



## Heart Failure and Cardiomyopathies

### IMPACT OF MALIGNANT LEFT VENTRICULAR FUNCTION ON INCIDENT HEART FAILURE IN OLDER ADULTS: THE MESA STUDY

Poster Contributions  
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**Background:** Left ventricular hypertrophy (LVH) combined with cardiac specific biomarkers for myocardial injury: hs-cTnT, or hemodynamic stress: NT-proBNP, identifies a “malignant” LVH phenotype at enhanced risk for progression to heart failure (HF), particularly HF with reduced ejection fraction (HFrEF). Older adults have higher incidence of HF, but proportionally less HFrEF than younger adults. We sought to determine if “malignant” LVH equally predicted incident HF and specifically, HFrEF among patients < and ≥65 years.

**Methods:** 4,985 participants of in the Multi-Ethnic Study of Atherosclerosis (MESA) study, 45-84 years old and free of known cardiovascular disease (CVD), with a baseline cardiac MRI and cardiac biomarker measures were divided into 2 age cohorts: <65 and ≥65 years. Elevated biomarker levels were defined as the upper tertile by decade of age. HFrEF was defined as LVEF<50% during the HF event

**Results:** MESA participants were followed for a median of 12.2 years during which there were 177 HF hospitalizations (87 HFrEF). Incident rates and adjusted hazard ratios for all HF and HFrEF specifically are shown in table.

	<65 years (N=2,921)			≥65 years (n=2,064)		
	N (%)	Incidence Rate (/1000pyrs)	Adjusted* Hazard Ratios	N (%)	Incidence Rate (/1000pyrs)	Adjusted* Hazard Ratios
Heart Failure						
No LVH, <1 biomarkers elevated	1,289 (44.1%)	0.7 (0.5, 1.2)	Reference	910 (44.5%)	2.5 (1.6, 3.7)	Reference
No LVH, ≥1 biomarkers elevated	1,363 (46.7%)	1.4 (1.0, 2.12)	1.6 (0.7, 3.4)	904 (44.3%)	6.7 (5.3, 8.6)	2.5 (1.5, 4.0)
LVH, <1 biomarkers elevated	96 (3.3%)	1.8 (0.5, 7.4)	1.4 (0.3, 6.89)	57 (2.8%)	8.1 (3.4, 19.5)	3.98 (1.47, 10.79)
LVH, ≥1 biomarkers elevated	173 (5.9%)	9.1 (5.6, 14.6)	5.24 (2.15, 12.77)	172 (8.4%)	23.9 (17.0, 33.6)	8.22 (4.61, 14.65)
<b>HFrEF</b>						
No LVH, <1 biomarkers elevated	1,289 (44.1%)	0.3 (0.1, 0.8)	Reference	910 (44.5%)	0.6 (0.3, 1.4)	Reference
No LVH, ≥1 biomarkers elevated	1,363 (46.7%)	0.8 (0.4, 1.3)	1.44 (0.49, 4.18)	904 (44.3%)	2.8 (1.9, 4.1)	4.01 (1.62, 9.91)
LVH, <1 biomarkers elevated	96 (3.3%)	0.9 (0.1, 6.5)	1.50 (0.17, 13.42)	57 (2.8%)	4.9 (1.6, 15.1)	11.24 (2.70, 46.71)
LVH, ≥1 biomarkers elevated	173 (5.9%)	6.9 (4.0, 11.9)	6.97 (2.17, 22.41)	172 (8.4%)	15.2 (9.9, 23.3)	23.20 (8.78, 61.32)

\* Adjusted for demographics (including age), systolic and diastolic blood pressure, anti-hypertensive medications, weight, height, LDL-C, HDL-C, triglycerides, diabetes, smoking and estimated GFR.

**Conclusions:** The presence of “malignant” LVH was associated with significantly increased HF and HFrEF across both age cohorts. Older adults with “malignant” LVH had > 23-fold increased risk of HFrEF compared to subjects without LVH or an elevated biomarker level. These older adults may warrant enhanced surveillance and more aggressive primary prevention treatment strategies.