

Periodontitis and Inflammatory Diseases

(From The American Journal of Cardiology and Journal of Periodontology Editors' Consensus, Vincent E. Friedewald, et. al., 7/2009)

The human organism is complex. Abnormalities of almost any of its parts or processes have profound effects on multiple other body areas, exemplified by the process of inflammation. **In recent years, the immune system, once believed to be only a vital defense against infection and a promoter of healing—except in the instances of a few uncommon connective tissue disorders—is now recognized as a significant active participant in many chronic inflammatory diseases (ID), including hypertension, diabetes, arthritis, inflammatory bowel disease, skin infections, and atherosclerotic cardiovascular disease (CVD) and periodontitis.**

Periodontitis, a chronic inflammatory disease, destroys connective tissue and bone that support the teeth. Periodontitis is common, with mild to moderate forms affecting 30% to 50% of adults and the severe generalized form affecting 5% to 15% of all adults in the United States. Patients with periodontitis are often asymptomatic. The diagnosis of periodontitis requires evaluation by a trained professional.

Pathophysiology

Periodontitis begins with a **microbial infection**, followed by destruction of soft tissue caused by hyperactivated immune cells that cause connective tissue and bone destruction. When teeth and gums are not disinfected on a regular basis, bacteria begin to colonize, and the disease occurs. Although bacteria are a major factor, other risk factors appear to influence the severity and extent of disease.

Risk Factors (non-oral)

Smoking, diabetes mellitus, genetics, mental anxiety, depression, obesity, and physical inactivity. Individuals who smoke (cigarettes, cigars, and pipes) have six to seven times more alveolar bone loss than nonsmokers in studies in the United States and other countries. Patients who smoke have poor wound healing and immune responses.

Periodontal disease is more severe and prevalent in patients with diabetes mellitus. Worsening periodontal disease adversely affects diabetic control. However, reatment of periodontal disease improves diabetic control. Results from the National Health and Nutrition Examination Survey (NHANES) I and its follow-up studies suggest that non-diabetic adults with periodontal disease develop type 2 diabetes more often than those without periodontal disease.

Treatment

All appropriate treatment strategies for periodontitis focus on reducing inflammation and promoting healing of the gums and bone to the teeth by removing bacteria attached to the tooth roots and reinforcement of patient oral hygiene to reduce bacterial counts. Systemic antibiotics may be used in addition for patients with other risk factors. Antibiotics reduce the bacterial load, but taken alone do not eliminate periodontal disease in the oral cavity. Advanced periodontitis may require surgery to gain adequate access for removal of the bacteria and debris on the root surfaces. In some instances, surgical approaches include bone and soft tissue regeneration to regain at least some support for the teeth and to facilitate self care.

Prevention

Long-term clinical studies have clearly demonstrated that the regular and effective removal of bacteria on the teeth can prevent periodontitis. Effective removal requires excellent oral hygiene, and consistent, recurring professional maintenance.

MECHANISMS FOR AN ASSOCIATION BETWEEN PERIODONTITIS AND OTHER INFLAMMATORY DISEASES

Moderate to severe periodontitis increases the level of systemic inflammation, a characteristic of all chronic inflammatory diseases (ID). Heart disease is included in this scenario.

Thus, many factors, especially cigarette smoking, are a factor in both diseases.

In addition to tobacco use, the following risk factors are common to periodontitis:

- (1) Diabetes mellitus.
- (2) Obesity: systemic inflammation is associated with obesity. Systemic inflammatory responses also could explain the association between periodontitis and type 2 diabetes insulin resistance.
- (3) Lipids: a case-controlled study showed that periodontitis is associated with elevated plasma triglycerides and total cholesterol.
- (4) Hypertension: studies have shown an increased prevalence of high blood pressure in patients with periodontitis.

CLINICAL RECOMMENDATIONS: PATIENTS WITH PERIODONTITIS

Patients with moderate to severe

periodontitis should consider a medical evaluation if they have not done so in the past 12 months.

Patients with periodontitis who have \pm 2 known atherosclerotic cardiovascular disease (CVD) or inflammatory disease (ID) major risk factors should be referred for medical evaluation if they have not done so in the past 12 months.

It is also recommended that patients with periodontitis assess their risk for future (next 10 years) CVD or ID events. Medical evaluation of patients with periodontitis should also include assessment of heart disease and atherosclerosis risk, including past events, family histories of heart disease or sudden coronary death, diabetes mellitus, systemic hypertension, or high cholesterol or lipids.

Medical evaluation of patients with periodontitis should include a complete physical examination, annual measurement of blood pressure at rest, and blood tests for lipids and glucose. A plasma c-reactive protein (CRP) determination is optional but should be considered, because recent studies have suggested that elevated CRP may have added value by helping determine how aggressively standard risk factors should be treated, especially lifestyle changes.

All patients with periodontitis who smoke tobacco should discontinue this habit because this is a major risk factor for atherosclerotic CVD and periodontitis.

All patients with periodontitis and elevated blood pressure should be treated appropriately by their physician. **All patients with periodontitis and elevated blood pressure should undertake lifestyle changes**, including weight reduction in subjects who are overweight, a diet high in potassium and calcium, a diet low in sodium, and moderation of alcohol intake. In addition to lowering blood pressure, lifestyle modifications also increase the efficacy of antihypertensive drug therapy and decrease the risk for atherosclerotic CVD and ID.

CLINICAL RECOMMENDATIONS: PATIENTS WITH INFLAMMATORY DISEASES WITH OR WITHOUT A PREVIOUS DIAGNOSIS OF PERIODONTITIS

Dentists, periodontists, and physicians managing patients with CVD or other inflammatory diseases (ID) should closely collaborate to optimize risk reduction and periodontal care. **Periodontal evaluation should be considered in patients with atherosclerotic CVD or other ID** who have signs or symptoms of disease, significant tooth loss, and unexplained elevations of CRP or other inflammatory biomarkers. Periodontal evaluation of patients with atherosclerotic CVD or ID should include a comprehensive examination of periodontal health. **If patients have untreated or uncontrolled periodontitis, they should be treated with a focus on reducing and controlling periodontal disease and eliminating inflammation.**

If you have questions about this information, or would like to schedule an appointment, Please call our office at 360.629.7229 or visit us on the web at www.cascadiadentistry.com.

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