A70.E658
JACC March 9, 2010
Volume 55, issue 10A

IMAGING AND DIAGNOSTIC TESTING

UTILITY OF A MULTIPLE BIOMARKER INDEX IN ASYMPTOMATIC ADULTS DEPENDS ON ATHEROSCLEROTIC BURDEN

ACC Poster Contributions
Georgia World Congress Center, Hall B5
Sunday, March 14, 2010, 9:30 a.m.-10:30 a.m.

Session Title: CT Coronary Calcium and Noncoronary CT Applications
Abstract Category: CT Coronary Calcium and Noncoronary CT Applications
Presentation Number: 1037-226

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Background: The utility of biomarkers in prediction of cardiac events in asymptomatic adults is unclear. We examined if the predictive value of biomarkers may depend on the atherosclerotic burden.

Methods: We studied 1302 asymptomatic persons (mean age 59 years, 47% female) with coronary calcium (CAC) scans, measures of biomarkers including BNP, IL-6, hs-CRP, myeloperoxidase, and plasminogen activator-1, and follow-up for coronary heart disease (CHD) and cardiovascular disease (CVD) events over 4.0±0.7 years. Cardiac event risk was determined for those above versus below the median biomarker score (1 point for each biomarker in the highest quartile), stratified by CAC score (<10, 10-99, and 100+). Cox regression examined the combined association of the biomarker index and CAC on risk of events.

Results: Overall, persons at or above (2-5) (high) vs. below the median (0-1) (low) biomarker index had greater rates of CHD (4.5% vs. 2.0%, p=0.01) and CVD (4.9% vs. 2.6%, p=0.03) with unadjusted HRs (95% CI) of 2.4(1.2-4.5) and 2.0 (1.1-3.5), respectively, however these were attenuated after risk factor adjustment. The biomarker index stratified risk in those with CAC scores of 10-99; in those with higher levels of CAC (>100), event risk was elevated regardless of biomarker level (table).

Hazard Ratios (HRs) for CHD and CVD Events by CAC / Biomarker Category				
CAC / Biomarker Category	CHD events, % (n)	HR (95% CI)	CVD events, % (n)	HR (95% CI)
CAC 0-9 (all)	0.4 (3)	1.0 (Reference)	0.6 (4)	1.0 (Reference)
CAC 10-99, low biomarkers	0.6 (1)	1.2 (0.1-11.4)	2.3 (4)	3.3 (0.8-13.2)
CAC 10-99, high biomarkers	5.8 (6)	10.1 (2.5-41)**	5.8 (6)	7.2 (2.0-26)**
CAC >100, low biomarkers	8.1 (13)	16.6 (4.5-62)**	8.8 (14)	12.3 (3.9-40)**
CAC >100, high biomarkers	11.5** (15)	18.8 (5.0-70)**	13.0** (17)	14.9 (4.7-48)**

*p<0.05, ** p<0.01 comparing event rates across CAC/biomarker categories, or for HR's relative to reference category.

Conclusion: Biomarkers may stratify risk of cardiac events best in persons with mild atherosclerosis.