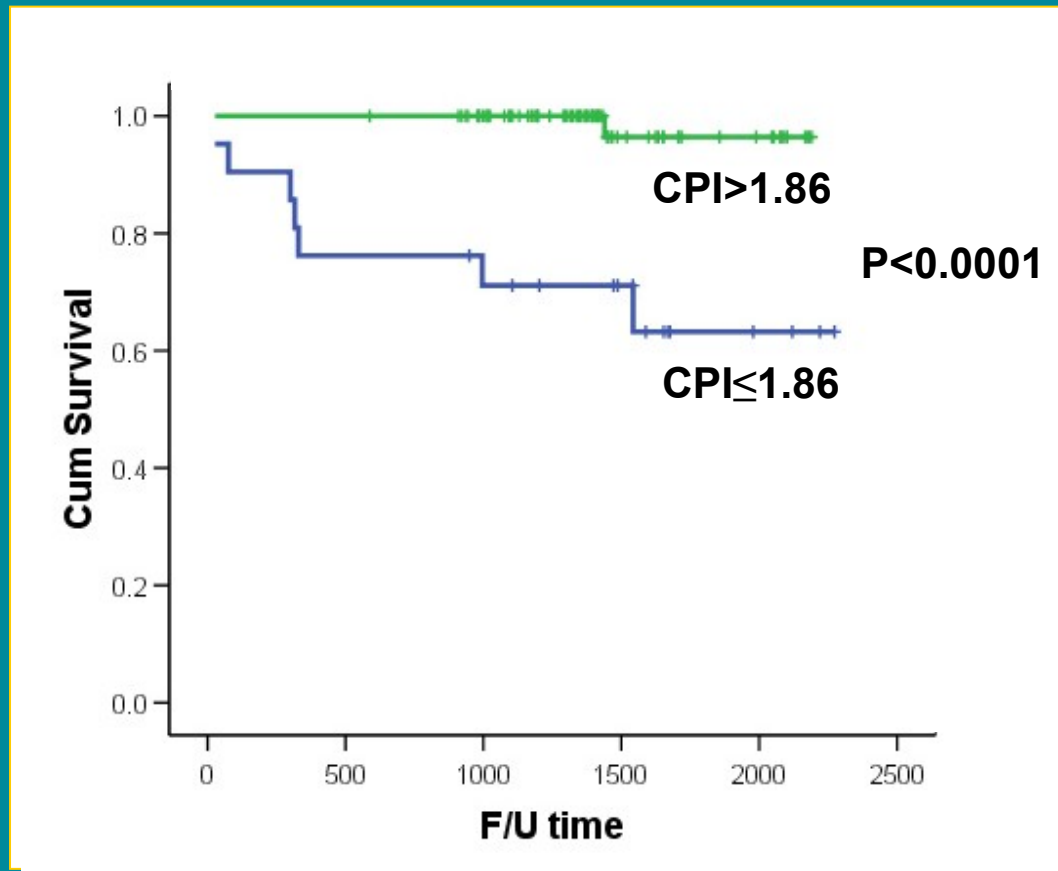


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Kaplan Meier Curve for prediction of Cardiac death by MCE



