Indexing Left Ventricular Mass to Lean Body Mass in a Hispanic Population

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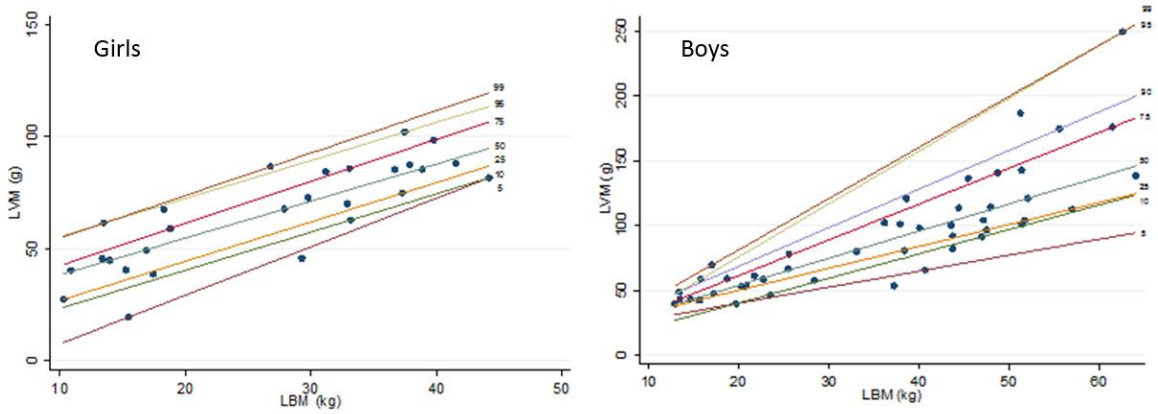
Background. Left Ventricular Hypertrophy (LVH) is an independent risk factor for cardiovascular and cerebrovascular events in adults. In a recent multiethnic study done in hypertensive/obese pediatric population, the highest prevalence of LVH (Left ventricular mass indexed to height$^{2.7}$ >95%) was found in Hispanics. Although lean body mass (LBM) is the strongest determinant of Left Ventricular mass (LVM) most studies still index LVM to height$^{2.7}$. The goal of this study is to evaluate, and compare both methods of indexing LVM in a Hispanic population, and to produce LVM-for-LBM percentile curves for children 5 to 18 years of age in healthy Hispanics.

Methods. Retrospective analysis of M-mode echocardiographic measurements were obtained from 2011 through 2014 from 74 healthy Hispanic children (5-15 years of age and BMI < 85th percentile). Quantile regression was used to create percentile curves of LVM for LBM (calculated using validated dual energy X-ray absorptiometry predictive equations) and LVM indexed to height$^{2.7}$ and were applied to 35 Hispanic obese and overweight children.

Results. The 95th percentile curves of LVM for LBM for healthy Hispanic children were similar to those depicted in a recent large multiethnic study. We found significant discrepancies in diagnosing LVH when comparing of LVM for LBM and LVM indexed to height$^{2.7}$ in 35 children at risk. (See figures)

Conclusions. We found the prevalence of LVH, when indexing to LBM in high risk Hispanic population, lower than previously reported. LVH is over diagnosed in healthy Hispanic children when LVM is indexed to height$^{2.7}$ compared to LVM for LBM. Our study suggests that Hispanic ethnicity is not a predisposing factor for LVH when LVM is indexed to LBM.



Estimates of the 5th, 10th, 25th, 50th, 75th, 90th, 95th, and 99th quantiles of LVM into LBM using quantile regression.

LVM for LBM Z score and LVMI for age Z score concordance at the 95th percentile for an at risk population

	LVMI for Age	
	< 95th percentile	≥ 95th percentile
LVM for LBM	N (%)	N (%)
< 95th percentile	26 (100%)	9 (81.82%)
≥ 95th percentile	0 (0.00%)	2 (18.18%)