

Abstract

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Telomere length and mortality: a study of leukocytes in elderly Danish twins.

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OBJECTIVE: Leukocyte telomere length, representing the mean length of all telomeres in leukocytes, is ostensibly a bioindicator of human aging. The authors hypothesized that shorter telomeres might forecast imminent mortality in elderly people better than leukocyte telomere length.

METHODS: They performed mortality analysis in 548 same-sex Danish twins (274 pairs) aged 73-94 years, of whom 204 pairs experienced the death of one or both co-twins during 9-10 years of follow-up (1997-2007). From the terminal restriction fragment length (TRFL) distribution, the authors obtained the mean TRFL (mTRFL) and the mean values of the shorter 50% (mTRFL(50)) and shortest 25% (mTRFL(25)) of TRFLs in the distribution and computed the mode of TRFL (MTRFL). They analyzed the proportions of twin pairs in which the co-twin with the shorter telomeres died first.

RESULTS: The proportions derived from the intrapair comparisons indicated that the shorter telomeres predicted the death of the first co-twin better than the mTRFL did (mTRFL: 0.56, 95% confidence interval (CI): 0.49, 0.63; mTRFL(50): 0.59, 95% CI: 0.52, 0.66; mTRFL(25): 0.59, 95% CI: 0.52, 0.66; MTRFL: 0.60, 95% CI: 0.53, 0.67). The telomere-mortality association was stronger in years 3-4 than in the rest of the follow-up period, and it grew stronger with increasing intrapair difference in all telomere parameters.

CONCLUSIONS: Leukocyte telomere dynamics might help explain the boundaries of the human life span.

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