

Abstract

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Leukocyte telomere length is associated with HDL cholesterol levels: The Bogalusa heart study.

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OBJECTIVE: This study examined the relationships of high-density lipoprotein cholesterol (HDL-C) with LTL and the rate of its shortening.

BACKGROUND: Diminished levels of HDL-C are associated with an increased risk for atherosclerosis. Shortened leukocyte telomere length (LTL) also entails an increased atherosclerotic risk.

METHODS: We studied 472 Whites and 190 African Americans (AfAs) enrolled in the Bogalusa Heart Study. Subjects were examined serially 3-13 times for HDL-C over an average period of 27.8 years from childhood through young adulthood. LTL was measured twice during adulthood at a mean age of 31.5 years (baseline exam) and 37.8 years (follow-up exam). HDL-C trajectories with age were constructed and the area under the curve (AUC) was used as a measure of cumulative HDL-C levels.

RESULTS: Multivariate regression analyses showed that LTL was positively associated with HDL-C in childhood (regression coefficient (bp per mg/dL) $\beta=3.1$, $p=0.024$), adulthood ($\beta=4.4$, $p=0.058$) and AUC from childhood to adulthood ($\beta=12.2$, $p=0.0004$) in the combined sample of AfAs and Whites. The association between LTL and HDL-C AUC was stronger in females ($\beta=18.5$, $p<0.001$) than in males ($\beta=2.9$, $p=0.590$) (difference in slopes $p=0.037$). A slower rate of LTL shortening per year was associated with higher HDL-C AUC in the total sample ($p=0.033$), adjusting for baseline LTL.

CONCLUSIONS: As HDL-C exerts anti-oxidant and anti-inflammatory effects and LTL registers the accruing burden of oxidative stress and inflammation, the association between HDL-C and LTL might be explained by the lifelong status of oxidative stress and inflammation.

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