

AN OVERVIEW FOR PHYSICIANS ORAL-SYSTEMIC RELATION

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Throughout the history of mankind, there has been the belief that disease which affects the mouth, such as periodontal disease, can have an effect on the rest of the body.

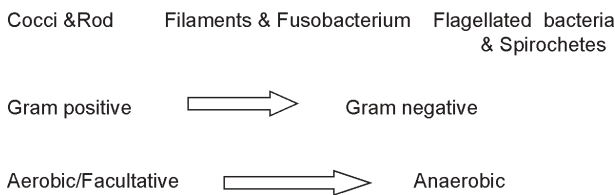
Over the centuries, writings from ancient Egyptians, Hebrews, Assyrians, Greeks & Romans to name a few, have all noted the importance of the mouth in overall health & well-being.

Thus, one could say that the concept linking periodontitis & systemic disease can be traced back to beginning of recorded history & medicine

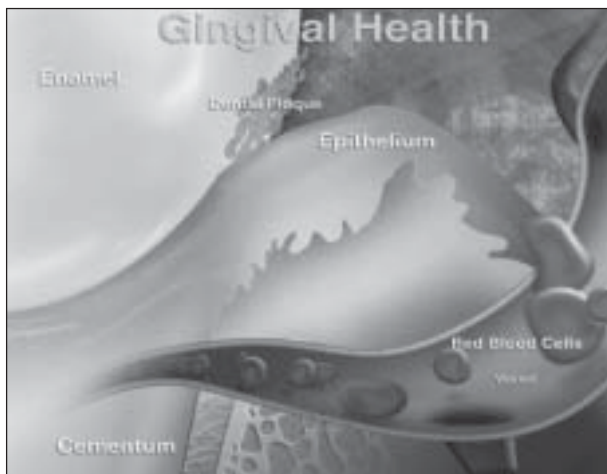
BACTERIAL CULPRITS

In the healthy mouth, more than 350 species of microorganisms have been found. Periodontal infections are linked to fewer than 5% of these species.

BACTERIAL SUCCESSIONS IN THE PERIODONTAL ENVIRONMENT



PERIODONTAL INFLAMMATION : FROM GINGIVITIS TO SYSTEMIC DISEASE



PERIODONTAL THERAPY AND ERADICATION OF GASTRIC HELICOBACTER PYLORI

The oral cavity has been proposed as a reservoir for *H. pylori* that could be responsible for the refractoriness of gastric infection to triple therapy (antibiotics, antimicrobials, and proton pump inhibitors). Evaluation of the efficiency of combined periodontal and triple therapy vs. triple therapy alone, in gastric *H. pylori* eradication in persons with *H. pylori* in the subgingival biofilm indicated that 77.3% of those treated with the combined therapy exhibited successful eradication of gastric *H. pylori*, compared with 47.6% who underwent only triple therapy.

PERIODONTITIS AS A RISK FOR CORONARY HEART DISEASE:

National Health Survey

A survey involving National Health and Nutrition Examination Survey data obtained from nearly 10,000 individuals indicated that those with periodontitis had a **25% increased** risk of CHD compared to those with minimal or no detectable periodontal Inflammation.

There is also evidence that some of the bacteria found in the dental plaque may have a direct effect on atherosclerosis and thromboembolic events. Recent research indicates that periodontitis may be associated with the development of cardiovascular disease. One theory is that the inflammatory proteins and the bacteria in the periodontal tissue enter the blood stream and cause various effects on the cardiovascular system.

A recent study examined the presence of bacteria known to cause periodontitis and the thickening of the blood vessel wall commonly seen in heart disease. After examining samples from more than 650 subjects, the investigators concluded that an increased level of blood vessel thickening was associated with the presence of the same bacteria found in dental plaque known to cause periodontitis.

PERIODONTAL DISEASE AND RESPIRATORY INFECTIONS

From all the evidence reviewed it seems quite plausible. Oral cavity may have a critical role in respiratory infections. e.g. : Oral bacteria from the periodontal pocket can be aspirated into the lung to cause aspiration pneumonia. The teeth may also serve as a reservoir for respiratory pathogens colonization and subsequent nosocomial pneumonia. The cytokines originating from periodontal tissues may alter respiratory epithelium to promote infection by respiratory pathogens.