Dwivedi G, 384, UK



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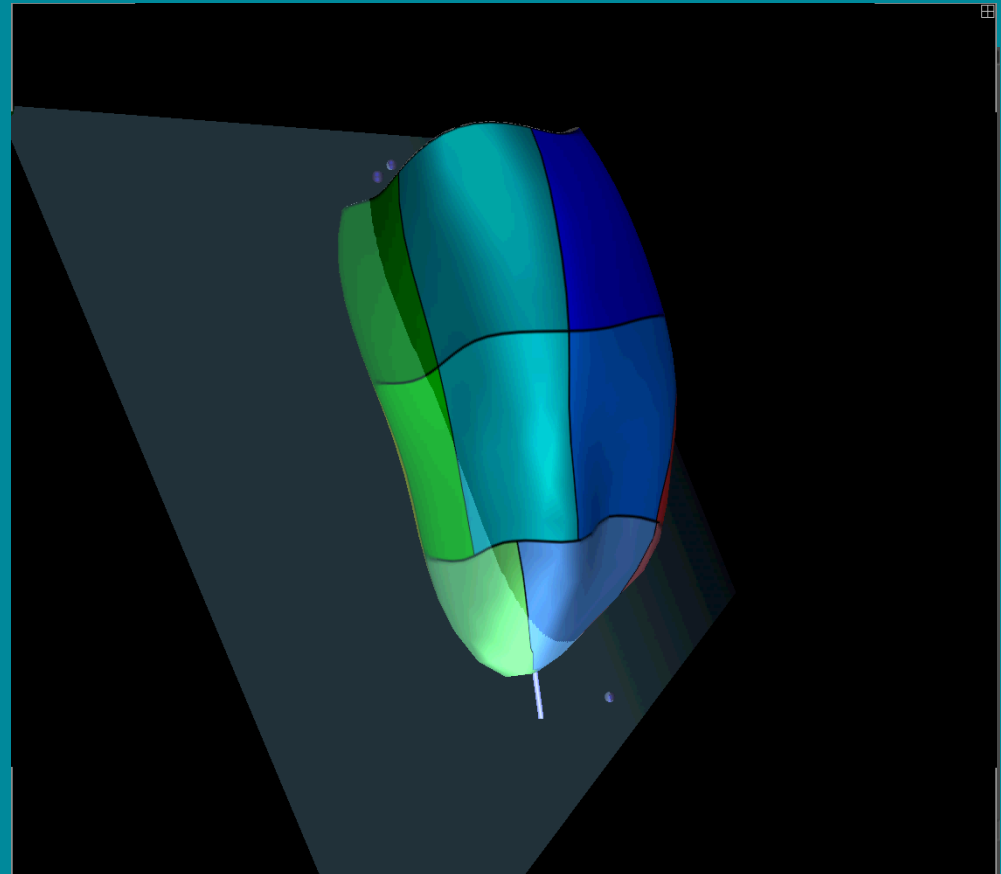


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CRT assessment by 3D Echo

- The data were analysed using dedicated offline software.
- Global and Local Landmarks were identified
- A semi automated tracing of the endocardium was then performed and a 3D model of the LV was reconstructed
- Global volumes, Ejection Fraction and Mass were calculated.

Semi-Automatic Contour Tracing Global and Local Landmarks



Dawson D, P4802, UK



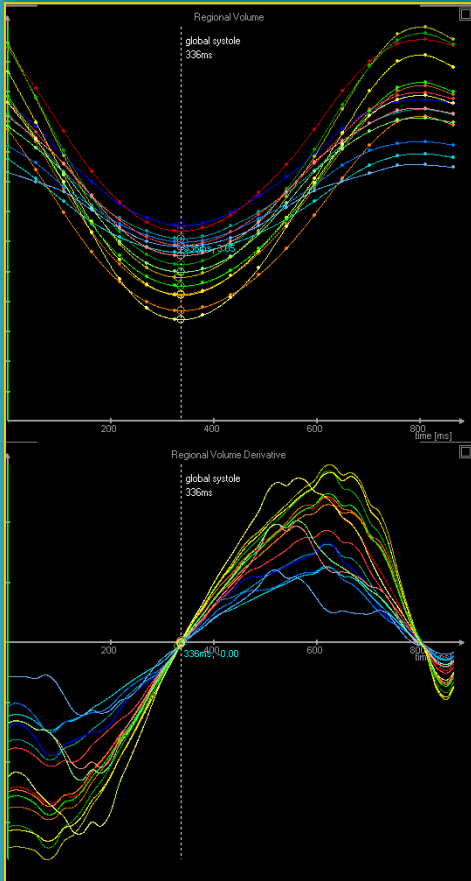
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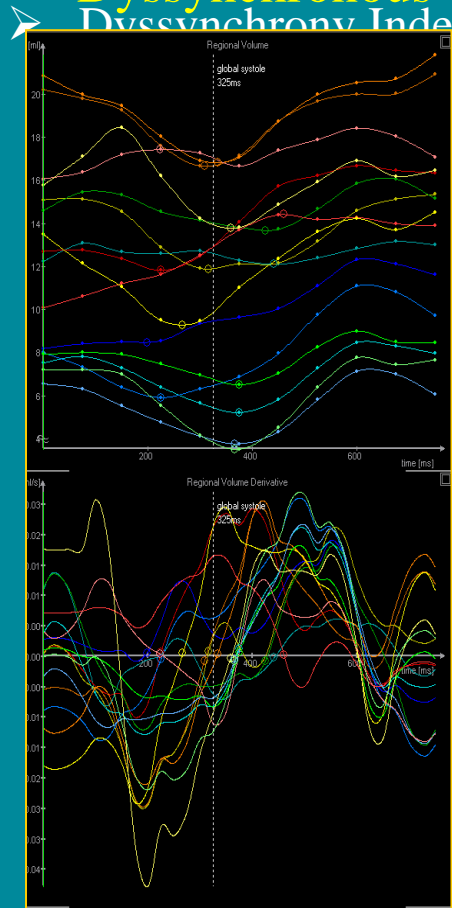
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Regional Volume-Time Curves

