

Abstract

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Mean leukocyte telomere length shortening and type 2 diabetes mellitus: a case-control study.

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OBJECTIVE: Recent data have implicated leukocyte telomere length shortening as a potential risk predictor for type 2 diabetes mellitus (T2DM) and its associated phenotypes. However, to date, epidemiologic data are scarce.

METHODS: Using a case-control study from a community-based population sample of the Boston metropolitan area (all whites: 424 controls and 432 cases), we examined the relationship of mean leukocyte telomere repeat copy number to single gene copy number (TSR) and T2DM. Associations of log(e)-transformed TSR with age, race, sex, body mass index (BMI), current smoking status, fasting insulin levels, fasting glucose levels, and hemoglobin A1c (HbA1c) were examined by multivariable linear regression analysis. A logistic regression analysis was performed to evaluate the association of log(e)-transformed TSR with T2DM with or without adjustment for potential confounders.

RESULTS: The log(e)-transformed TSR was significantly shorter in the white cases than the white controls ($P=0.003$). In a multivariable linear regression analysis, an inverse association of log(e)-transformed TSR with BMI was observed ($P=0.04$). Furthermore, in a multivariable logistic regression analysis, decreased log(e)-transformed TSR was significantly associated with T2DM (adjusted odds ratio=1.748; 95% confidence interval [CI]=1.015-3.012; $P=0.044$).

CONCLUSIONS: In summary, the current investigation has shown an association of mean leukocyte telomere length shortening with T2DM in white subjects. If corroborated in other studies, our findings suggest the potential importance of telomere biology in T2DM.

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