Non-compaction Phenotype Does Not Influence the Prognosis of Non-ischemic Dilated Cardiomyopathy.

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Background

- Non-compaction cardiomyopathy (CMP) is an unclassified CMP, characterized by prominent left ventricular (LV) trabeculae and deep inter-trabecular recesses.
- Some data suggest it might have a worse prognosis.
- Different echocardiographic and cardiac magnetic resonance (CMR) diagnostic criteria have been proposed.

Aim of the study

- We investigated whether the degree of LV non-compacted (NC) myocardium, assessed by CMR, influences the prognosis of patients with non-ischemic dilated cardiomyopathy (DCM).

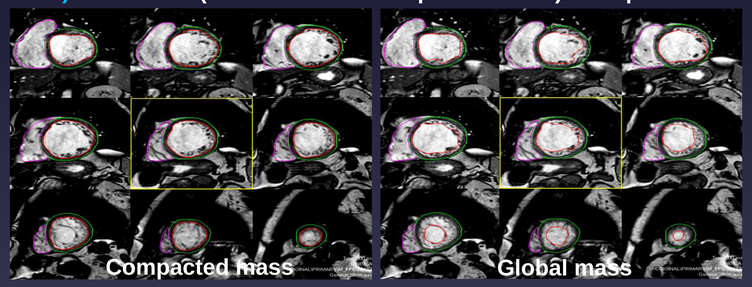
Methods

- 158 patients (53±14 years, 99 males) with DCM, LV ejection fraction (LVEF)<40% and no angiographic significant coronary artery disease.
- 48 control subjects (60±10 years, 22 males).

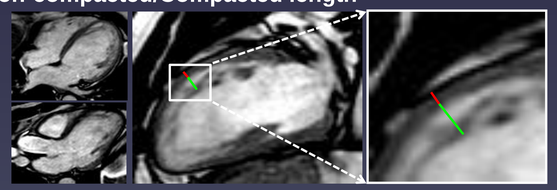
CMR

- Left (LV) and right (RV) ventricular volumes, left atrial (LA) volume, indexed to BSA
- LV fibrosis: amount and distribution
- Non-compacted myocardium quantification:

METHOD 1) NC mass = (Global mass – Compacted mass)/ Compacted mass



METHOD 2) Non-compacted/Compacted length



ECHOCARDIOGRAPHY

MACE = cardiovascular death (CVD), heart transplantation (HT), left ventricular assist device implantation (LVAD), resuscitated cardiac arrest and appropriate device choc.

Mean±SD NC mass of patients and controls was 31±15% and 17±7%, respectively.
Patients were divided in 2 NC mass groups based on the mean±2SD NC mass of controls (= 31%) and 2 NC/C groups using the NC/Compacted ratio cutoff of 2.3 (Table 1).

Table 1	Method 1 (NC mass)		Method 2 (NC/C length)	
	NC mass < 31%	NC mass > 31%	NC/C<2.3	NC/C>2.3
No patients (%)	87 (55)	71 (45)	100 (63)	58 (37)
NC mass (% LV), median (IQR)	22 (17.4-26.5)	39 (34.4-50)	-	-

General clinical data of patients are presented in Table 2.

	Method 1 (NC mass)		Method 2 (NC/C length)	
	NC mass < 31%	NC mass > 31%	NC/C<2.3	NC/C>2.3
Age, years	56±15	53±15	56±16	52±14
Male gender, n (%)	58 (67)	41 (58)	66 (66)	33 (57)
BSA, m²	1.9±0.2	1.9±0.2	1.9±0.2	1.9±0.2
SBP, mmHg	125±20*	114±18	122±20	117±20
DBP, mmHg	76±14	71±12	75±14	71±13
NYHA I-II/ III-IV, (%)	45/55	61/39	52/48	50/50
VO2, ml/kg/min	17±6	17±7	17±7	16±5

Table 2. General data of patient groups. There was no statistical difference between groups in cardiovascular risk factors, nor in treatment of heart failure (either medication or device therapy).
* p<0.05 vs. NC mass > 31%

