ANGIOTENSIN II TYPE 1 RECEPTOR POLYMORPHISM IS ASSOCIATED WITH BASELINE HEMODYNAMICS AMONG PATIENTS WITH CORONARY ARTERY DISEASE AND EXERCISE INDUCED MYOCARDIAL ISCHEMIA: RESULTS FROM THE PSYCHOPHYSIOLOGICAL INVESTIGATIONS OF MYOCARDIAL ISCHEMIA STUDY

ACC Poster Contributions
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Background: Stress is known to cause increased activation of the sympathetic nervous system, which contributes to increased baseline vascular tone, and may be one of the mechanisms by which stress increases vulnerability to myocardial ischemia or other adverse cardiovascular events among patients with coronary artery disease (CAD). Baseline vascular tone is influenced by many factors. We tested the hypothesis that individual genetic variants involved in the renin-angiotensin-aldosterone system (RAAS) would influence resting hemodynamic tone among patients with CAD.

Methods: Samples were from 65 patients enrolled in the Psychophysiological Investigations of Myocardial Ischemia study, a National Institutes of Health sponsored, multicenter study designed to assess psychological and physiological correlates of stress among patients who had documented CAD and exercise-induced ischemia. Resting hemodynamic values, using baseline (after 30 minutes of rest) measures of the rate pressure product (RPP), were obtained and compared to a synonymous polymorphism in exon (rs5182) of the angiotensin II type 1 receptor (AGTR1) gene by using the GoldenGate Assay on Illumina VeraCode System.

Results: The frequency of rs5128 GG, GA, and AA genotypes was 32.8%, 43.8%, and 23.4% respectively and the frequency of A allele was 23.4%. Patients with the AA genotype had significantly higher baseline RPP than patients with GG and GA genotypes (mean baseline RPP ± SD: 11,482 ± 2969.2 vs. 9,745 ± 1,734.6; P=0.045).

Conclusions: Patients homozygote for A allele of this common genetic polymorphism of the angiotensin II type 1 receptor had a significantly higher baseline RPP, which may place this group at higher risk for future adverse cardiac events.