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Clinical Investigation

The Association Between Low-Density Lipoprotein Cholesterol and Incident Atherosclerotic Cardiovascular Disease in Older Adults: Results From the National Institutes of Health Pooled Cohorts

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Abstract

BACKGROUND/OBJECTIVES

Elevated low-density lipoprotein cholesterol (LDL-C) in early adulthood is associated with increased risk of atherosclerotic cardiovascular disease (ASCVD). The strength of the association between LDL-C and ASCVD among older adults, however, is less understood.

DESIGN

We examined individual-level cohort data from the National Institutes of Health Pooled Cohorts (Framingham Study, Framingham Offspring Study, Multi-Ethnic Study of Atherosclerosis, and Cardiovascular Health Study), which prospectively measured CVD risk factors and incident disease.

SETTING

Prospective cohort study.

PARTICIPANTS

Adults, aged 75 years or older, free of ASCVD.

MEASUREMENTS

We evaluated the associations between LDL-C and incident ASCVD (stroke, myocardial infarction, and cardiovascular death) in unadjusted analysis and in multivariable-adjusted Cox proportional hazards models. We assessed 5-year Kaplan-Meier ASCVD event rates in patients with and without hyperlipidemia (LDL-C ≥130 mg/dL or on lipid-lowering medications), stratified by the number of other risk factors, including smoking, diabetes, and hypertension.

RESULTS

We included 2667 adults, aged 75 years or older (59% female), free of ASCVD; median age was 78 years, with median LDL-C of 117 mg/dL. In both unadjusted and adjusted analyses, there was no association between LDL-C and ASCVD (adjusted hazard ratio = 1.022; 95% confidence interval = 0.998-1.046; *P* = .07). Among adults without other risk

factors (free of smoking, diabetes, and hypertension), event rates were similar between those with and without hyperlipidemia (Kaplan-Meier rates = 5.8% and 7.0%, respectively). Among adults with one or two or more other risk factors, the presence of hyperlipidemia was also not associated with 5-year CVD event rates (Kaplan-Meier rates = 12.8% vs 15.0% [*P* = .44] for one other risk factor and 21.9% vs 24.0% [*P* = .59] for two or more other risk factors).

CONCLUSION

Among a well-characterized cohort, LDL-C was not associated with CVD risk among adults aged 75 years or older, even in the presence of other risk factors. **J Am Geriatr Soc 67:2560–2567, 2019**

Supporting Information

Filename	Description
jgs16123-sup-0001-supinfo.docx Word 2007 document , 102.6 KB	**Supplementary Figure S1**. Association between LDL-C and ASCVD risk (including those on lipid-lowering therapy). **Supplementary Table S1**. Distribution of deaths by deciles of LDL-C and the ratio of noncardiovascular to cardiovascular deaths. **Supplementary Table S2**. Kaplan-Meier estimates and cumulative incidence estimates by decile of LDL-C. **Supplementary Table S3**. Baseline characteristics by number of risk factors. **Supplementary Table S4**. The 5-year ASCVD risk among ≥75-year-old patients with zero, one, or two risk factors, with and without hyperlipidemia, with patients on lipid-lowering therapy excluded.

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