

Periodontics

*Perspectives of Current Ideas, Techniques and Clinical Concept
in Periodontics and Restorative Dentistry*

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New Findings on the Relationship Between Periodontal Disease and Heart Disease

Within the past 5-10 years there has been growing evidence of an association between periodontal disease and coronary heart disease, as well as other cardiovascular diseases. The association has been linked to the spread of bacteria and bacterial products from the periodontal lesion to the bloodstream. Heart disease in general can be subdivided into various clinical entities and conditions. Recent evidence has suggested correlations with periodontal disease and Coronary Heart Disease (CHS) and Acute Myocardial Infarction (AMI) - which is associated with Acute Coronary Syndrome (ACS) and Chronic Coronary Heart Disease (CCHD).

One mechanism that has been proposed linking periodontal disease and heart diseases occurs via the Gram-negative bacterial cell wall component lipopolysaccharide. It induces adhesion of leukocytes to the endothelium, platelet aggregation, production of proinflammatory cytokines and foam cell formation from arterial wall macrophages. In periodontal disease there is a significantly higher number of bacteria (up to one million times) present in diseased pockets versus those with periodontal health. Significantly higher numbers of bacteria in and of itself can account for their effect, however there is a qualitative change in the composition of the subgingival microflora towards the predominance of Gram-negative bacteria.

Acute Coronary Syndrome is a condition that is defined by chest pain associated with typical electrocardiogram changes and a myocardial infarction. For these patients, their total bacterial load was higher versus control subjects. In addition, there are significant increases in several types of bacteria such as Porphyromonas gingivalis, Tannerella forsythensis, Treponema denticola, Streptococcus intermedius and Streptococcus sanguis. Other significant factors that can be measured are the increases in serum white

blood cell counts and hsC - rp levels (C - reactive protein). Factors such as age, gender and smoking status did not differ between studied ACS and control groups. Based on these findings a case can be made that despite the often thought of model of periodontal disease being a chronic infection there instead may be periodic acute infectious episodes exposing the patient to cardiovascular events. The finding that hsC - rp is associated with ACS further suggests an acute infectious mechanism for periodontitis. Interestingly, when ACS patients are compared with chronic coronary heart disease (CCHD) patients many parameters such as number of restorations, sites with bleeding upon probing, and increased pocket depths are worse in the ACS patients.

Coronary Heart Disease and periodontal disease have many risk factors in common. For those patients with CHS, they have been shown to have greater alveolar bone loss, probing depths, bleeding on probing and clinical attachment loss. This association is especially strong in people less than 60 years old. In those patients, smoking and diabetes was also found to have a strong association. Smoking and diabetes are known to cause changes in the microvasculature function affecting the peripheral blood circulation. In addition, in smokers and diabetics there is an increased susceptibility to infections. For patients over 60 years old there is a decreasing effect that can be explained by "healthy survivor effect" where death has already occurred in those susceptible.

As a result of many recent studies there are many associated cardiovascular conditions that have been correlated with periodontal disease. In particular, when considering heart disease, the presence of periodontal disease is a significant risk factor (along with diabetes and smoking). Clinical implications for this association are important for practitioners. The long standing chronic clinical appearance of periodontal disease may in fact represent many accumulated acute episodic occurrences. The chronic versus acute model of periodontal disease has been examined and the possibility has been theorized that the progression of periodontitis is in fact a series of acute exacerbations rather than slow and incremental. This model may have similarity and correlation to the association found in some studies that heart disease when found in the presence of periodontal disease reflects several aspects of an acute infectious process.

References

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Next Topic: Periodontal Factors for Predicting Tooth Loss