



HEMODYNAMIC PREDICTORS OF LEFT VENTRICULAR MASS INDEX IN THE GENERAL POPULATION

Poster Contributions
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Background: Left ventricular mass index (LVMI) is a strong predictor of cardiovascular events. However, comprehensive data on its determinants are sparse. We sought to characterize the hemodynamic predictors of LVMI and the strength of their associations .

Methods: Using the Multi-ethnic Study of Atherosclerosis (MESA) database, univariate and multivariate association between demographic as well as hemodynamic parameters and LV mass index were explored via linear regression model. Analysis was stratified by gender in order to identify potential gender differences of the impact of each parameter. Estimates represent change in LVMI per unit change in the parameter.

Results: 3677 patients with mean (SD) age 61 (10) who had non-missing values for the variables of interest were included in this study. Of all hemodynamic variables considered, 3 clinical variables (mean arterial pressure, pulse pressure, & pulse rate), 4 pulse wave variables (small and large artery elastic index, cardiac ejection time and total vascular impedance), and 1 MRI variable (aortic distensibility) independently predicted LV MI (Table 1). We also noted gender differences in the predictive ability of these parameters e.g. pulse pressure was significantly associated with LVMI in males (3.2 [95% CI: 1.1, 5.3]) but not in females (0.13 [-1.5, 1.7])

Conclusions: We identified hemodynamic (as well as demographic) independent predictors of LVMI and observed gender differences in the impact of some of these predictors on the LV mass index.

Table 1. Independent predictors of LV mass index, stratified by gender				
	Female		Male	
Demographic variables				
Age†	-0.92 (-1.8, -0.05)	0.04	-2.96 (-4.0, -1.9)	<0.001
Race				
Caucasian	Reference	-----	Reference	-----
Chinese	2.4 (-0.5, 5.3)	0.11	2.2 (-0.86, 5.4)	0.15
African-American	1.3 (-0.16, 2.8)	0.08	5.0 (3.2, 6.8)	0.00
Hispanic	2.2 (0.35, 3.9)	0.02	3.7 (1.6, 5.8)	0.00
Smoker	4.7 (2.9, 6.4)	<0.001	4.75 (2.66, 6.83)	<0.001
Current alcohol use	-0.4 (-1.7, 0.92)	0.54	0.56 (-1.04, 2.18)	0.49
Exercise, MET-hrs/week	0.02 (0.002, 0.38)	0.03	0.01(-0.006, 0.03)	0.24
Hypertension	3.0 (1.4, 4.5)	0.00	2.4 (0.56, 4.3)	0.01
Diabetes	3.4 (1.1, 5.6)	0.004	1.7 (-0.69, 4.16)	0.16
BMI	0.12 (-0.015, 0.26)	0.081	0.37 (0.14, 0.6)	0.001
Clinical variables (per SD)				
SBP	1.6 (-0.11, 3.2)	0.07	-1.6 (-3.7, 0.63)	0.16
MAP	2.2 (1.2, 3.3)	<0.001	2.5 (1.2, 3.8)	<0.001
Pulse pressure	0.13 (-1.5, 1.7)	0.86	3.2 (1.1, 5.3)	0.003
Pulse rate	-2.8 (-3.7, -1.9)	<0.001	-3.4 (-4.5, -2.3)	<0.001
Pulse wave variables (per SD)				
Large artery elastic index	1.0 (-0.18, 2.2)	0.09	2.0 (0.5, 3.4)	0.008
Small artery elastic index	0.87 (0.04, 1.7)	0.04	0.83 (0.002, 1.7)	0.04
Estimated cardiac ejection time	-2.4 (-3.4, -1.5)	<0.001	-2.5 (-3.6, -1.3)	<0.001
Total vascular impedance	1.7 (0.34, 3.0)	0.01	3.9 (1.5, 6.3)	0.001
Systemic vascular resistance	-0.25 (-1.58, 1.1)	0.71	1.1 (-0.76, 3.0)	0.24
MRI variables (per SD)				
Aortic distensibility	-0.63 (-1.24, -0.18)	0.04	-2.14 (-3.1, -1.2)	<0.001

Estimates represent change (with 95% CI) in LV mass index per unit change in each parameter
†Estimate represents change in hazard ratio per 10 year increase in age