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## QUALITY OF CARE AND OUTCOMES ASSESSMENT

**ASSOCIATIONS BETWEEN A SINGLE NUCLEOTIDE POLYMORPHISM IN CHROMOSOME 9P21 AND ARTERIAL STIFFNESS IN THE ATHEROSCLEROSIS RISK IN COMMUNITIES STUDY**

ACC Poster Contributions

Ernest N. Morial Convention Center, Hall F

Tuesday, April 05, 2011, 9:30 a.m.-10:45 a.m.

Session Title: Genetic Associations with Cardiovascular Phenotypes and Endophenotypes

Abstract Category: 48. Genetics and Clinical Outcomes

Session-Poster Board Number: 1178-160

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**Background:** A clear association between a putative single nucleotide polymorphism (9p21) (rs10757274) in chromosome 9 and risk of coronary heart disease (CHD) has been established but the mechanism of increased risk is still unclear. Small studies in older adults indicate that aortic distensibility and compliance may be associated with 9p21. We examined the association between 9p21 and six arterial stiffness parameters obtained by carotid ultrasound. These variables were also tested as possible confounders in relationship between 9p21 and incident CHD among 7745 white ARIC participants.

**Methods:** 9p21 was defined as a dichotomous variable (1 or 2 risk alleles versus 0). Differences in arterial stiffness measures (continuous variables) between those with and without the 9p21 risk allele were examined using t-tests from linear regression models (table). Hazard ratios (95%CI) were calculated to examine if the arterial stiffness measures changed the association between 9p21 and incident CHD

**Results:** There were no differences in any of the arterial stiffness parameters between those with and without the risk allele ( $P > 0.1$  for all) (table). As expected, the association between 9p21 and incident CHD remained unchanged [HR 1.2; 95% CI 1.1, 1.3] when the arterial stiffness parameters were included.

**Conclusion:** No significant associations between 9p21 and parameters of arterial stiffness were noted suggesting that arterial stiffness is unlikely to explain the association between 9p21 and CHD.

Associations between 9p21 allele status and arterial stiffness, measured using six parameters\*

	t-Test	P value
Arterial Strain	0.62	0.53
Compliance	0.22	0.82
Distensibility	0.28	0.78
Stiffness Index	0.38	0.71
Pressure Strain Modulus (Ep)	0.37	0.71
Young's elastic modulus	0.18	0.86

\*Adjusted for age, gender, systolic blood pressure, anti-hypertensive medication use, smoking, total cholesterol, HDL-cholesterol and diabetes

Arterial strain (CAS) =  $(DS - DD) / DD$ ,

compliance =  $\pi * (DS2 - DD2) / (4 * PP)$

distensibility =  $100 * (DS2 - DD2) / (PP * DD2)$

stiffness index =  $\log(SBP / DBP) / CAS$

Pressure strain modulus =  $PP / CAS$

Young's Elastic Modulus =  $(0.5 * DD / CIMT) * Ep$

DS = peak systolic arterial diameter

DD = end diastolic arterial diameter

SBP = systolic blood pressure

DBP = diastolic blood pressure

PP = pulse pressure