

Abstract

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Telomere attrition is associated with inflammation, low fetuin-A levels and high mortality in prevalent haemodialysis patients.

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INTRODUCTION: Chronic kidney disease (CKD) predisposes to a 10- to 20-fold increased cardiovascular risk. Patients undergo accelerated atherogenesis and vascular ageing. We investigated whether telomere attrition, a marker of cell senescence, contributes to this increased mortality risk.

METHODS: This is a cross-sectional study in prevalent haemodialysis patients [n = 175; 98 Males; median (range) age: 66 (23-86) years]. Biochemical markers of oxidative stress and inflammatory status were measured in relation to the patient's leucocyte telomere length. Overall mortality was assessed after a median of 31 (range 2-42) months.

RESULTS: Telomere length was shorter in CKD men, despite women being older (average +/- SD 6.41 +/- 1.23 vs. 6.96 +/- 1.48 kb, P = 0.002). Telomere length was associated with age (rho = -0.18, P = 0.01), fetuin-A (rho = 0.26, P = 0.0004), high-sensitivity C-reactive protein (rho = -0.21, P = 0.005) and IL-6 (rho = -0.17, P = 0.02). In a multivariate logistic regression (pseudo r(2) = 0.14), telomere length was associated with age >65 years (odds ratio: 2.11; 95% CI: 1.10, 4.06), sex (2.01; 1.05, 3.86), fetuin-A (1.85; 0.97, 3.50) and white blood cell count (2.04; 1.02, 4.09). Receiver operating characteristic curves identified a telomere length < 6.28 kb as a fair predictor of mortality. Finally, reduced telomere length was associated with increased mortality, independently of age, gender and inflammation (likelihood ratio 41.6, P < 0.0001), but dependently on fetuin-A levels.

CONCLUSION: Age and male gender seem to be important contributors to reduced telomere length in CKD patients, possibly via persistent inflammation. Reduced telomere length also contributes to the mortality risk of these patients through pathways that could involve circulating levels of fetuin-A.

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