ARIC MANUSCRIPT PROPOSAL FORM

Manuscript #529

1. Title: Distribution and associations of valvular lesions in the Jackson ARIC Cohort


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3. Timeline:
Final analysis will await completion of the echo data set.

4. Background/Rationale:
A number of factors have been reported to contribute to the development of valvular heart disease including heredity/congenital factors, aging, rheumatic fever, and other factors1. Echocardiography has provided a method to evaluate valvular lesions non-invasively. In this Cardiovascular Health Study of an elderly cohort of predominantly white participants, Stewart et.al. evaluated the association of atherosclerotic risk factors with calcified aortic valve disease and found that increased age, male gender, high Lp(a), increased LDL cholesterol, hypertension, height, and current smoking were predictive of degenerative aortic valve disease2. Studies have suggested that mitral annular calcification is associated with feminine gender, age, hypertension, obesity, and atrial fibrillation as well as diabetes, congestive heart failure, and coronary heart disease. In an asymptomatic Japanese population, age was found to be associated with echocardiographically detected valvular regurgitation and multi-valvular regurgitation4. Aortic root dilation due to hypertension has been hypothesized to contribute to aortic regurgitation, but there have been conflicting echocardiographic findings. While rheumatic fever is the contributing factor in many cases of mitral regurgitation, other cases result from myocardial ischemia. Macchi evaluated 110 healthy subjects by echocardiography and found an inverse association between age and pulmonary insufficiency and significant positive associations between age and mitral and aortic insufficiency white others found only a positive association between prevalence of different types of valvular regurgitation and increasing age7-9. A study of valvular regurgitation in athletes, found an increase in prevalence of regurgitation in athletes compared to controls. The ARIG Jackson echocardiography data provides an opportunity to look at the prevalence of valvular heart disease in a population-based African-American cohort.

5. Main Study Questions/Objectives:
(1) What is the prevalence of valvula, lesions including thickening of aortic and mitral valve leaflets (sclerosis), valvular regurgitation, mitral annular calcification, aortic root fibrocalcific change, and mitral valve prolapse in African-Americans? Does prevalence differ by sex and/or age?

(2) Determine the clinical correlates of the valve lesions: Potential variables include age, gender, hypertension (or systolic blood pressure), diabetes, atrial fibrillation, Lp(a), cholesterol, LDL, smoking, diagnostics of heart failure, diagnosis of MI, height, physical activity level, BMI and lung disease.
6. Data:

Visit 1 gender, atrial fibrillation (ERHA7-1 2X, total cholesterol, HDL, Lp(a), physical activity at work (work 103), sport (sprt 101), leisure (LISR_101).

Visit 3: Age (v3corage1), systolic blood pressure (SBPC22), v3 hypertension, diabetes, cigarette smoking, ethanol, BMI, report doctor diagnosis of heart failure (PHXA8J), heart attack (PHXA81), or lung disease (PI4XA8L)

Echo data will be from the ECHA dataset and include: aortic leaflets (echa15), mitral leaflets (echa16), mitral regurgitation (echa17), aortic regurgitation (echa18), tricuspid regurgitation (echa19), pulmonary regurgitation (echa20), mitral annular calcification (echa21), mitral valve prolapse (echa22), and aortic fibrocalcific change (echa23)

References


Tennenbaum, Leor Jr Motro M, et al Improved posterobasal segment function after thrombolysis is associated with decreased incidence of significant mitral regurgitation in a first inferior myocardial infarction J of Am Col Cardiol 1 995,25:1 558-63.


