

Abstract

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Shorter telomeres are associated with mortality in those with APOE epsilon4 and dementia.

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OBJECTIVE: Reduced telomere length may be a marker of biological aging. We hypothesized that telomere length might thus relate to increased risk for dementia and mortality.

METHODS: This nested case-control study used stored leukocyte DNA from 257 individuals (mean age, 81.4 +/- 7.9 years; 64.6% female; 44.7% Hispanic, 33.5% non-Hispanic black, and 21.8% non-Hispanic white). Our assay used real-time polymerase chain reaction, with two separate reactions amplifying telomere sequence and reference single copy gene (ribosomal-protein-P0), providing a calculated telomere-to-single copy gene (T/S) ratio.

RESULTS: Mean telomere length was shorter among subjects dying during follow-up than in those surviving (0.453 +/- 0.211 vs 0.525 +/- 0.226 [± standard deviation]; $p < 0.009$). It was also shorter in those with Alzheimer's disease compared with control subjects (0.458 +/- 0.207 vs 0.516 +/- 0.229; $p < 0.03$). For participants with Alzheimer's disease, compared with those with the longest telomeres, the mortality odds ratio (OR) was 4.8 (95% confidence interval [CI], 1.7-13.8) in those with intermediate-length telomeres and 7.3 (95% CI, 2.4-22.0) in those with the shortest telomeres. The presence of an epsilon4 allele also increased the mortality OR, with an OR of 5.8 (95% CI, 1.3-26.4) for intermediate-length telomeres and an OR of 9.0 (95% CI, 1.9-41) for the shortest telomeres.

INTERPRETATION: Our findings suggest that leukocyte telomere length is related to both dementia and mortality and may be a marker of biological aging.

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