ARIC Manuscript Proposal # 826

PC Reviewed: 09/18/01	**Status: __A_**	**Priority: __2__**
SC Reviewed: 09/18/01	**Status: __A_**	**Priority: __2__**

1.a. Full Title: Assessment of indices for left ventricular mass for the Jackson ARIC cohort.

b. Abbreviated Title (Length 26 characters): LV mass indices

2. Writing Group (list individual with lead responsibility first):

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3. Timeline:
Submit to ARIC Publications Committee: 9/01/01
Analysis Completed: 5 Months after approval by ARIC
Draft Manuscript: 6/01/02
Final Manuscript: 9/10/02
NHLBI and ARIC approval: 10/10/02
Submission for publication: 11/01/02

4. Rationale:

The statistical analysis of echocardiographically determined left ventricular mass presents several challenges including the choice of a method to index LV mass for body size(1;2). Several indices using data from different reference populations have been presented in the literature including body surface area (BSA), height and height raised to a power between 1.0 and 3.0, yet no clear consensus on which method is optimal has emerged.(3-6) The approach for obtaining an optimal LV mass index based on height has generally involved finding an index that does not appear to be functionally related to height.

This study will present a review of the existing literature on methods for indexing LV mass and a comparison of the various methods for indexing LV mass for several subsets of men and women from the ARIC Jackson Cohort.

We will present a simple statistical expression for an optimal height exponent under the assumption that LV mass is approximately distributed according to the Lognormal distribution with the constraint that LV mass index and height have covariance equal to zero. Estimates of this result will then be shown to be computationally equivalent to regression coefficients for least squares regression estimates of the linear relationship between log LV mass and log height.

The initial subset of participants for analysis will be defined in the same way that optimal LV mass indices were derived for the Framingham[6]. For the Jackson cohort this includes a relatively small group of non-obese (BMI<26) participants who were without evidence of cardiovascular disease (CVD) at the time that LV mass was measured. Since restriction of BMI for the Jackson cohort leads to a relatively small and potentially non-representative group of participants the analysis will then be repeated including individuals with BMI < 30 who were without evidence of cardiovascular disease (CVD) at the time that LV mass was measured. Finally the analysis will be performed using the broad cohort.

5. Main Hypothesis/Study Questions:

Optimal LV mass indices obtained by indexing with height for the Jackson ARIC cohort will be based on a height exponent between 1.0 and 2.0. Indices based on height raised to powers greater than and 2.0 will result in LV mass indices that are significantly correlated with height and therefore LVH classifications that are correlated with height.

6. Data (variables, time window, source, inclusions/exclusions):

ARIC visit 3 M mode echocardiogram data, gender, height, body mass index, diabetes status, and prevalent coronary heart disease (the latter variables will be taken from visit 4 if the echo exam was done during visit 4). Participants with missing or poor quality m model left ventricular mass measurements will be excluded from this study

Reference List

1. Liao Y, Cooper RS, Mensah GA, McGee DL. Left ventricular hypertrophy has a greater impact on survival in women than in men. Circulation 1995;92:805-10.

2. Liao Y, Cooper RS, Durazo-Arvizu R, Mensah GA, Ghali JK. Prediction of mortality risk by different methods of indexation for left ventricular mass. J Am Coll Cardiol 1997;29:641-7.

3. de Simone G, Daniels SR, Devereux RB et al. Left ventricular mass and body size in normotensive children and adults: assessment of allometric relations and impact of overweight. J Am Coll Cardiol 1992;20:1251-60.

4. de Simone G, Devereux RB, Roman MJ, Alderman MH, Laragh JH. Relation of obesity and gender to left ventricular hypertrophy in normotensive and hypertensive adults. Hypertension 1994;23:600-6.

5. de Simone G, Devereux RB, Daniels SR, Koren MJ, Meyer RA, Laragh JH. Effect of growth on variability of left ventricular mass: assessment of allometric signals in adults and children and their capacity to predict cardiovascular risk. J Am Coll Cardiol 1995;25:1056-62.

6. Lauer MS, Anderson KM, Larson MG, Levy D. A new method for indexing left ventricular mass for differences in body size. Am J Cardiol 1994;74:487-91.

7.a. Will the data be used for non-CVD analysis in this manuscript? ____ Yes __X__ No

b. If Yes, is the author aware that the file ICTDER02 must be used to exclude persons with a value RES_OTH = "CVD Research" for non-DNA analysis, and for DNA analysis RES_DNA = "CVD Research" would be used? ____ Yes ____ No
(This file ICTDER02 has been distributed to ARIC PIs, and contains the responses to consent updates related to stored sample use for research.)

8.a. Will the DNA data be used in this manuscript? ____ Yes __X__ No

8.b. If yes, is the author aware that either DNA data distributed by the Coordinating Center must be used, or the file ICTDER02 must be used to exclude those with value RES_DNA = "No use/storage DNA"? ____ Yes ____ No

9. The lead author of this manuscript proposal has reviewed the list of existing ARIC Study manuscript proposals and has found no overlap between this proposal and previously approved manuscript proposals either published or still in active status.
ARIC Investigators have access to the publications lists under the Study Members Area of the web site at: http://bios.unc.edu/units/cscc/ARIC/stdy/studymem.html

___X___ Yes _____ No