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Periodontitis Dysregulates Oral MicroRNA Linked With Cardiovascular-Endothelial Risk Dysfunctions

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Objectives Recent studies have evidenced that micro-RNAs (miRNAs) are involved in a wide range of epigenetic processes linked with periodontitis, increased cardiovascular disease (CVD and endothelial dysfunctions. The present study evaluated the impact of periodontitis on gingival crevicular fluid (GCF) miRNAs associated with increased CVD risk and endothelial dysfunctions and evaluated their possible predictors.
Methods Healthy controls (n=15), patients with CVD (n=15), periodontitis (n=16) and periodontitis+CVD (n=16) were enrolled. Patients were clinically and periodontally evaluated. In addition, GCF miRNAs 7, 21, and 200 expression were analyzed using a real-time quantitative polymerase chain reaction (RT-PCR).
Results In the analyzed sample, patients with periodontitis and periodontitis + CVD had higher -7 and 21- miRNAs expression in comparison with healthy controls. Moreover, compared to healthy controls, subjects with periodontitis and periodontitis + CVD had higher GCF miRNA -7, -21 and -200 expression, while there were no changes in miRNAs expression with CVD patients. The multivariate regression analysis evidenced that periodontitis (miRNA 21), full mouth bleeding score (FMBS) (miRNA -7) and periodontal inflamed surface area (PISA) (miRNA -7 and -200) were significant predictors of higher GCF miRNAs expression in the analyzed sample.
Conclusions The results of the study highlighted that patients with periodontitis and periodontitis with cardiovascular diseases exhibited high mi-RNAs GCF levels compared to healthy subjects. The multivariate regression models highlighted that periodontitis and its extent, as FMBS and PISA, were significant predictors of upregulated miRNAs.