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## Non Invasive Imaging

### PROLONGED QRS DURATION PREDICTS INCREASED INDEXED LEFT VENTRICULAR VOLUME AND MASS BY CMR: THE FRAMINGHAM HEART STUDY

Poster Contributions

Hall C

Saturday, March 29, 2014, 10:00 a.m.-10:45 a.m.

Session Title: CMR in Pediatrics and Animal Models

Abstract Category: 17. Non Invasive Imaging: MR

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**Background:** Prolonged electrocardiographic QRS duration (QRSd) is associated with excess echocardiographic left ventricular (LV) size and mass (LVM), but it is not known whether prolonged QRSd predicts excess LV end-diastolic volume (EDV) and LVM by volumetric cardiac magnetic resonance (CMR) after indexation to body surface area (EDVi, LVMi).

**Methods:** 1426 Framingham Offspring cohort members (65±9 y, 45% M) who had CMR studies and were without history of myocardial infarction or heart failure were stratified by QRSd<100ms (NLQRS) or QRSd≥100ms (HIQRS). Sex-specific EDVi, LVMi, LVM/EDV (concentricity) and ejection fraction (EF) for NLQRS and HIQRS groups were compared by t test. We used logistic regression models adjusted for age, sex, systolic blood pressure (SBP) and hypertension (SBP≥140, DBP≥90mmHg or medication use) to determine whether HIQRS was an independent predictor of excess EDVi, LVMi, or LVM/EDV. Thresholds for "excess" were the upper 95th percentile values from a healthy referent sample of adults.

**Results:** For corresponding groups men had greater EDVi, LVMi and LVM/EDV than women (Table). Mean EFs were normal in all groups. QRSd correlated (r) with EDVi and LVMi. EDVi and LVMi were greater in HIQRS vs NLQRS. HIQRS was associated with 4.8-fold odds (95%CI= 2.7-8.7) of excess EDVi and 3.1-fold odds (CI 1.9-5.0) of excess LVMi.

**Conclusion:** QRSd≥100ms is an independent predictor of excess LV EDVi and LVMi. Prolonged QRS duration should provoke suspicion of LV hypertrophy and cavity dilation.

\* p<0.001, \*\* p<0.05 (for r, Pearson correlation)

	MEN				WOMEN			
	r	NLqrs	HIqrs	NLvs.HI	r	NLqrs	HIqrs	NLvs.HI
		N=538	N=109	p		N=743	N=36	p
EDVi	0.21*	70±13	75±14	<0.001	0.13*	61±9	68±13	0.002
LVMi	0.15*	62±10	66±12	0.002	0.13*	48±8	55±10	0.003
LVM/EDV	-0.08**	0.90±0.17	0.88±0.14	0.22	0.009	0.80±0.13	0.82±0.13	0.54
LVEF	-0.04	0.71±0.07	0.72±0.07	0.51	-0.12**	0.74±0.06	0.70±0.09	0.02