Compared with angiography, MDCT underestimated the inner diameter of the stent (p<0.0001). The mean error from the high resolution images (16%) was lower than the error from the conventional images (27%)(p<0.0001). The attenuation measured inside the stent was higher than that in the contrast enhanced coronary lumen proximal and distal to the stent (p<0.0001). However, the in-stent attenuation was highly correlated with the contrast attenuation in the coronary arteries (r>0.87).

Conclusion

By measuring the contrast enhancement within coronary stents, an objective method of determining stent patency is possible with 16-row MDCT.

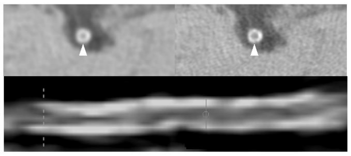

Figure 1A

1018-149 In-Stent Restenosis Evaluation With 16-Slice Computed Tomography Coronary Scanner

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Background : Multislices Computed Tomography scanner (CT scan) have shown a good negative predictive value and specificity in coronary artery stenosis evaluation. Whether it can be useful in the assessment of in-stent coronary restenosis remaines to be evaluated.
Methods : A total of 27 coronary stents were systematically imaged by coronarography and 16 slices CT scan in 15 patients 6 month after angioplasty in order to evaluate the accuracy of CT scan in determining the occurrence of coronary in- or peri-stent restenosis. Restenosis was defined as a relative stenosis more than 50 % of the reference segment as measured by QCA for angiography and by visual assessment for CT scan. Angiograhic and CT scan interpretation were made by 2 independent operators.
Results : Patients were investigated 6 ± 1 month after the initial angioplasty. Mean diameter and length of implanted stent were respectively 3±0.6 and 10.2±2.6 mm. Stent were placed in LAD in 13 cases (48%), LCx in 5 (18.5%), RCA in 5 (18.5%) and Left Main in 4 (14.8%). By QCA, in-stent restenosis prevalence was 10%. In 2 cases/27 (7%) CT scan stent image was not evaluable. In the remaining 25 stents, sensibility of CT scan for restenosis diagnosis was 33%, specificity 100%, positive predictive value 100% and negative predictive value 80%.
Conclusion : Coronary 16 slices CT scan is a non invasive imaging technique which can be used with a high accuracy to eliminate in-stent restenosis .

1018-150 16-Slice Multidetector-Row Computed Tomography and Magnetic Resonance Imaging for the In Vivo and Noninvasive Assessment of Vessel Areas and Diameters

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Background: Non-invasive imaging can detect early atherosclerotic disease. Magnetic resonance imaging (MRI) is already established as a tool for plaque characterization. Sixteen-slice multidetector-row computed tomography (MDCT) was recently introduced in the field of cardiac imaging with promising results as a non-invasive angiography. We compared the capabilities of MDCT and MRI for detecting changes in vessel areas and diameters.
Methods: Five atherosclerotic rabbits were imaged in-vivo. MRI protocol: proton density, repetition time/echo time [TR/TE] 2300/5.6 ms; T2, TR/TE 2300/62 ms; T1, TR/TE 800/5.6 ms; slice thickness 3mm; spatial (in plane) resolution 3x3 mm. MDCT protocol: 120kv, 120mAs, collimation 12x0.75; spatial (in plane) resolution 6x6 mm. We analyzed, blindly, 3mm axial reconstructions from MDCT that were carefully matched with MRI images (154 sections). The findings were analyzed by Pearson correlation and paired Student's t test (2p).
Results: See table below. Overall, there was an excellent agreement between both modalities. MDCT slightly overestimated anterior-posterior (AP) and lateral diameter (LAT), lumen area (LA), and underestimated total vessel area (TVA).
Conclusions: The subtle measurement differences found between both modalities may be due to the better spatial resolution of MRI. Both techniques offer the possibility of non-invasively detect modifications of vessel area and diameter. MDCT offers the additive value of a shorter image acquisition time.

