

Abstract

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Apolipoprotein E polymorphisms predict low density lipoprotein cholesterol levels and carotid artery wall thickness but not incident coronary heart disease in 12,491 ARIC study participants.

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BACKGROUND: Elevated levels of low density lipoprotein (LDL) cholesterol is a well-established risk factor for cardiovascular disease, and recent advancements have provided evidence that carotid artery intima-media thickness (IMT) is associated with increased occurrence of cardiovascular events.

OBJECTIVE: Apolipoprotein E (ApoE) has been widely studied in regard to its role in lipid transport and metabolism, but the role that ApoE genetic variation plays in relation to carotid artery IMT and risk of incident coronary heart disease remains a subject of debate.

METHODS: In 1987-2001, the authors examined the effect of each ApoE allele (epsilon2, epsilon3, epsilon4) on LDL cholesterol and carotid IMT, as well as the association with coronary heart disease risk, in 12,491 participants of the US Atherosclerosis Risk in Communities Study. ApoE epsilon2, epsilon3, and epsilon4 allele frequencies were determined, respectively, in Whites (0.08, 0.77, 0.15) and African Americans (0.11, 0.67, 0.22).

RESULTS AND CONCLUSIONS: These alleles did not predict incident coronary heart disease in either racial group. The ApoE epsilon2 allele was associated with lower LDL cholesterol and the epsilon4 allele with higher LDL cholesterol in both Whites and African Americans. The ApoE epsilon2 and epsilon4 alleles were associated with carotid IMT measures in both racial groups, but, after adjusting for lipid parameters, only the epsilon4 allele was associated with carotid IMT measures in African Americans.

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