(RVEDV), RV end-systolic volume (RVESV), RV ejection fraction (RVEF), and RV mass. The acquisition time for real-time cardiac MRI was significantly shorter than that for cine MRI (1±0 versus 13±2 minutes, p<0.001). Both techniques yielded good quality images allowing RV volumetrics. There was good agreement between real-time volumes and cine volumes. The RV measurements obtained with real-time cardiac MRI showed close correlation with those obtained with conventional cine MRI (RVEDV: r=0.94, p<0.001, RVESV: r=0.95, p=0.001, RVEF: r=0.66, p<0.05, RV mass: r=0.94, p<0.005). **Conclusions:** Compared with the conventional cine MR imaging, real-time MR imaging shows markedly reduced acquisition time in the assessment of RV volumes and mass. We conclude that real-time MR imaging system is a valuable technique that provides accurate assessment of RV volumes and mass in a time-efficient manner.

1140-68 Cardiac Cine Magnetic Resonance Imaging Identifies Anatomical and Functional Abnormalities in Patients With Arrhythmias of Right Ventricular Origin

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Background: A definitive diagnosis of arrhythmogenic right ventricular dysplasia (ARVD) is made by histological demonstration of transmural fibrofatty replacement of right ventricle (RV) myocardium. Cardiac cine MRI (cMRI) is noninvasive and can offer information about RV myocardial infiltration as well as RV structure and function. It may also have a role in the diagnosis of RV outflow tract tachycardia (RVOT VT).
Objectives: Identify the cMRI findings in patients with arrhythmias of RV origin. Assess the role of cMRI in the diagnosis of ARVD and RVOT VT by identifying abnormalities in global or regional RV structure, shape and function.
Methods: We examined the cardiac cMRI scans of all patients with ventricular arrhythmias of RV origin (LBBB morphology) referred for possible diagnosis of ARVD between 02/1999 and 04/2001. Patients were included in one of 3 groups: rare PVCs (< 12000/24 hours), frequent PVCs (> 12000 PVCs /24 hours) and ventricular tachycardia (VT)
Results: We identified 118 patients with arrhythmias of LBBB morphology (mean age 38 y, range 14-70 y, and 44% men). Of these 37 patients (30%) had VT, whereas 81 had PVCs (rare PVCs - 41%, frequent PVCs - 29%). The most common indications for testing were syncope, palpitations and asymptomatic arrhythmia. The cMRI showed fatty/fibrofatty infiltration of the RV in 9%, abnormalities of RV shape (thinning, dilatation) in 40% and abnormalities in RV motion (hypo-, a-, dyskinesis) in 40%. Abnormalities were most common in the infundibulum, followed by the apex and the base of the RV. Abnormalities were significantly more frequent in the patients with VT or NSVT (52%) than in patients with PVCs (rare PVCs- 15%, frequent PVCs -25%). Based on cMRI, a diagnosis of ARVC was made in 19% of patients and excluded in 71%. 12 patients (10%) had studies suggestive of RVOT VT (small areas of akinesis or dyskinesis limited to the infundibulum).
Conclusion: Many patients with RV arrhythmias have abnormalities on cMRI. In these patients, cMRI is a useful tool in the diagnosis of ARVD and RVOT VT. A subgroup of patients with very frequent PVCs and abnormalities of RV structure or function may have a mild form of RV cardiomyopathy.

POSTER SESSION

1141 Studies of Myocardial Blood Flow and Physiology in Disease States

Monday, March 18, 2002, 3:00 p.m.-5:00 p.m.
Georgia World Congress Center, Hall G
Presentation Hour: 4:00 p.m.-5:00 p.m.

1141-59 Effect of Spinal Cord Stimulation on Cardiac Adrenergic Nervous Fiber Function in Patients With Angina and Normal Coronary Arteries

Gaetano A. Lanza, Alfonso Sestito, Sima Sandric, Filippo Crea, Francesco De Seta, Fulvio Bellocci, Attilio Maseri, *Istituto di Cardiologia and Medicina Nucleare, Università Cattolica del Sacro Cuore, Roma, Italy, Medtronic Italia, Roma, Italy.*