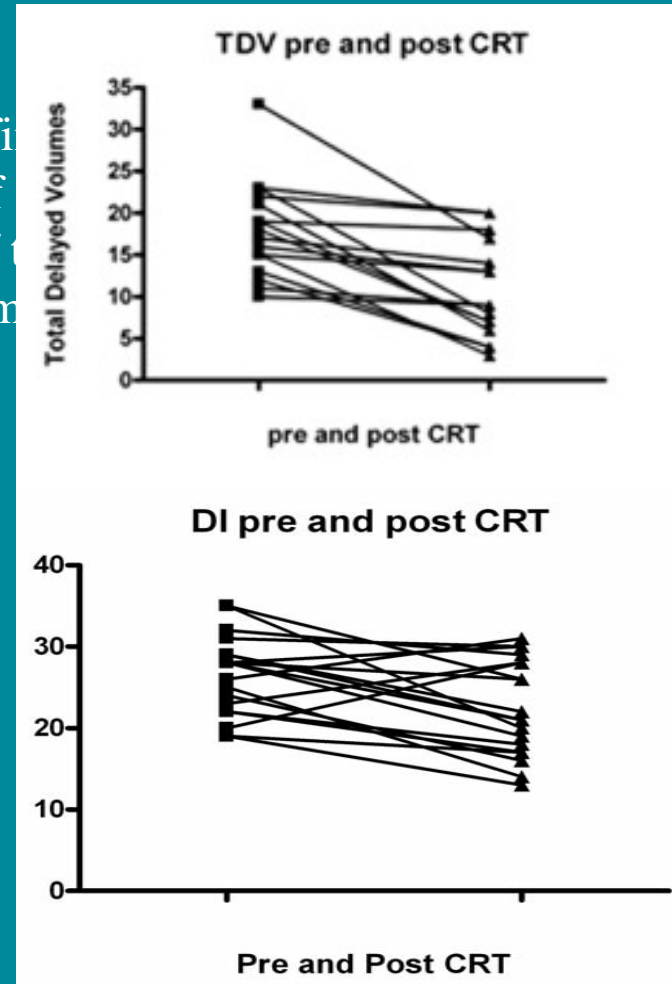
Synchronous



Dyssynchronous



Dyssynchrony Index is defined as the (SD) of the time elements of the regional volume curves. It is minimized in synchronous conditions.



