Manuscript #151

1. Title:
Heart Rate Variability and Atherosclerosis

2. Writing Group (list individual with responsibility first):
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3. Timeline:
Submit Proposal to Publications Committee 3/31/92
Complete Data received from URC 5/01/92
Complete analysis 9/01/92
Submit first draft to Publications Committee 12/01/92
Submit to Journal 3/01/93

4. Rationale:
It has long been recognized that the sympatho-vagal system plays an important role in cardiac regulation. Heart rate variability is considered as the only simple, noninvasive measurement of sympatho-vagal function. In animal studies, increased sympathetic activity or impaired vagal tone was associated with activation of macrophages and monocytes. They later interact with LDL cholesterol and enhance the development of atherosclerosis. In some clinical observations, coronary artery disease patients have lower heart rate variability. In ARIC Visit 1, two minutes each of resting and standing heart rate information were recorded according to standard protocol. We have developed programs to process heart rate data to provide both time and frequency domain heart rate variability indexes, which are commonly accepted as the markers of sympatho-vagal control of heart. Therefore, we can assess the association between heart rate variability and atherosclerosis in ARIC ultrasound atherosclerosis case-control pairs.

5. Main Hypothesis:
1. Increased sympathetic or impaired parasympathetic activity measured by heart rate variability is a risk factor of atherosclerosis.

6. Data (variables, source, inclusion/exclusion):
Visit 1 cohort data for the ARIC ultrasound case-control population are to be used. Demographic variables, heart rate data, known risk factors for CHD are also required.