

late gadolinium enhancement for analysis of necrosis were obtained. The left ventricle was divided into 16 segments (ASE) for analysis of the presence of oedema and necrosis. For comparative analysis with the ECG, 4 locations were considered at CMR: anterior (anterior septum and anterior wall), lateral (lateral and posterior walls), inferior (inferior wall and inferior septum) and generalized. The criteria used to define topographic concordance of ECG with CMR were: the correlation of  $\geq 1$  location in each patient if  $\leq 2$  locations affected and if there were widespread ECG changes there would have to be  $\geq 2$  locations exhibiting changes at CMR.

**Results:** The sensitivity of the ECG for the detection of myocarditis was 86.4%. The sensitivity of ST-segment elevation was 77.3% (N = 17) and inversion of T waves was 50% (N = 11). There was topographic agreement between: ST segment elevation and oedema in 47.1%, T wave inversion and oedema in 90.9%, ST-segment elevation or inversion of T waves with oedema in 79%. There was ST-segment elevation topographically related to myocardial necrosis in 64.7% and there was necrosis in 90.9% of the locations exhibiting T wave inversion. There was either ST-segment elevation or inversion of T waves in 84.2% of the locations that had evidence of necrosis in CMR.

**Conclusions:** ECG changes usually attributed to myocardial infarction have proved to have good sensitivity for the detection of myocarditis. Either ST-elevation or T wave inversion were good predictors of the location of edema and necrosis at CMR.

### P2508 Comparison of flat panel digital fluoroscopy with multislice computed tomography calcium scoring for the detection of coronary artery calcification in asymptomatic individuals



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**Background:** High coronary artery calcium score (CACS) is associated with moderate to high risk of future cardiovascular events, even in asymptomatic individuals. Studies describing a limited diagnostic accuracy of fluoroscopy were performed using previous generation x-rays systems with conventional image intensifier chains. We investigated digital fluoroscopy's accuracy for detection of CACS using a flat panel digital detector (FPDD) fluoroscopy system. Multislice computed tomography (MSCT) derived CACS was used as a reference method.

**Methods:** Asymptomatic volunteers without known coronary artery disease (CAD) and with a normal ECG underwent ECG-gated low radiation MSCT. CACS was calculated using the Agaston method and subjects were classified into 4 risk categories for CAD: low (CACS 0-10), intermediate (CACS 11-100), high (CACS 101-400) and very high (CACS >400) risk. A cutoff of 10 was used to transform the results of the reference method into a binary variable. Cardiac fluoroscopic imaging was performed in LAO 45° and CRANIAL 15° view on the same day, and analyzed blindly by two independent investigators. Fluoroscopy results were classified as absent (0), mild (1), moderate (2) and severe calcification (3).

**Results:** We studied 151 individuals (66.5% men, 70.9% current/ex smokers, 62.3% dyslipidemics, 39.1% hypertensives, 13.2% diabetics) with a mean age of 53.1±7.6 years. Inter-observer and intra-observer agreement for fluoroscopy's results was 75.5% and 82.4% respectively (weighted kappa coefficient 0.724 and 0.812 respectively). ROC curve revealed that detection of any calcium on fluoroscopy (score >0) had 85.9% sensitivity and 87.3% specificity for identifying individuals with Agaston CACS >10 (AUC 0.889, p<0.001), with 83.3% and 89.4% positive and negative predictive value respectively. A fluoroscopy score >1 had 100% sensitivity and 85.8% specificity for identifying individuals with Agaston CACS >400 (AUC 0.975, p<0.001), with 33.3% and 100.0% positive and negative predictive value respectively.

**Conclusion:** FPDD fluoroscopy demonstrates high sensitivity and specificity for detection of coronary calcium compared with MSCT. In individuals with an Agaston CACS >400 this technique has an excellent negative prognostic value and could substitute MSCT, especially in centers where the latter is not available.

### P2509 Myocardial perfusion scintigraphy in patients with right ventricular pacing



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**Purpose:** Myocardial perfusion scintigraphy (MPS) with pharmacological stimulus has been validated, through the years, as an efficient non-invasive imaging technique for the diagnosis of myocardial ischemia. However, few data are available regarding MPS use in patients with right ventricular pacing (RVP). Asynchronous activation resulting from right ventricular apical pacing has been pointed out as the cause of left ventricular dysfunction and changes in myocardial perfusion despite normal coronary arteries. We sought to evaluate the positive predic-

tive value (PPV) and prognostic value of MPS with pharmacological stimulus in patients with RVP.

