**NONINVASIVE ULTRASOUND EVALUATION OF SUBCLINICAL ATHEROSCLEROSIS: PROGRESS AND PITFALLS**

**J.M. Gardin**

Hackensack University Medical Center, Hackensack, NJ, USA

Noninvasive imaging modalities, e.g., ultrasound, computed tomography, and magnetic resonance, can be used to evaluate subclinical atherosclerosis. Carotid artery ultrasound intima-medial thickness (IMT) measurements are reported to add predictive value to traditional risk factors for predicting myocardial infarction and stroke. We have found that addition of femoral artery to carotid artery ultrasound increased detection of plaques by 31% in men and 56% of women aged 50-64 years (Postley, ... Gardin, et al. J Am Soc Echocardiogr. 2009;22:1145-51.). Recently, we reported the Lifetime Risk algorithm was superior to both 10-year and 30-year Framingham Risk Score (FRS) algorithms in assigning subjects with carotid or femoral plaques to the high-risk FRS category for women aged 20-to-60 years and for men aged </= 50 years (Postley, ... Gardin. J Am Coll Cardiol. 2012;59:A420.).The progression rate of carotid IMT is associated with relative risk for cardiovascular disease (CVD) clinical outcomes. Reduction in carotid IMT progression in lipid-lowering trials has been associated with a reduction in CVD events. However, a recent meta-analysis (Constanzo, et al. J Am Coll Cardiol. 2010;56:2006-20.) questioned the reported association of regression or slowed progression of carotid IMT with reduction in CVD events. Remaining challenges include the need:

(1) to define independent predictive value of each imaging measure over clinical (e.g., Framingham) risk assessments and newer serologic markers;

(2) to determine comparative performance of imaging modalities;

(3) for additional imaging measures of plaque bioactivity; and

(4) to establish that imaging techniques favorably impact CVD outcomes in a cost-effective manner.