ASSOCIATION BETWEEN PERIODONTAL DISEASE AND CANCER

Periodontal disease has long been linked to many systemic diseases, and recently a link between periodontal disease and cancer has been established. English-language papers studying the relationship between periodontal disease and tooth loss in humans and increased risk of several types of cancers along with overall cancer risk between 1990 and April 2009 were reviewed.

The most consistent increased risk was noted in studies of oral and esophageal cancers and periodontal disease. Gastric and pancreatic cancers had an association in most but not all studies. Lung, prostate, hematologic and other cancers were less consistently associated. Studies to date indicate a positive correlation between several forms of cancer and periodontal disease.

PERIODONTITIS AS A RISK FOR DIABETIC COMPLICATIONS

Periodontal contribute to the progression of diabetes probably by disturbing the glucose regulation. When bacteria enter the blood stream & enter the immune cells, prompting and inflammatory response, high levels of cytokines damage or destroy cells in the pancreas , altering

the production and utilization and exacerbating the diabetic condition . In diabetic patients with periodontitis , periodontal therapy may have beneficial effects on glycaemic control. Diabetic adults with severe periodontitis at base line had a significantly greater incidence of kidney and macrovascular complications over the subsequent 1 to 11 years.

PERIODONTAL DISEASE AND PREGNANCY OUTCOME

Periodontal disease has been associated with increased risk of preterm low birth weight, low birth weight and preterm birth. Systemic inflammation plays a major role in the pathogenesis of preterm delivery. CRP produced in periodontitis has been associated with adverse pregnancy outcomes, including preeclampsia, intrauterine growth restriction and preterm delivery.

It is seen that more than 60 % of the mortality that occurs among the infants without anatomic or chromosomal congenital defects is attributable to Preterm Low Birth Weight. These infants account for 5 million neonatal intensive care unit hospital days per year at an annual cost of greater than 5 billion \$. The overall cost to society in terms of suffering and long term disabilities far exceeds these monetary estimates. Thus more emphasis should be placed on prevention rather than costly tertiary care ⁽⁴⁾.

PERIODONTAL DISEASE AND STROKE

Overall 25 % of all stroke patients had significant dental infections. This study supports an association between poor oral health & stroke in mean under age 50. Periodontal infection may contribute directly to the pathogenesis of atherosclerosis resulting in narrowing of the vessel lumen & also in elevated production of fibrinogen and C-reactive protein which serve to increase the risk of stroke.

PERIODONTAL DISEASE IN GENETICS

Both genetics and environmental factors play an important role in the patient susceptibility to periodontal disease, researchers believe a number of genes which differs among various ethnic or cultural groups is responsible for the presence and severity of periodontal disease.

There is evidence that genetic factors influence susceptibility to the different forms of early onset periodontitis. However, it is unlikely that a specific gene will be identified as causing enhanced disease susceptibility. It is more likely that the genetic influences are as multifactorial as the diseases themselves, and a complex interplay between genetically determined host responses and environmental challenges may determine whether disease is present.

PERIODONTAL DISEASE AND MORTALITY

Recent study suggests oral health status as a possible risk factor for systemic conditions. Longitudinal Study was done to determine age related changes in the oral cavity and to identify risk factor for those subjects with the most alveolar bone loss averaging more than 21%, the risk of dying during the follow-up period was 70% higher than all other subjects. Thus periodontal status at the base line examination was a significant predictor of mortality independent of other factors.

CONCLUSION

What becomes evident from this review is that the periodontal tissues are often associated with manifestations of a wide range of systemic diseases. Early detection and carefully managed therapeutics with the physician and periodontist working hand-in-hand may prove beneficial to the patient's general health and quality of life.

It is important that physicians recognize and familiarize themselves with these possible oral manifestations, and refer for the treatment of the periodontal disease. However it is too early to provide specific recommendations regarding the treatment of periodontal disease to improve specific health outcomes, but dentists can become advocates for a general health promotion and disease prevention message.

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