ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #189

1. Title (length 26):
Ventricular Ectopic Activity and Left Ventricular Hypertrophy

2. Writing Group:
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3. Time Table:
To be completed within one year as a part of doctoral dissertation research project under the direction of Dr. Gerardo Heiss.

4. Rationale:
Ventricular ectopic activity has been viewed as a marker of established heart disease, a marker of the severity of known disease, and an independent cause of sudden cardiac death. Despite evidence from recent clinical trials that suppression of ventricular ectopic activity may not decrease the risk of sudden death, controversy remains as ventricular ectopic activity on a two minute rhythm strip is associated with higher risk of sudden cardiac death in some studies.

The cross-sectional correlates of ventricular ectopic activity, particularly age, race and sex, are not fully defined. Previous population-based studies suggest that ventricular ectopic activity is associated with systolic blood pressure and age, but not with other traditional risk factors for coronary artery disease including smoking, total cholesterol, or body mass index. In clinical series of patients, left ventricular hypertrophy has been associated with frequency and complexity of ventricular ectopic activity. A better understanding of the putative association of ventricular ectopic activity with left ventricular mass, may suggest a link between left ventricular hypertrophy and sudden cardiac death. Since the distribution of ventricular mass may differ by age, race, and sex groups, clinically important differences in the relationship of ventricular ectopic activity to ventricular mass may be present for different age, race, and sex groups.

5. Main Hypothesis:
1) In the Visit 1 ARIC cohort, the presence of any ventricular ectopic activity on a two-minute rhythm strip is associated with electrocardiographic criteria for left ventricular mass.
2) In the Visit 1 ARIC cohort, the relationship of ventricular ectopic activity to ventricular mass does not differ by age, race, and sex.
3) The relationship hypothesized under #1 is independent of other potential correlates of ventricular ectopic activity including educational attainment, the presence of known coronary artery disease, known congestive heart failure, diabetes, systolic blood pressure, LDL cholesterol, HDL cholesterol, body mass index, cigarette smoking, and the use of cardioactive drugs (e.g. diuretics, beta blocking drugs, calcium blocking drugs, or digitalis).
4) There is a stronger relationship between complex forms of ventricular ectopic activity (e.g. more than one ectopic beat on the tracing, multiple morphologies of beats, etc.) and left ventricular mass than with the presence of simple ventricular ectopic activity alone.

6. Data:
Visit 1 data will be analyzed after exclusion of subjects with abnormalities of the 12-lead ECG that precludes diagnosis of left ventricular hypertrophy (e.g. bundle branch block, or Wolf-Parkinson-White syndrome).

A descriptive analysis will be performed first, including distributions of ventricular ectopic activity by age race, and sex group, and an analysis of ventricular ectopic activity by left ventricular mass for each age, race, and sex group.

Ventricular ectopic activity will be defined from the two-minute rhythm strip. The primary dependent variable is the presence of any ventricular ectopic activity versus no ventricular ectopic activity. Analyses will also be performed with the dependent variable on an ordinal scale of ventricular ectopic activity, as defined by frequency and complexity of ventricular ectopic activity (e.g. multiple morphologic beats). The independent variable for both analyses is left ventricular mass defined by the Dalhousie criteria. Covariates of this relationship include the variables identified above.