

Poster presentation

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Gender related differences in left ventricular remodelling in non-ischemic dilated cardiomyopathy- a structural and functional analysis by cardiovascular magnetic resonance

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Introduction

The impact of gender on morbidity, mortality and the response to medical therapy in cardiovascular disorders, including cardiomyopathies, has long been recognized. Recently, gender-related differences in the cardiac phenotype of patients with hypertrophic cardiomyopathy were identified using contrast-enhanced cardiovascular magnetic resonance (CE-CMR). However, no data exists in patients with non-ischemic dilated cardiomyopathy (DCM).

Objective

Goal of this study was to use CE-CMR to determine gender-associated differences in left ventricular (LV) remodeling and the occurrence of myocardial fibrosis in patients with DCM. As gender impacts cardiac structure and function even in normal hearts, results were interpreted in relation to those obtained from a healthy reference population.

Methods

CE-CMR was performed in 192 consecutive patients with DCM (age 51.9 ± 2.1 yrs.; 47 females) and in 80 controls free from cardiovascular disease (age 50.2 ± 1.4 yrs.; 41 females) on a 1.5 T clinical scanner. LV volumes, systolic function and mass were derived from SSFP cine images.

The LV-remodelling index (LVRI) was calculated as mass/end-diastolic volume.

Results

Males and females with DCM were comparable with regard to baseline characteristics, including heart failure

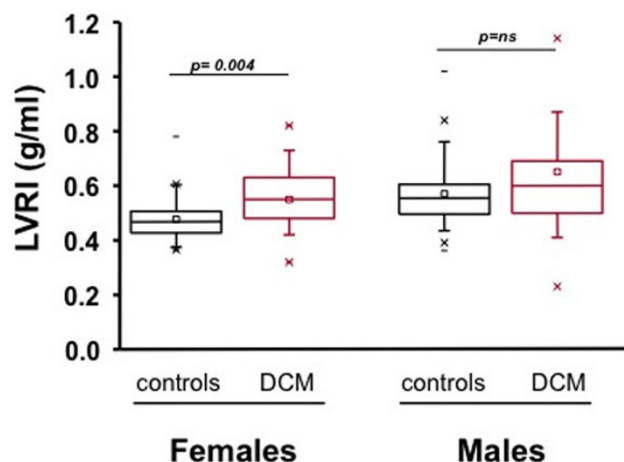


Figure 1
Left-ventricular remodelling index (LVRI) according to gender and presence of DCM.

Table 1: CMR results of LV volumetry according to gender and disease

	Females		Males	
	controls (n = 41)	DCM (n = 47)	controls (n = 39)	DCM (n = 147)
LV-EF (%)	68.8 ± 1	38 ± 2.1*	65.4 ± 1.4	36.4 ± 1.2*
LV- EDV (ml)	125.3 ± 3.2	216.4 ± 12.8*	161.9 ± 5.1#	267.5 ± 7.8*#
LV-EDV/BSA (ml/m²)	71.6 ± 1.6	123 ± 7.1*	81.3 ± 1.9#	131.7 ± 3.9*
LV-ESV (ml)	39.6 ± 1.8	140.7 ± 14.3*	56.6 ± 3.1#	179.4 ± 8.4*#
LV- mass (g)	59.6 ± 1.7	116.1 ± 6*	92.4 ± 3.3#	168.7 ± 10.9*#
LV-mass/BSA (g/m²)	33.9 ± 0.7	64.5 ± 3.8*	44.4 ± 1.5#	82.3 ± 5.1*#
LVRI (g/ml)	0.46 (0.43- 0.51)	0.55 (0.47-0.63)*	0.57 (0.49-0.63)#	0.6 (0.51-0.69)#

* $p < 0.01$ vs. respective controls; # $p < 0.01$ vs. respective female group

medication and NYHA classification. Table 1 depicts the results of LV volumetry:

Gender- associated differences found in controls were mainly sustained among DCM patients. Regardless of gender, DCM patients exhibited a decline of systolic function and an increase of volumes and myocardial mass compared to controls. Interestingly, the LVRI showed a significant increase only in females, reflecting a higher increase in LV mass relative to the increase in EDV compared to males (Figure 1). Gender was not associated with the presence of LGE (58/138_{DCMmales} vs. 14/46_{DCMfemales}, $P = ns$).

Conclusion

This study provides first evidence for the influence of gender on the remodelling process in patients with DCM, as women seem to experience a more pronounced hypertrophy relative to dilatation. If confirmed in future research, this finding may have important implications on the therapeutic approach in women with DCM.

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