Variable	Pearson Correlation	Mean Difference	Standard Deviation	95% CI of the Differences	
				Lower	Upper
LA (mm2)	0.840*	0.045*	0.081	-0.058	-0.032
TVA(mm2)	0.939*	0.029	0.159	-0.048	0.002
AP(mm)	0.664*	0.122*	0.388	-0.180	-0.060
LAT(mm)	0.573*	0.294*	0.320	0.243	0.345

CI, confidence interval; LA lumen area; TVA, total vessel area; AP, anterior-posterior; LAT, lateral diameter.
*p<0,05;

POSTER SESSION

1036 Contrast Echocardiography: Viability With Comparison to Other Techniques and Bioeffects

Sunday, March 07, 2004, Noon-2:00 p.m.
Morial Convention Center, Hall G
Presentation Hour: 1:00 p.m.-2:00 p.m.

1036-155 Myocardial Viability Assessment After Primary Angioplasty in Patients With Acute Myocardial Infarction: Comparison of Contrast-Enhanced Magnetic Resonance Imaging With Myocardial Contrast Echocardiography

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Background. The assessment of reversible myocardial dysfunction after primary coronary intervention (PCI) is important for clinical decision-making. The aim of this study was to compare the merits of myocardial contrast echocardiography (MCE) and contrast enhanced magnetic resonance (MR) imaging to predict functional recovery after PCI.
Materials and methods. Twenty-five consecutive patients with acute myocardial infarction (AMI) were studied after PCI. MCE images were obtained using low mechanical index (MI: 0.1) real time perfusion imaging (power modulation). MR was performed with first-pass perfusion (hypo-enhancement) and late contrast-enhancement imaging (hyper-enhancement). A 16-segment model of the left ventricle was used to analyze MCE and MR images. Recovery of regional contractile function was evaluated at sixty days follow-up in all patients.
Results. In 181 segments related to acute infarct territory, wall motion and perfusion were analyzed. Dysfunctional myocardium was present in 152 segments. Fifty-six (31%) and 58 (32%) segments were respectively hypokinetic accoridng to MCE and MR, and 87 (48%) and 83 (46%) segments were akinetic (agreement between MCE and MR 93%, kappa 0.88). The sensitivity of MCE and MR imaging with hypo- and hyper-enhancement to identify reversible dysfunction was respectively 95%, 96% and 86% (P=NS). Specificity was respectively 57%, 50% and 92% (P<0.05). Accuracy was respectively 78%, 90% and 75%.
Conclusions. Identification of potential reversible dysfunctional myocardium can be determined both by MCE and MR imaging after AMI and PCI, although MR has a better specificity for the identification of reversible myocardial dysfunction (stunned myocardium).

1036-156 Can Resting Myocardial Contrast Echocardiography Replace ^{99m}Technetium Sestamibi SPECT for the Diagnosis of Myocardial Viability Following Myocardial Infarction

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Background: Microvascular perfusion is a pre-requisite of myocardial viability early after acute myocardial infarction (AMI). Low-power myocardial contrast echocardiography (MCE) is a new bedside technique that can assess microvascular perfusion during a single breath-hold. We have hypothesised that MCE is comparable to SPECT for the detection of myocardial viability early after AMI.
Methods: Accordingly 44 patients underwent transthoracic echocardiography (TTE), resting MCE and nitrate enhanced SPECT 7-10 days after their first AMI and thrombolysis. Contrast opacification was assessed using a 16 segment model. A dysfunctional segment was classified as viable by MCE if there was homogenous or reduced contrast opacification within 15 cardiac cycles following a destruction pulse, and by SPECT if there was either normal, or a mild to moderate reduction in tracer uptake. All patients proceeded to revascularisation and 3-6 months later had repeat TTE, those with significant residual dysfunction had a low-dose dobutamine echocardiographic study to assess contractile reserve (CR). A segment was termed viable if there was an improvement in wall motion or retained CR in a previously dysfunctional segment.
Results: On a segmental basis, 132(49%) out of 212 dysfunctional segments demon-