ACC.12
61st Annual Scientific Session & Expo
ACC-i2 with TCT innovation in intervention

E1352
JACC March 27, 2012
Volume 59, Issue 13

Imaging

INCREASED PULSE WAVE VELOCITY MEASURED BY COMPUTED TOMOGRAPHY IS ASSOCIATED WITH CORONARY ATHEROSCLEROSIS, AND MORTALITY

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

Session Title: Imaging: CT - Novel Applications of Non-Contrast CT
Abstract Category: 24. Imaging: CT
Presentation Number: 1112-576

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Background: Increased pulse wave velocity (PWV), marker of vascular function, is associated with cardiovascular risk factors. This study investigates the long-term clinical outcome of subjects with and without increased PWV.

Methods: Two hundred and forty eight subjects (aged 65±8 years, 46% women, and 100% statin therapy) underwent computed tomography angiography (CTA) and were prospectively followed. PWV measured in CTA timing bolus phase was calculated as: the ratio of distance over time difference between contrast enhancements of Ascending and Descending Aorta (m/sec). Coronary artery disease was defined as luminal stenosis 1-49% (non-obstructive) and 50%+ (obstructive). Major adverse cardiac event (MACE) was defined as myocardial infarction or cardiovascular death.

Results: PWV increased proportionally form subjects with normal coronaries (8.1±0.88) to diseased coronaries (10.1±0.89) (P=0.001). During a median follow up of 36-month, the MACE rate was 10.1%. The adjusted relative risk of MACE was 4.95 (95%CI 1.04-9.16), and 8.02 (95%CI 1.73-17.09) in intermediate and highest tertiles of PWV as compared to lowest tertile of PWV, respectively. The event free survival rate decreased significantly with increase in PWV across each CAD category from 100% in normal coronaries with lowest PWV tertile to 75% in obstructive CAD with highest PWV tertile. (Figure)

Conclusion: Increased PWV is independently associated with coronary atherosclerosis and predicts MACE.