OUTCOMES OF LESIONS WITH POSITIVE REMODELING USING CORONARY MULTI-DETECTOR ROW COMPUTED TOMOGRAPHY DATA ANALYSIS

ACC Moderated Poster Contributions
McCormick Place South, Hall A
Saturday, March 24, 2012, 11:00 a.m.-Noon

Session Title: Imaging: CT - Prognosis
Abstract Category: 24. Imaging: CT
Presentation Number: 1108-434

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Background: Computed tomography (CT) angiography is a noninvasive imaging technique for assessing not only coronary artery stenosis but also plaque characteristics including plaque “remodeling”, with plaques that show substantial positive remodeling potentially having a higher risk for cardiovascular events than plaques with lesser extent of remodeling.

Methods: Between September 2005 and February 2010, 557 consecutive patients underwent 64-slice coronary CTA. Among these patients, 188 patients who had coronary artery disease (more than 50% diameter stenosis) were enrolled. Based on coronary artery remodeling index, the study population was divided into 2 groups: patients with negative remodeling (77.7%), and patients with positive remodeling (22.3%).

Results: Among the 188 patients, one cardiac death occurred because of fatal ST segment elevation myocardial infarction (STEMI) in positive remodeling group (PRG), and one with non-ST segment elevation myocardial infarction (NSTEMI) occurred in negative remodeling group (NRG). Nine patients (21.4%) developed unstable angina in PRG and 10 patients (6.9%) developed unstable angina in NRG (p<0.016). Eleven patients (7.5%) in NRG experienced the primary outcome as compared with 10 patients (26.2%) in PRG (p=0.009).

Conclusions: 64-slice CTA could provide promising information for acute coronary events by identifying positive remodeling plaques and plaque characteristics in significant coronary artery lesions. These characteristics indicate increased risk for subsequent coronary events and are useful for the detection of “vulnerable plaque”.