nary segments were significantly diseased. The sensitivity, specificity, positive and negative predictive value to identify ≥50% obstructed segments was 92% (216/234, 95% CI:88-95), 95% (1092/1150, 95% CI:93-96), 79% (216/274, 95% CI:73-88) and 98% (1092/1110, 95% CI:97-99), respectively. All occluded segments were detected.Conclusion: The diagnostic performance of MSCT coronary angiography combined with heart rate control to detect significant stenosis in the entire coronary tree is high.

1075-162 Detection of Coronary Artery Aneurysms, Stenoses and Occlusions by Means of Multislice Spiral Computed Tomography in Adolescents and Young Adults With Kawasaki Disease

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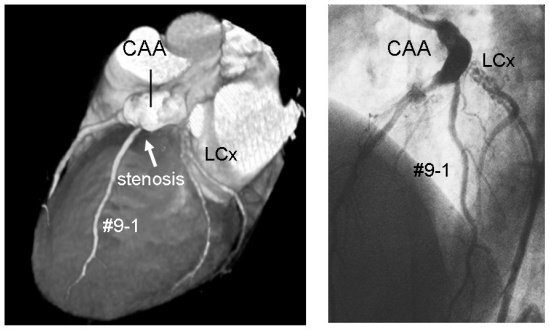
We evaluated the diagnostic accuracy of multislice spiral computed tomography (MSCT) to detect coronary artery aneurysms (CAAs), stenoses and occlusions in 10 adolescents and young adults with Kawasaki disease. **Methods:** Patients consisted of 7 men and 3 women with the age 18±5 years old (range; 13-26 years old). Coronary artery bypass surgery had been performed in 2 patients (2 arteries). Coronary angiography had been performed within 3 years in all the patients. MSCT was performed using a Siemens SOMATOM Volume Zoom. Patients were premedicated with Metoprolol (20-60mg). The scan was performed with collimation 1.0mm and the gantry rotation time 500ms. In all patients, the single-phase algorithm with 250ms temporal resolution was applied. The retrospectively ECG-gated image reconstruction was performed with the end of the reconstruciton window (250ms) positioned at the peak of the P waves on ECG in order to avoid cardiac motion artifacts. **Results:** MSCT detected all the CAAs (n=12) and complete occlusions (n=6).The sensitivity and specificity to detect significant coronary stenoses were 100%, and 94%, respectively. **Conclusion:** MSCT has a potential to become a standard diagnostic tool in adolescents and young adults with Kawasaki disease.**Figure:** A 20-year-old man with Kawasaki disease. A giant CAA and stenosis at the first diagonal artery (#9-1) are demonstrated on both MSCT and angiogram. In addition, the left circumflex artery (LCx) shows multi-layered 'braid-like' appearance.



1075-163 Multislice Gated Cardiac Computed Tomography Accurately Estimates Left Ventricular Volumes and Ejection Fraction

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Background: Multislice computed tomography (MSCT) is currently used for non-invasive coronary imaging. Image reconstruction at different times during the cardiac cycle also offers the opportunity to assess left ventricular (LV) volumes and ejection fraction (EF). However, the accuracy of these measurements has not yet been compared with other techniques. Therefore the aim of this study was to compare LV volumes and ejection fraction obtained using MSCT against those obtained by cine MRI.

Methods: Fourteen patients with coronary artery disease (12 M, 59±13 years) underwent both MSCT and cine MRI on the same day. MSCT was acquired using a 16 slice system (IDT, Philips Medical Systems, Cleveland OH) after injection of 120 cc iodated contrast agent. Retrospectively ECG gated cardiac images were acquired using a table pitch of 0.24 during a 20 second breathhold and reconstructed every 12.5% of the cardiac phase. MRI was performed using a 1.5 T (Philips Intera CV, Best, the Netherlands) system. Ten serial short axis images of 8 mm width and 2 mm spacing were obtained in 20 cine phases using a balanced fast field echo VCG gated sequence with SENSE during serial breathholds. Short-axis MSCT and MRI images were analyzed semi-automatically using dedicated softwares (MX-view, Easy-vision, Philips). LV end-diastolic (EDV) and end-systolic (ESV) volumes as well as LVEF were calculated using the Simpson's method and compared among both techniques.

