Abstract

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Oxidative stress, chronic inflammation, and telomere length in patients with periodontitis.

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OBJECTIVE: The aim of this study was to determine leukocyte telomere length (LTL) in individuals with periodontitis and controls, exploring its relationship with systemic inflammation and oxidative stress.

METHODS: Five hundred sixty-three participants were recruited for this case-control study: 356 subjects with and 207 subjects without periodontitis. LTL was measured by a qPCR technique from leukocytes' DNA. Global measures of oxidative stress (reactive oxygen metabolites) and biological antioxidant potential in plasma were performed together with high-sensitivity assays for C-reactive protein (CRP). Leukocyte counts and lipid profiles were performed using standard biochemistry.

RESULTS: Cases had higher levels of CRP (2.1±3.7mg/L vs 1.3±5.4mg/L, P<0.001) and reactive oxygen metabolites (378.1±121.1 U Carr vs 277.4±108.6 U Carr, P<0.001) compared to controls. Overall, cases had shorter LTL with respect to controls (1.23±0.42 vs 1.12±0.31T/S ratio, P=0.006), independent of age, gender, ethnicity, and smoking habit. When divided by subgroup of periodontal diagnosis (chronic, n=285; aggressive, n=71), only chronic cases displayed shorter LTL (P=0.01). LTL was negatively correlated with age (P=0.001; R=-0.2), oxidative stress (P=0.008; R=-0.2), and severity of periodontitis (P=0.003; R=-0.2) in both the whole population and the subgroups (cases and controls).

CONCLUSION: We conclude that shorter telomere lengths are associated with a diagnosis of periodontitis and their measures correlate with the oxidative stress and severity of disease.

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