Abstract

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Influence of apolipoprotein E, smoking, and alcohol intake on carotid atherosclerosis: National Heart, Lung, and Blood Institute Family Heart Study.

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BACKGROUND AND PURPOSE: Apolipoprotein E (apoE) isoforms and lifestyle factors play an important role in the development of coronary heart disease. The association of apoE and carotid atherosclerosis remains controversial.

METHODS: We investigated the relation of apoE, cigarette smoking, alcohol drinking, and their interaction with carotid atherosclerosis on 544 individuals free of coronary heart disease in the National Heart, Lung, and Blood Institute (NHLBI) Family Heart Study. Atherosclerotic lesions of the carotid arteries were detected through high-resolution ultrasound.

RESULTS: Subjects in the apoE4 group had lower blood pressure, lower high-density lipoprotein cholesterol, and higher low-density lipoprotein cholesterol. In a multivariate logistic regression model, apoE isoforms and alcohol consumption were not significantly associated with the prevalence odds of carotid atherosclerosis (P=0.94 and 0.98, respectively, for trend). In contrast, compared with those who never smoked, the prevalence odds ratios for carotid atherosclerosis were 1.7 [95% confidence interval (CI),1.1 to 2.7], 2.8 (95% CI, 1.2 to 6.2), and 1.9 (95% CI, 0.7 to 5.5) for former smokers, current smokers of 1 to 20 cigarettes per day, and current smokers of >20 cigarettes day, respectively (P=0.0018 for trend). We did not find evidence of an interaction between apoE and alcohol consumption. Our data suggested a synergistic effect between the apoE allele epsilon(4) and smoking on carotid atherosclerosis: odds ratios were 1.7 (95% CI, 0.8 to 3.6) for smoking alone, 1.0 (95% CI, 0.6 to 1.8) for epsilon4 alone, and 3.7 (95% CI, 1.1 to 3.6) for the joint presence of the apoE allele epsilon4 and smoking.

CONCLUSIONS: Smoking but not alcohol consumption or ApoE is associated with an increased odds of carotid atherosclerosis. Our data suggest a synergistic effect between the apoE allele epsilon4 and smoking on carotid atherosclerosis.

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