Abstract

Lancet. 2004 Feb 14;363(9408):507-10.

Telomere length and possible link to X chromosome.

Nawrot TS, Staessen JA, Gardner JP, Aviv A.

Study Coordinating Centre, Laboratory of Hypertension, Department of Molecular and Cardiovascular Research, University of Leuven, Campus Gasthuisberg, Herestraat 49, B-3000 Leuven, Belgium.

BACKGROUND: Because telomeres are eroded during mitosis, telomere length indicates the replicative history of human somatic cells. Clinical markers of ageing--such as pulse pressure and survival--are associated with telomere length. On the basis of findings of studies in twins, telomere length seems to be familial, but little is known about its mode of inheritance. We aimed to investigate the inheritance of telomere length.

METHODS: We measured terminal restriction fragment (TRF) length in white-blood-cell DNA taken from individuals from the family-based cohort of the Flemish Study on Environment, Genes, and Health Outcomes.

FINDINGS: We recorded no correlation in sex and age adjusted TRF length between spouses (r=-0.05; p=0.70) nor between fathers and sons (r=-0.16; p=0.35). By contrast, we noted robust correlations in TRF length between fathers and daughters (r=0.60; p<0.0001); between mothers and sons (r=0.41; p=0.0017) and daughters (r=0.59; p<0.0001); and among siblings (r> or =0.61; p< or =0.0004).

INTERPRETATION: X-linked inheritance of TRF length is the most probable explanation for our findings. Pending confirmation, our observations suggest that the process of ageing might be an X-linked trait.

PMID: 14975611