SIGNIFICANCE OF MYOCARDIAL ISCHEMIA IN HYPERTROPHIC CARDIOMYOPATHY: RELATION OF REGIONAL PERFUSION ABNORMALITIES TO LEFT VENTRICULAR HYPERTROPHY ASSESSED BY MAGNETIC RESONANCE IMAGING

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Background. In hypertrophic cardiomyopathy (HCM) regional myocardial perfusion patterns may represent an important determinant of heart failure symptoms and sudden death. We hypothesized magnetic resonance perfusion imaging (MRI) would allow more precise quantitative assessment of regional blood flow distribution in HCM.

Methods. MRI first-pass perfusion imaging and cine MRI were performed in 40 HCM patients (age: 38 ±15) and 40 age/sex matched healthy volunteers. In 15 pts, quantitative rest-stress (adenosine 140ug/kg/min) perfusion imaging was performed; in 25 pts with outflow obstruction only rest imaging was performed. Myocardial blood flow and perfusion reserve (MPR=hyperemic: resting flow) were calculated in 8 LV segments/ slice (2-5 slices/ patient), for a total of 1016 segments (for rest) and 272 (for stress). The segmental perfusion and wall thickness was compared.

Results. In HCM, myocardial blood was significantly reduced at rest and stress in hypertrophied segments, compared to non-hypertrophied segments in the same pts or normal volunteers (table). Greater LV wall thickness and perfusion were inversely related ($y=1.62\ x^{-1}$).

Conclusions. The cardiomyopathic process in HCM is most marked in hypertrophied regions of the LV. MR perfusion abnormalities were most prominent in hypertrophied compared to non-hypertrophied areas. Adverse consequences of HCM (i.e., sudden death and progressive symptoms), often associated with marked LVH may be due, in part, to myocardial ischemia.

Segments	Rest (ml/min/g)	Stress (ml/min/g)	MPR
HCM: hypertrophied (n= 850)	0.63 ±0.16	1.64 ±0.1	2.6 ±0.72
HCM: non-hypertrophied (n= 166)	0.79 ±0.2	2.45 ±0.7	3.1 ±0.8
Normal volunteers (n=1056)	1.02 ± 0.27	3.4 ±0.73	3.68 ±1.5
p-values	< 0.042	< 0.01	< 0.01