The Transmural Extent of Necrosis Modulates the Contractile Response of Metabolically Viable Myocardium to Dobutamine
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Background: Both positron emission tomography (PET) and low-dosedobutamine echocardiography (LDE) have been proposed to assess the presence of viable myocardium. Although both of these modalities share the same final purpose, i.e., to predict which segment is likely to resume contractile function following revascularization, they frequently disagree on the presence of segmental viability. In particular, many segments with preserved metabolic viability lack evidence of contractile reserve during LDE. The aim of this study was to determine whether small subendocardial infarcts might contribute to the lack of infarct reserve in metabolically viable myocardium.

Methods: Twenty-six patients with chronic multivessel disease and altered cardiac function (EF 34±15%) underwent DFPET, LDE and Go-enhanced MRI for the assessment of myocardial viability. Baseline contractile function, infarct reserve (LDE) and the transmural extent of necrosis (quantitative late- enhancement MRI) were compared among PET viable (60±8% SEBPET) segments and nonviable as well as in LDE-detecting and non-responding segments. Results: At baseline, 127/208 segments were dysfunctional. Sixty-four of these segments were considered PET viable, whereas 63 were PET nonviable.

1166-40 Myocardial Hyperenhancement by Magnetic Resonance Imaging in Genotyped Hypertrophic Cardiomyopathy: Patients Identify Early Disease and Correlates With Clinical Risk
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Introduction: Some patients with Hypertrophic Cardiomyopathy (HCM) have abnormal areas of myocardial hyperenhancement after gadodiamine-DTPA by Cardiovascular Magnetic Resonance (CMR). This is believed to represent myocardial fibrosis or disarray, but the precise histology and relationship to genotype and disease stage is unknown. We examined a cohort of genotyped subjects all carrying the same sarcomeric protein mutation (Tropinin 3) to assess the relationship between hyperenhancement and disease stage and to assess whether CMR could detect early disease.

Methods: Thirty patients from 10 families underwent cine and contrast enhanced CMR. 15 patients fulfilled WHO criteria for HCM with abnormal wall thickness on echo (G+ LVH+) and 15 with a normal echo (G-LVH-). Results: All (100%) G+LVH+ patients and 4 (27%) G+LVH- patients had abnormal cine CMR imaging with abnormal regional hypokinesia. Abnormal hyperenhancement was present in 12 (86%) G+LVH+ patients and 3 (20%) G+LVH- patients. Where present, the mean extent of hyperenhancement was in the G+LVH+ patients (15%, range 3-48%) and less in G+LVH- patients (36%). Overall, the extent of hyperenhancement was related to high clinical risk of sudden death (2 standard risk factors for sudden death). (mean 15% high risk vs. 4%, p<0.003), total LV mass (n=56, p<0.001) and inversely to ejection fraction (r=-0.32, p<0.001). The extent of hyperenhancement, and the number of segment with hyperenhancement increased with age (p<0.01 for both). Conclusion: Hyperenhancement occurs in almost all G+/LVH+ patients, and a significant number of G-LVH+ patients. The intra-pedigree relationship of hyperenhancement with subject age is evident that hyperenhancement increases over time as the phenotype evolves. Hyperenhancement may have a role both in the diagnosis of early disease and as a new marker for clinical risk.

1166-41 Determination of Infarct Size by Contrast-Enhanced MRI: Comparison Between Quantitative Planimetry and a Semiquantitative Visual Score Method
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Background: Delayed-enhanced MRI can measure infarct size precisely, which has important clinical and prognostic significance. We examined whether a faster semiquantitative visual score method is valid to determine infarct size when compared to the quantitative and time-consuming planimetric method.

Methods: Thirteen patients with previous myocardial infarction underwent contrast-enhanced MRI on a 1.5 T ST whole-body magnet (Intera NT, Philips). Eight short-axis slices covering the whole left ventricle (LV) were acquired and analyzed in two ways: manual drawing of the hyperenhanced regions and LV endocardial and epicardial borders to determine the infarct size as a percent of LV mass using commercial software (Philips Visual evaluation software (VES)) of all 6 slices, divided in 49 segments (2 basal slices with 0 segments, 4 middle slices with 6 segments and 2 apical slices with 4 segments, therefore weighting for the segment mass), by two independent observers that were blind to the planimetry results. They graded the transmural extent of hyperenhancement on a four-point scale in which a score of 0 indicated no hyperenhancement, a score of 1 (borders of hyperenhancement) was defined as less than 25%, a score of 2 (25% to 75%) and a score of 3 (more than 75%). The final score of each patient was then divided by the total possible score, providing the infarct size as percent of LV mass.

Conclusion: Ce MRI versus VS (19±4.1%, vs. 19±4.3%, P<0.05). Correlation coefficient for PL vs. VS was good for both observers (n=0.90 and 0.82, P<0.01). Bland-Altman analyses revealed a mean difference of -1.2%, with a 95% confidence interval for the differences between PL and VS ranging from -11.0 to 8.6%. Moreover, infarct sizing by the score method can be used in routine cardiac MRI exams, adding objective data to the report and significantly decreasing post-processing time.