

Oral inflammation and Cardiovascular (Heart) Disease

Medical Research

Cardiovascular Disease and Atherosclerosis

Atherosclerosis, the thickening and hardening of arteries produced by a build-up of plaque, is the underlying cause of cardiovascular disease (CVD). It is essentially an inflammatory disease, whereby an initial lesion, in response to injury to the endothelium of elastic and muscular arterial tissue, leads to a complex chronic inflammatory process. There is accumulating evidence of a role for infectious agents in atherogenesis; by causing endothelial injury, they may, in part, trigger the inflammatory response. The levels of inflammatory mediators in the systemic circulation, such as C-reactive protein (CRP) and fibrinogen, are indicators of a general inflammatory response and atherosclerosis. This link between inflammation and atherosclerosis suggests that chronic infections, such as oral infections from periodontal disease, may predispose to cardiovascular disease. Significant similarities in the pathogenesis of atherosclerosis and periodontitis have suggested a common underlying biological mechanism for the two conditions. Based on this paradigm, several studies have investigated the relationship between periodontitis and cardiovascular disease.

Indirect Evidence: Epidemiological Studies

Most of the evidence supporting a relationship between periodontal disease and CVD comes from epidemiological studies. In the late 1980s, pioneer work showed that patients who had a history of myocardial infarction (MI) generally had worse oral health than control subjects. Subsequently, cross-sectional data from the Third National Health and Nutrition Survey (NHANES III) indicated that patients with severe clinical attachment loss were at greater risk for MI than subjects with a healthy periodontium (odds ratio:3.8). Since then, systematic literature reviews have indicated that most studies report a modest association between periodontal disease and CVD, between a 1.3 and 2-fold increase in the risk of CVD in people with periodontitis. Conversely, treatment of periodontitis was shown to decrease serum concentration of CRP, interleukin (IL)-6 and tumor necrosis factor (TNF)- α , indicating that infection of the periodontium can influence systemic conditions. What remains unclear from these studies, however, is whether periodontitis can predispose to atherosclerosis.

Recommendations

Management and Prevention

Oral inflammation and periodontal disease are generally chronic and can persist asymptotically for many years in the absence of appropriate treatment. This results in chronic exposure to local and systemic inflammation, which may induce or enhance already existing inflammatory disease, including atherosclerosis. For this reason, appropriate oral preventive care is important not only to preserve oral health, but also systemic health. Management and prevention strategies must sensitize both dental care providers and patients to the importance of good oral health on systemic burden and chronic diseases.

Early control of bacterial plaque accumulation is essential for the prevention of oral inflammation and periodontal disease, with daily mechanical removal of bacterial plaque by tooth brushing supplemented with flossing. Utilization of a dentifrice with antibacterial and anti-inflammation properties will help in achieving this goal.

Control of periodontal infection and inflammation will improve the oral health of patients, decrease the systemic chronic inflammation burden caused by oral inflammation, improve general health, and may ultimately contribute to the reduction of cardiovascular disease.

Prevention is best with frequent dental check up and evaluation.

Many people require professional cleanings by their hygienist every 2-3 months in order to maintain oral health.