Background. 123-I-meta-iodo-benzylguanidine (MIBG) scintigraphy is helpful to assess the integrity and function of cardiac adrenergic nerve fibers. Cardiac MIBG uptake can be impaired in patients with angina and normal coronary arteries (NCA), and spinal cord stimulation (SCS) improves symptoms in these patients. In this study we assessed whether SCS improves cardiac adrenergic nerve function in patients with angina and NCA.
Methods. We studied 7 patients (4 men, 59.3±11 years) with angina and NCA, who underwent SCS because of symptoms refractory to medical therapy. Patients underwent cardiac MIBG scintigraphy both during SCS and in the absence of SCS. The 2 tests were done in random order 3 weeks apart from each other. Global MIBG uptake, assessed on planar radionuclide images, was expressed as heart/mediastinum (H/M) ratio. Furthermore, on cardiac tomographic images the left ventricle was divided into 24 segments and a MIBG uptake score was assigned to each segment, according to the scale: 0=normal uptake; 1=mild defect; 2=moderate defect; 3=severe defect. A global MIBG uptake defect score was calculated for each patient as the sum of all segmental scores. A 99m-Tc-sestamibi exercise stress test was performed to assess myocardial perfusion within ±1 day from MIBG scintigraphy, both in presence and absence of SCS.
Results. Abnormalities in MIBG uptake were found in 5 patients (71%), both in presence or absence of active SCS. The H/M ratio was 1.78±0.36 and 1.77±0.37 (p=0.74), and the MIBG uptake score was 18.6±25.9 and 18.4±25.5 (p=0.79), in presence and absence of active SCS, respectively. Reversible exercise-induced perfusion defects were detected in 4 patients in the absence of active SCS. The perfusion defects improved in 2 of these patients during active SCS.
Conclusions. Our data show that cardiac MIBG uptake abnormalities are present in a significant number of patients with angina and NCA. SCS had no significant effects on MIBG defects, suggesting that its clinical benefits may be unrelated to improvement in cardiac adrenergic nerve function. SCS, however, improved reversible myocardial perfusion defects in 2 patients, suggesting that it may have detectable anti-ischemic effects.

1141-60 Left Bundle Branch Block and Quantitative Regional Myocardial Blood Flow Patterns in Humans – Adenosine vs. Bicycle Stress in PET

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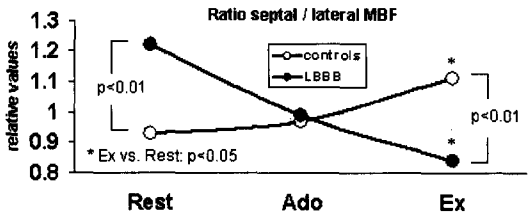
Background: Patients with Left Bundle Branch Block (LBBB) often have septal perfusion defects in exercise radionuclide myocardial perfusion scans, but less frequent using pharmacologic stress (adenosine, Ado). Decreased septal perfusion in LBBB due to delayed relaxation and shortened diastole has been hypothesized as cause of this phenomenon.
Aim: To study the influence of LBBB on quantitative regional myocardial blood flow (MBF) at rest and during adenosine- vs. bicycle exercise-induced hyperemia (Ex).
Methods: 15O-labelled H2O and Positron-Emission-Tomography (PET) was used to measure regional MBF (ml/min/g) at rest, during Ado (0.14mg/kg/min over 7 min) and immediately after supine bicycle exercise in 21 healthy male volunteers and 10 LBBB-patients without coronary artery disease. The ratio septal/lateral MBF was calculated for each condition.
Results: Global and septal MBF was significantly higher in LBBB at rest and Ex. The ratio septal/lateral MBF was higher in LBBB than controls at rest, was not significantly affected by Ado in both groups, but increased by +19% (p<0.05) during Ex in controls, while it decreased by -31% (p<0.05) in LBBB-patients.
Conclusions: During Ado induced hyperemia, almost homogenous MBF distribution was found in both groups. During Ex induced hyperemic MBF, however, there was a significant change in regional perfusion pattern in LBBB patients but not in controls. This results in a apparent relative septal underperfusion despite normal absolute flow values in LBBB.



1141-61 Verapamil Attenuates the Coronary Vasodilatory Response to Adenosine and A_{2A} Adenosine Receptor Agonists

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Background: Verapamil is a widely used calcium channel inhibitor. We sought to determine its effect on the vasodilator properties of adenosine (Ado) and the A_{2A} adenosine receptor agonist ATL-146e (ATL). **Methods**: In 4 anesthetized dogs, LAD coronary artery flow, arterial pressure (AP), heart rate and dP/dt were monitored. The hemodynamic responses to Ado (60 μg/kg) and ATL (1.0 μg/kg) were recorded in the absence and presence of varying doses of verapamil (0.002, 0.004, and 0.02 mg/kg/min). **Results**: Verapamil caused a dose-dependent decrease in AP, which fell from 124±10 to 99±9 mmHg at the highest dose tested (p<0.05), and no change in resting heart rate or dP/dt. As shown in the table, the increase in LAD flow following either Ado or ATL was progressively attenuated by increasing verapamil infusion rates. The mechanism for the observed attenuation in the coronary flow response is unknown, however reversal of the AP drop with calcium (3 mg/kg/min) did not improve the flow response to Ado or ATL (53±18% and 92±45%, respectively), indicating that the attenuation was not pressure dependent. **Conclusions**: Verapamil markedly attenuated the increase in coronary flow following Ado or an A_{2A} Ado receptor agonist. The clinical implication is that submaximal stress may occur in patients on calcium channel antagonists that undergo pharmacologic stress perfusion imaging. Further studies are needed to elucidate the mechanism of this effect and its potential impact on clinical imaging following vasodilator stress.

Table 1: Percent Increase in LAD Flow with Vasodilator

	Verapamil Infusion Rate (mg/kg/min)			
Vasodilator	**0 (Baseline)**	**0.002**	**0.004**	**0.02**
ADO	214 ± 14 *	157 ± 16	123 ± 23	81 ± 19 †
ATL	341 ± 80 *	206 ± 65 †	187 ± 37	96 ± 11 †

* p <0.05 vs Rest, † p <0.05 vs Baseline