Hyperechoic Myocardium: A New Noninvasive Marker of High Rsk Patients in Hypertrophic Cardiomyopathy with Magnetic Resonance Correlation

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Cardiac magnetic resonance imaging (CMR) late gadolinium enhancement (LGE) is frequent in hypertrophic cardiomyopathy (HCM) and is associated with clinical markers of sudden cardiac death (SCD) risk and progression towards heart failure

Purpose: To determine the frequency and significance of myocardial hyperechoic areas in HCM and to correlate them to LGE, a well established technique for myocardial fibrosis detection

Methods: To compare the presence and extension of hyperechoic and LGE myocardial regions, both ultrasonic and CMR studies were performed blindly and prospectively in 32 consecutive HCM adult patients, excluding previous septal ablation, coronary artery disease and contra-indication to CMR.

Results: Hyperechoic regions were found in 53.1% and LGE regions in 81.3% of the patients. The sensitivity, specificity, negative and positive predictive values and accuracy of presence of hyperechoic myocardium for detection of LGE regions were 61.5, 83.3, 33.3, 94.1 and 65.6%, respectively (r=0.57 to 0.74). While echo almost systematically underestimated LGE extent, total hyperechoic area correlated positively with the magnitude of ventricular hypertrophy, left atrial and ventricular sizes and decreased ejection fraction, and was larger in patients with > 2 SCD risk factors (p=0.04).

Conclusions: In HCM, 1) hyperechoic myocardium corresponds with CMR late-enhancement; 2) The sensitivity for such a detection is relatively low, but its positive predictive value is high; 3) Even if the area of hyperechoic myocardium underestimates LGE extent, the presence of large areas might help to target high-risk patients for SCD and heart failure. This new ultrasonic sign seems a promising tool for serial non-invasive evaluations and/or in case of contra-indication to CMR.

Typical septal hyperechoic region.