CMR data (n=158)	Method 1 (NC mass)		Method 2 (NC/C length)	
	NC mass < 31%	NC mass > 31%	NC/C<2.3	NC/C>2.3
LVMi, g/m²	98±23*	86±25	93±22	92±30
LVEDVi, ml/m²	158±48	167±55	159±47	168±58
LVESVi, ml/m²	120±47	132±54	122±47	130±56
LVEF, %	26±8	23±9	25±8	24±8
RVEDVi, ml/m²	86±31	92±39	88±33	90±39
RVESVi, ml/m²	53±29	59±38	56±32	56±38
RVEF, %	42±13	40±15	40±13	42±15
Fibrosis, %, median (IQR)	0.41(0.17-1.26)	0.55 (0.29-2)	0.51(0.19-1.68)	0.48(0.25-1.56)
Midseptal scar, n (%)	22 (26)	25 (35)	31 (31)	16 (28)
LAVi, ml/m²	62±24	65±34	63±25	65±35

Table 3. CMR data of patient groups. All volumes are indexed to BSA. * p<0.05 vs. NC mass < 31%

ECHO data (n=100)	Method 1 (NC mass)		Method 2 (NC/C lenght)	
	NC mass < 31%	NC mass > 31%	NC/C<2.3	NC/C>2.3
E/A	1.5±0.9	1.5±0.9	1.5±0.8	1.6±0.9
E/e'	16±7	16±9	16±7	16±8
PASP, mmHg	34±15	35±15	34±15	35±15

Table 4. Echocardiography data of patient groups. All p>0.05.

Results

Median (IQR) follow-up time = 3 years (1.3-5.8)
26 patients experienced MACE (11 CVD, 6 HT, 4 LVAD, 1 resuscitated cardiac arrest and 4 appropriate chocs).

Hazard ratio for MACE in Uni- and Multivariable Analyses

Variable	Univariable Analysis		Multivariable Analysis	
	HR (95%CI)	p value	HR (95% CI)	p value
Smoker *	2.47 (1.073-5.682)	0.033		
SBP, mmHg	0.979 (0.957-1.002)	0.071		
DBP, mmHg *	0.962 (0.931-0.994)	0.019	0.965 (0.932-0.998)	0.038
NYHA class *	1.381 (0.953-2.001)	0.088		
LVEDVi, per 10ml/m² *	1.097 (1.044-1.152)	0.0001	1.069 (1.007-1.135)	0.029
LVESVi, per 10ml/m²	1.106 (1.051-1.164)	0.0001		
LVEF, % *	0.921 (0.875-0.971)	0.002		
RVEDVi, per 10ml/m² *	1.135 (1.036-1.243)	0.007		
RVESVi, per 10ml/m²	1.164 (1.060-1.277)	0.001		
RVEF, % *	0.957 (0.929-0.985)	0.003	0.970 (0.943-0.999)	0.040
LAVi, per 10ml/m² *	1.098 (0.985-1.223)	0.091		
Fibrosis, % *	1.091 (0.988-1.204)	0.085		
NC mass, %LV	1.010 (0.984-1.036)	0.474		
NC/C ratio	0.972 (0.673-1.404)	0.880		

Table 5. Hazard ratio for MACE in uni- and multivariable Cox analysis.
* Variables with a p value < 0.1 on univariable analysis were included in the multivariable model.

Kaplan Meier estimates of MACE-free survival

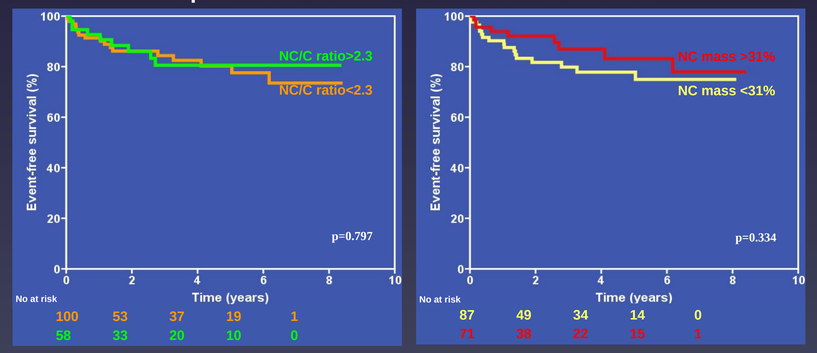


Figure 1. Kaplan-Meier estimates of MACE-free survival, stratified according to the NC/C ratio (left) and NC mass (right) groups, respectively. The log-rank test was used to compare the survival curves.

Conclusion

The predictors of outcome of patients with DCM were diastolic blood pressure, indexed LV end-diastolic volume and right ventricular ejection fraction. By contrast, the prognosis was not influenced by the degree of left ventricular myocardial non-compaction. This argues against non-compaction phenotype being a more severe form of dilated cardiomyopathy.

No disclosures