Dawson D, P4802, UK

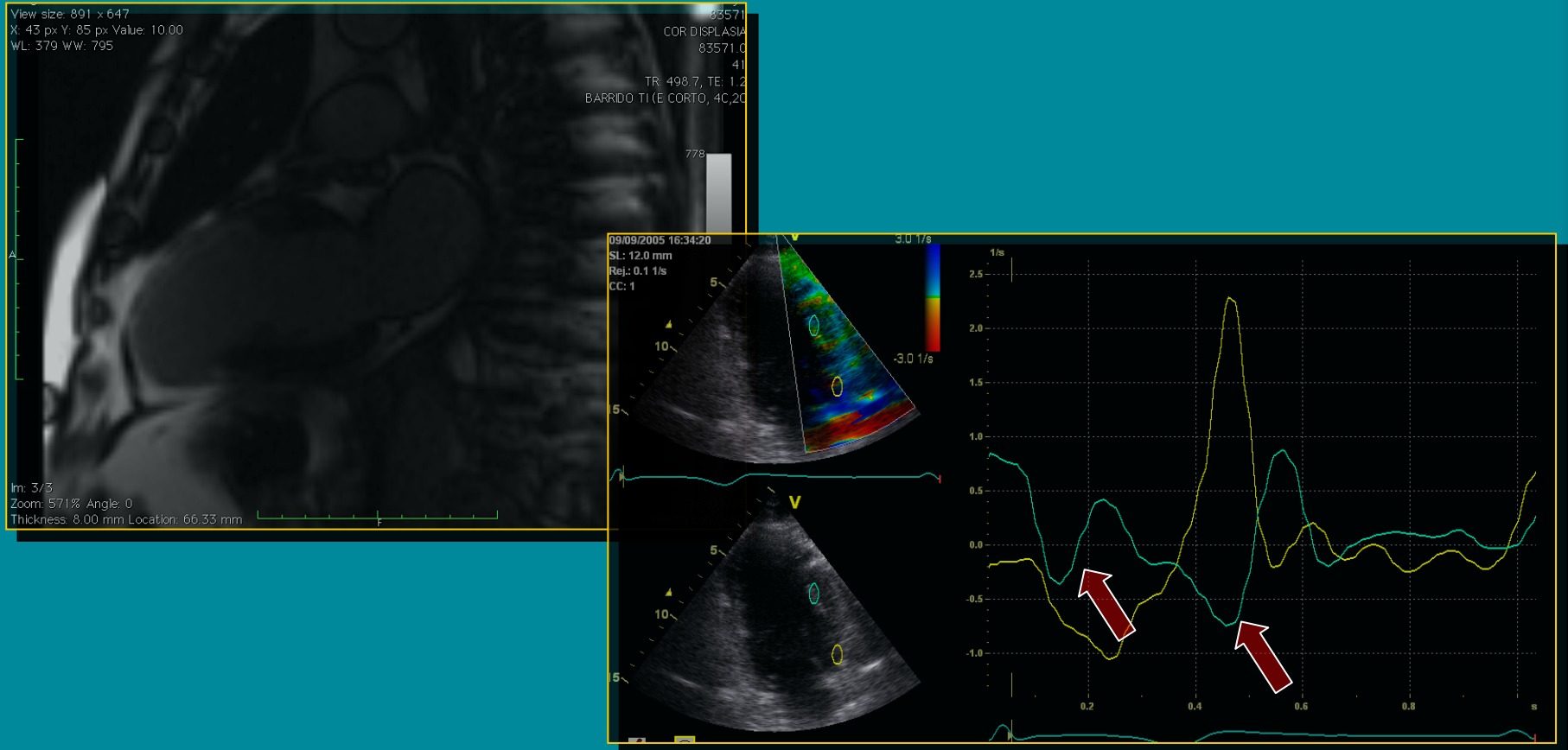


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Strain rate imaging to determine the transmurality of anterior wall MI



Mahia P, SP, 383

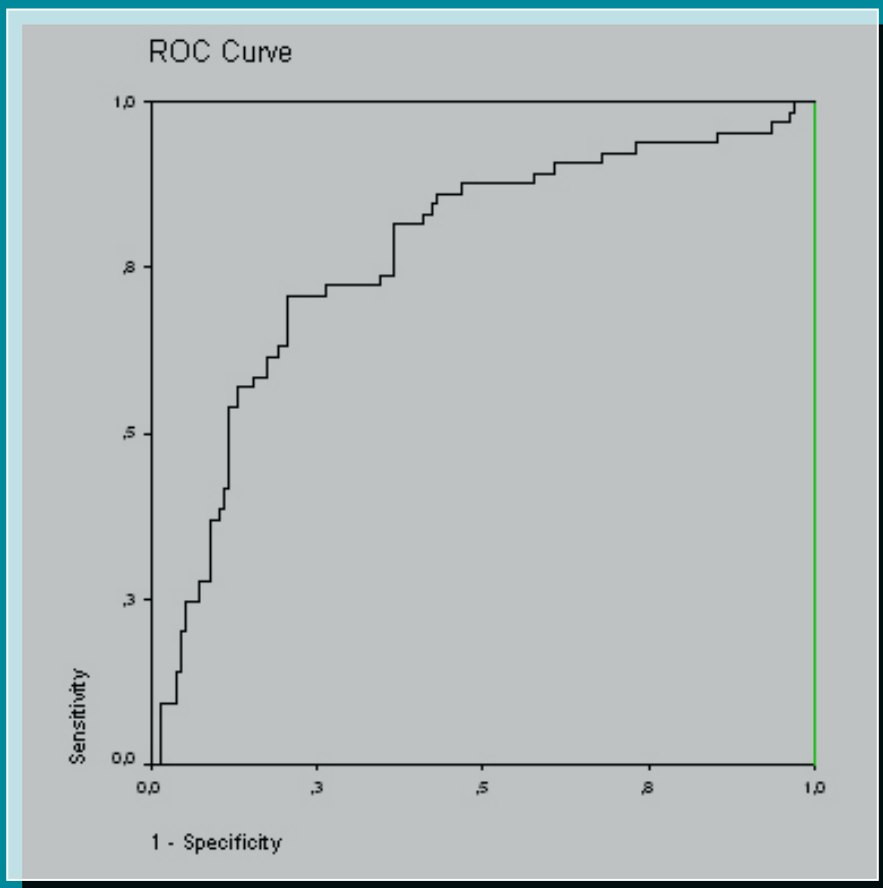


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Strain rate imaging to determine the transmural extent of anterior wall myocardial infarction



S	73.7%
E	70.8%
AUC	0.76

SR $-0.60s^{-1}$

Mahia P, SP, 383



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