Abstract

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Leukocyte telomere length in healthy Caucasian and African-American adolescents: relationships with race, sex, adiposity, adipokines, and physical activity.

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OBJECTIVE: To examine the relationships of race, sex, adiposity, adipokines, and physical activity to telomere length in adolescents.

STUDY DESIGN: Leukocyte telomere length (T/S ratio) was assessed cross-sectionally in 667 adolescents (aged 14-18 years; 48% African-Americans; 51% girls) using a quantitative polymerase chain reaction method. Generalized estimating equations analyses were performed.

RESULTS: Telomere length was greater in the African-American adolescents than in the Caucasian adolescents (age- and sex-adjusted T/S ratio ± SE, 1.32 ± 0.01 vs 1.27 ± 0.01: P = .014) and greater in girls than in boys (age- and race-adjusted T/S ratio ± SE, 1.31 ± 0.01 vs 1.27 ± 0.01; P = .007). None of the adiposity or adipokine measures explained a significant proportion of the variance in telomere length. Vigorous physical activity was positively associated with telomere length (adjusted R(2) = 0.019; P = .009) and accounted for 1.9% of the total variance only in girls.

CONCLUSIONS: This study, conducted in a biracial adolescent cohort, demonstrated that (1) race and sex differences in telomere length have already emerged during adolescence; (2) adiposity and adipokines are not associated with telomere length at this age; and (3) the antiaging effect of vigorous physical activity may begin in youth, especially in girls.

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