Results: Mean heart rate during cardiac MSCT was 68±12 bpm (range 50-102 bpm). LVEDV and LVESV assessed by MSCT (141±60 ml and 77±60 ml) were not significantly different from those calculated by MRI (156±94 ml and 97±86 ml respectively, both p=N.S. vs. MSCT). Consequently, the EFs estimated by MSCT and MRI were similar (51±22 vs 52±24 %, p=N.S.). MSCT and MRI measurements of LVEDV, LVESV, and EF were strongly correlated (r= 0.84, 0.90, 0.98, respectively).

Conclusions:

Retrospectively gated MSCT accurately estimates LV volumes and ejection fraction. Since assessment of cardiac function with MSCT can easily be obtained at the time of coronary imaging, this places MSCT in a strong position for the one-stop shop assessment of coronary patients.

1075-164 It Is More Than Calcium? Characterization of Coronary Segments via Computer-Assisted Electron Beam Computed Tomography Image Analysis

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Background: Imaging coronary arteries with electron beam computerized tomography (EBCT) is an available technique being used to detect coronary plaque calcification and burden of coronary artery disease (CAD). Currently, EBCT software neglects analysis of non-calcified arteries. We evaluated the feasibility of using pixel density via computer assisted image analysis to provide a quantifiable characterization of non-calcific EBCT imaged coronaries. Image analysis may identify pixel density changes within non-calcified arterial segments in subjects with CAD.

Methods: Evaluation of non-calcified proximal coronary segments obtained from EBCT recordings. Calibration used bone signals as high density and air to low, providing a pixel density range from 255 to 0 units. Imaged arteries were allocated in 4 groups: Low score + no cardiac risk factors, low score + 2 or more cardiac risk factors, high score + known CAD + segment within non-calcified artery, high score + known CAD + skip lesions within a calcified vessel. Image analysis calculated absolute minimum, maximum and mean arterial pixel densities.

Results: Arterial pixel densities, as well as absolute minimum and maximum pixel densities correlated to EBCT mean calcium score, and known CAD. Table 1.

Conclusion: Characterization of non-calcific coronary segments via assisted EBCT image analysis is a feasible method that allows quantification of pixel densities. Increasing pixel density within coronaries correlates with EBCT score and known CAD.

Table 1.Pixel densities obtained by image analysis compared to mean calcium score calculated by EBCT

	Mean Calcium Score (EBCT)	Mean Measured Area (Computer)	Mean Minimum Pixel Density (Computer)	Mean Arterial Pixel Density (Computer)	Mean Maximum Pixel Density (Computer)
No Cardiac Risk Factors (n=15)	0	1393.82 mm^2	58.25	109.61	151.00
>=2 Cardiac Risk Factors (n=13)	0	1044.54 mm^2	60.00	112.68	158.86
Known CAD (n=30)	81.5	533.59 mm^2	79.00	131.10	184.06
Skip Lesions (n=15)	86.9	536.44 mm^2	71.2	138.178	207.47

ORAL CONTRIBUTIONS

802 Stress Echocardiography: Beyond Traditional Uses

Monday, March 08, 2004, 9:15 a.m.-10:30 a.m.
Morial Convention Center, Hall D-1

9:15 a.m.

802-1 Relationship Between Contractile Reserve and Diastolic Function in Hibernating Myocardium

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Background: In hibernating myocardium, degree of fibrosis is known to dictate extent of contractile response to dobutamine. Since increased fibrosis may also cause increased stiffness and impaired left ventricular (LV) diastolic filling, we evaluated whether there is a relationship between contractile reserve and diastolic filling in hibernating myocardium.

Methods: In 31 patients with chronic ischemic LV dysfunction (age 65±9 yrs; 26 males), evidence of viability (by dobutamine echocardiography), and no LV scar, 2D- and Doppler echocardiography were performed at baseline and 6±3 months after revascularization. Based on transmitral flow pattern at rest, patients were divided into two groups: restrictive filling pattern (RF, n=12) and non-restrictive filling (NRF, n=19).

Results: At baseline, RF and NRF groups did not differ with respect to average number