**Methods:** Sixty patients with RVP consecutively submitted to MPS with pharmacological stimulus were reviewed. All MPS were ordered for the diagnostic work-up of retrosternal pain. The pharmacological stimulus used was adenosine and all patients had permanent RVP. We determined the PPV of MPS in patients submitted to coronariography after the detection of ischemia by MPS. For the evaluation of the prognostic value of MPS, we compared the patients with reversible defects on MPS to those without reversible defects. The end points were the composite end points of all cause mortality, hospitalization for acute coronary syndrome and non-scheduled coronary revascularization at one and three years.

**Results:** Of the sixty patients analyzed, MPS identified ischemia in twenty-six individuals. Fourteen patients presenting ischemia in MPS underwent coronariography. New or worsened coronary heart disease was identified in seven patients; the remaining seven patients had normal coronary arteries. Considering the fourteen patients submitted to coronariography, the PPV of MPS was fifty percent. Most of the false positive defects were localized to the apical, inferior and septal walls. When comparing patients with ischemia (n=26) and those without ischemia (n=34) on MPS, the former presented a trend to higher number of adverse events at one year (23.8% vs 6.3%; p=0.1) and at three years (28.6% vs 7.1%; p=0.08).

**Conclusions:** RVP resulted in perfusion defects not related to the presence of coronary heart disease, mainly in apical, inferior and septal walls. In the population studied, the PPV of MPS for the detection of coronary heart disease in patients with RVP was fifty percent. Reversible perfusion defects in MPS may have prognostic value.

### P2510 Impairment of cardiac adrenergic nerve function predicts clinical outcome in patients with cardiac syndrome X



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**Background:** Patients (pts) with cardiac syndrome X (CSX) have excellent long-term prognosis, but a significant number shows worsening angina despite multi-drug treatment. In CSX pts, previous studies found a significant scintigraphic impairment of cardiac uptake of 123-I-metaiodobenzylguanidine (MIBG), indicating abnormal function of cardiac adrenergic nerve fibres. In this study we investigated whether cardiac MIBG results can predict clinical outcome in CSX pts.

**Methods:** We performed cardiac MIBG scintigraphy in 40 CSX pts (age 58±5, 14 M). Cardiac MIBG uptake was measured by the heart/mediastinum (H/M) ratio and by SPECT regional MIBG uptake score (higher values=lower uptake). Clinical findings, exercise stress test parameters, SestaMIBI stress myocardial scintigraphy and C-reactive protein serum levels were also assessed in all pts. End-points included readmission for angina, worsening angina, repetition of coronary angiography and quality of life, assessed by a visual analogic scale (Euro-QoL) graduated from 0 (worst) to 100 (best).

**Results:** At a follow-up of 79±47 months (range 36-144), no patient died or had acute myocardial infarction. Hospital readmission for angina occurred in 25 pts (62%) and 23 pts (57%) underwent coronary angiography. Angina was judged improved over time by 15 pts (37%), whereas 23 pts (57%) reported worsening angina. Values of MIBG variables according to clinical end-points are shown in the Table. A significant correlation was found between Euro-QoL scale and H/M ratio (r=-0.44; p=0.005) and MIBG score (r=-0.70; p<0.001). No other clinical or laboratory variable showed significant relation with end-points.

		H/M ratio	P	MIBG score	P
≥2 readmissions for angina	Yes (n=14)	1.57±0.50	0.13	43±30	0.004
	No (n=26)	1.75±0.23		19±18	
Repetition of coronary angiography	Yes (n=23)	1.63±0.39	0.17	37±28	0.001
	No (n=17)	1.79±0.25		11±7	
Worsening angina	Yes (n=23)	1.62±0.41	0.15	38±29	0.001
	No (n=17)	1.78±0.24		13±8	

**Conclusion:** Our data show that, in CSX pts, the extension of cardiac MIBG uptake defects can identify those with a worse outcome of symptomatic state.

### P2511 Predictive factors of Trastuzumab mediated cardiotoxicity in the setting of adjuvant chemotherapy for breast cancer: analysis of left ventricular diastolic function by radionuclide angiocardigraphy



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**Background:** Trastuzumab has been shown to benefit patients with HER2-positive breast cancer, but can induce cardiotoxicity, particularly when combined with anthracyclins. However, little is known about the predictive factors of trastuzumab mediated cardiotoxicity.

**Aim:** Evaluation of left ventricular diastolic function obtained by Radionuclide An-