
Low plasma HDL-cholesterol: Is it also a risk factor for lung cancer?

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Objective: The objective of this study was to examine prospectively the association of baseline plasma high density lipoprotein cholesterol (HDL-C) with incident lung cancer in members of the Atherosclerosis Risk in Communities (ARIC) cohort.

Methods: The sample consisted of 14,793 ARIC participants, aged 45-65, who received a diagnosis of lung cancer from 1987 to 2000. Lung cancer cases were ascertained through medical records review and linkage to state cancer registries. Association of low HDL-C (men: < 40 mg/dL, women: < 50 mg/dL) and 259 incident lung cancer cases was estimated using Cox proportional hazard models adjusted for age, race, gender, body mass index, smoking status, pack-years of cigarette smoking, triglycerides, physical activity, and alcohol consumption at baseline.

Results: Low HDL-C was associated with an increased incidence of lung cancer in the total sample ((Hazard Ratio (HR): 1.45, 95% confidence interval (CI) 1.10, 1.92) and among former smokers (HR: 1.77, 95% CI 1.05, 2.97), but not among the current smokers (HR: 1.04, 95% CI 0.74, 1.47). The number of lung cancer cases among never smokers in this study was too small (n=13) for separate determination of associations. Unadjusted lung cancer incidence was inversely associated with HDL-C as a continuous variable, however the trend for this association was not significant after adjustment for covariates (total sample HR: 0.92, 95% CI 0.78, 1.08, former smokers HR: 0.87, 95% CI 0.62 1.22). Elimination of cases occurring within five years of baseline did not appreciably change the point estimates, suggesting lack of reverse causality.

Conclusion: The strength of smoking as a risk factor for lung cancer among the current smokers may mask an association with HDL-cholesterol. Smoking decreases plasma HDL-C levels, further reducing the likelihood of making a meaningful estimate of the association in that sample group. The modest association of low plasma HDL-C, a traditional cardiovascular disease risk factor, with greater incident lung cancer underscores potential similarities in etiologies of cancer and cardiovascular disease and the importance of antioxidant and other protective properties of HDL-cholesterol.