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CARDIAC FUNCTION AND HEART FAILURE

THE COMPLEX INTERPLAY BETWEEN LATE-ENHANCEMENT ON CARDIAC MAGNETIC RESONANCE, OUTFLOW OBSTRUCTION AND LEFT VENTRICULAR FUNCTION DURING EXERCISE IN HYPERTOPHIC CARDIOMYOPATHY. AN EXERCISE ECHOCARDIOGRAPHY-MAGNETIC RESONANCE STUDY

ACC Poster Contributions
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Background: The functional significance of late gadolinium enhancement (LGE) detected on cardiac magnetic resonance (MRI) has been associated with impaired diastolic function in patients with hypertrophic cardiomyopathy (HCM), however its functional significance during exercise has never been evaluated.

AIMS: To evaluate left ventricular (LV) function during exercise-echocardiography in patients with HCM in relation to the amount of LGE on MRI.

Methods: Forty three consecutive patients with HCM underwent contrast-enhanced cardiac MRI with a 1,5 T system and performed bicycle exercise echocardiogram (off medications) within the following month. Patients were divided into 2 groups: LGE -, with little or no LGE (33 patients) and LGE + with a relevant amount of LGE (10 patients). LGE was considered to be relevant when >4% of total LV mass was present (median value in our population).

Results: At rest the two groups were comparable for age, male gender, NYHA class, LV mass and maximum interventricular septum thickness; the only significant differences were greater LV outflow obstruction (45.7 ± 9 vs. 17.5 ± 5.8 mmHg; p= 0.012) and larger mitral regurgitation jet area (2.7 ± 0.5 vs. 1.1 ± 0.4 cm^2; p=0.029) in the LGE - group. On exercise, differences in LV diastolic function also emerged. Peak exercise data are summarized in Table 1.

Conclusions: Patients with HCM and little or no LGE detected by MRI develop a significantly greater LV outflow obstruction and higher LV filling pressures at peak exercise.

	LGE -	LGE +	p-value
Watts achieved	94,6 ± 31,7	85 ± 21	0,371
Maximum heart rate (bpm)	122,2 ± 3.6	131,6 ± 6	0,214
Mitral regurgitation jet area (cm^2)	4,1 ± 0,7	3,0 ± 0,8	0,409
End-diastolic volume (ml)	56,6 ± 4,2	40,1 ± 7,3	0,065
Ejection fraction (%)	82,3 ± 2	83,5 ± 2,8	0,764
Max LV outflow gradient (mmHg)	81,9 ± 13,7	35,4 ± 10,1	0,010
E/A	0,88 ± 0,04	0,81 ± 0,05	0,406
E'-wave septal mitral annulus (cm/s)	7,5 ± 0,6	10,7 ± 1,8	0,136
E'-wave lateral mitral annulus (cm/s)	9,9 ± 0,7	13,9 ± 1,8	0,023
E/E" septal mitral annulus (cm/s)	17,8 ± 2,3	10,8 ± 1,8	0,026
E/E" lateral mitral annulus (cm/s)	12,5 ± 1,4	7,6 ± 1,2	0,014
S-wave septal mitral annulus (cm/s)	8,7 ± 3,5	9,1 ± 1,8	0,740
S-wave lateral mitral annulus (cm/s)	9,0 ± 3,4	9,3 ± 2,8	0,850