

Abstract

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Leukocyte telomere length is associated with complications of Type 2 diabetes mellitus.

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OBJECTIVE: The key goal of diabetes management is to prevent complications. While the patho-physiological mechanisms responsible for diabetes complications have been extensively studied, at present it is impossible to predict which patient with diabetes could develop complications. In recent years, the role of leukocyte telomere length in the pathogenesis of cardiovascular disease and Type 2 diabetes has been investigated. However, studies aiming to investigate the role of telomeres in the development and progression of Type 2 diabetes, as well as diabetic complications, are still lacking. As a consequence, this study aimed to verify whether leukocyte telomere length is associated with the presence and the number of diabetic complications in a sample of patients with Type 2 diabetes.

METHODS: This is a cross-sectional study. Nine hundred and one subjects were enrolled, including 501 patients with Type 2 diabetes, of whom 284 had at least one complication and 217 were without complications, and 400 control subjects. Leukocyte telomere length was measured by quantitative real-time PCR.

RESULTS: Patients with diabetes complications had significantly shorter leukocyte telomere length than both patients without diabetes complications and healthy control subjects. Moreover, among patients with diabetes complications, leukocyte telomere length became significantly and gradually shorter with the increasing number of diabetes complications. The magnitude of the effect of the decrease of the abundance of telomeric template vs. a single-copy gene length (T/S ratio) on complications is described by the estimated odds ratio OR = 5.44 (95% CI 3.52-8.42).

CONCLUSIONS: The results of the study support the hypothesis that telomere attrition may be a marker associated with the presence and the number of diabetic complications.

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