

Meeting abstract

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2048 The hypertrophic cardiomyopathy phenotype revisited with cardiovascular magnetic resonance

Martin S Maron^{*1}, Evan Appelbaum², Caitlin Harrigan³, Jacqueline Buros³, C Michael Gibson², John R Lesser⁴, James E Udelson¹, Warren J Manning² and Barry J Maron⁴

Address: ¹Tufts-New England Medical Center, Boston, MA, USA, ²Beth Israel Deaconess Medical Center and Perfuse Core Laboratory and Data Processing Center, Boston, MA, USA, ³Perfuse Core Laboratory and Data Processing Center, Boston, MA, USA and ⁴Minneapolis Heart Institute Foundation, Minneapolis, MN, USA

* Corresponding author

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Introduction

Hypertrophic cardiomyopathy (HCM) is generally regarded as a disease characterized by substantial left ventricular (LV) wall thickening, often with extensive hypertrophy diffusely involving the LV chamber. This impression has been based on traditional non-tomographic imaging with two-dimensional echocardiography. However, CMR has certain advantages for more precisely defining LV hypertrophy and the phenotypic expression of HCM.

Purpose

To define the distribution and pattern of LV wall thickening in HCM using CMR.

Methods

CMR was performed in 82 consecutive HCM patients (42 ± 16 years; 71% male) from two HCM referral centers. ECG-gated, breath-hold cine images were acquired in 3 long-axes and contiguous 10 mm thick short-axis slices, achieving full LV coverage. LV was divided into 16 segments based on the established AHA model. For each short-axis cross-sectional level of the LV (basal, mid, apical) the greatest wall thickness measurement was calculated in each wall segment. LV hypertrophy was defined as wall thickness ≥ 15 mm and: *focal* when confined to ≤ 2 contiguous segments (≤ 12% of LV), *intermediate* if

present in 3–7 segments (13–49% of LV) and *diffuse* when present in ≥ 8 segments (≥ 50% of LV).

Results

Maximal LV wall thickness was 22 ± 4.5 mm (range 15 to 36 mm). Basal anterior septum and contiguous anterior free wall were the most common areas. Distribution and extent of hypertrophied LV segments was focal in 16 (19%), intermediate in 30 (35%) and diffuse in 39 (46%). Sixteen patients (19%) also had areas of non-contiguous LV hypertrophy separated by regions of normal thickness. A significant relationship was evident between the number of hypertrophied LV segments and total LV mass ($r^2 = 0.6$; $p < 0.001$). However, no correlation was evident between distribution of LV hypertrophy and a variety of demographic and clinical variables including: gender ($p = 0.5$), age ($p = 0.9$), LV outflow obstruction ≥ 30 mmHg ($p = 0.1$) or heart failure class ($p = 0.2$).

Conclusion

HCM has been traditionally regarded as a disease characterized by marked and diffuse hypertrophy. However, the present CMR data provide a novel perspective on the HCM phenotype with the majority of patients showing relatively localized LV hypertrophy involving only 10–50% of LV. The patterns of LV hypertrophy as identified

by CMR, showed no relationship to the magnitude of heart failure symptoms.

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