

Abstract

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Homocysteine levels and leukocyte telomere length.

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OBJECTIVE: Elevated plasma homocysteine is a risk factor for vascular diseases, possibly due to homocysteine-mediated increase in oxidative stress and inflammation. As leukocyte telomere length (LTL) registers the cumulative oxidative stress and inflammation, we examined the relationship between homocysteine and LTL.

METHODS: LTL was measured using the Southern blot method. The relationship between LTL and homocysteine levels was considered for confounding with the following covariates: age, sex, smoking, obesity, physical activity, menopause, hormone replacement therapy use and creatinine clearance.

RESULTS: 1,319 healthy subjects were recruited from a population-based cohort. LTL was negatively correlated with plasma homocysteine levels, after adjustment for smoking, obesity, physical activity, menopause, hormone replacement therapy use and creatinine clearance. The difference in multiply-adjusted LTL between the highest and lowest tertile of homocysteine levels was 111 base pairs ($p=0.004$), corresponding to 6.0 years of telomeric aging. This relationship was further accentuated by decreased concentrations of serum folate and increased levels of C-reactive protein.

CONCLUSIONS: Increased homocysteine levels are associated with shortened LTL, further supporting the tenet that LTL is an index of cardiovascular risk.

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