

Genetic Study: Coronary Artery Calcification in the FHS SCAN Study

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Abstract

Coronary Heart Disease (CHD) is the leading cause of death and a major cause of illness and disability among American men and women. Coronary Artery Calcification (CAC) is an established marker of CHD. Three phenotypes: 1) coronary artery calcification, 2) aortic calcification and 3) coronary + aortic calcification were explored. Calcification begins 5-10 years earlier in males than females. Those people below these sex cutoffs were removed from the analysis. Approximately 1/3 of the data values were zero. Those zeros were imputed from the tail of a transformed-normal distribution. A quantitative Multiple Imputation and Relative Imputation method was used to determine heritabilities for the phenotypes. Heritabilities for Caucasians were determined: phenotype 1 ~ 45%, phenotype 2 ~ 55% and for phenotype 3 ~ 55%. These heritabilities provide justification for a genome-wide quantitative linkage analysis under Multiple Imputation and Relative Imputation Methods for Caucasians and African Americans for identifying regions which may harbor genes that contribute to arterial calcification.