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Distinct Salivary Inflammatory Profiles in Patients With Periodontitis and Peri-Implantitis

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Objectives Periodontitis (PD) and peri-implantitis (PI) are characterized by an inflammatory response and immune reaction initiated by pathogenic bacteria and biofilm. The chronic inflammation in turn can cause the degradation of connective tissue and tooth-supporting bone leading to PD and PI, respectively. This study aimed to compare the salivary inflammatory mediator profile in patients with periodontitis, peri-implantitis and healthy controls.

Methods Samples of stimulated whole saliva were collected from patients (n=138), with a mean age of 63.2 ± 11.6 years. Healthy individuals (n=41) and individuals with periodontitis and/or peri-implantitis (n=97) who had implants installed for a minimum of 10 years were included. Samples were analyzed using a multiplex-immunoassay panel including the tumor necrosis factor (TNF), interferon (IFN), and interleukin (IL) superfamily (Bio-Rad Laboratories).

Results The levels of BAFF (belonging to the TNF ligand family), sIL6Rβ, IFN-β, and sIL6Rα were significantly ($p < 0.05$) higher in saliva samples of patients with PD and/or PI compared to healthy subjects without periodontal disease. Using the diagnosis periodontitis and/or peri-implantitis as the dependent variables and salivary inflammatory mediators, sex and smoking as independent variables demonstrated that smoking and sIL6Rβ were significantly ($p < 0.05$) correlated (OR=4.69 and OR=52.77 respectively) with PD and/or PI diagnosis.

Conclusions Within the limits of this cross-sectional study, our findings suggest a potential difference in salivary cytokine levels between patients according to periodontal and peri-implant diagnosis. Moreover, our study suggests that sIL6Rβ shows promise as a candidate biomarker for salivary diagnostics of periodontitis and/or peri-implantitis. Using the detection of salivary inflammatory mediator levels might serve as an adjunctive diagnostic method for early detection of signs of disease. Additional investigation with a larger sample size is needed to further determine the role of salivary cytokines in the pathogenesis and progression of PD and PI.