New Study Confirms Periodontal Disease Linked to Heart Disease
Data Reveals Diseased Gums Pump High Levels of Harmful Bacterial Components Into Bloodstream
CHICAGO – February 7, 2002 – A newly published study in the Journal of Periodontology confirms recent findings that people with periodontal disease are at a greater risk of systemic diseases such as cardiovascular disease. Study Abstract * Researchers found diseased gums released significantly higher levels of bacterial pro-inflammatory components, such as endotoxins, into the bloodstream in patients with severe periodontal disease compared to healthy patients. As a result, these harmful bacterial components in the blood could travel to other organs in the body, such as the heart, and cause harm.

Abstract

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Systemic Release of Endotoxins Induced by Gentle Mastication: Association With Periodontitis Severity

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Background: Periodontitis has recently been identified as a potential risk factor for systemic pathologies such as cardiovascular disease, the hypothesis being that periodontal pockets could release pro-inflammatory bacterial components, for instance endotoxins, into the bloodstream. It is known that the oral cavity can be a source of circulating bacteria, but this has never been shown for bacterial endotoxins, and no evidence exists so far that the risk of systemic injury is related to the severity of periodontitis. The aim of the present study was to test the influence of gentle mastication on the occurrence of endotoxemia in patients with or without periodontal disease.

Methods: A total of 67 subjects were periodontally examined and grouped according to their periodontal status. This classification was based on an original index of severity of periodontal disease (periodontal index for risk of infectiousness, PIRI) aimed at reflecting the individual risk of systemic injury from the periodontal niches. Thus, the patients were classified into 3 risk groups: low, PIRI = 0; n = 25; moderate, 1 ≤PIRI ≤5, n = 27; and high 6 ≤PIRI ≤10, n = 15. Blood samples were collected before and 5 to 10 minutes after a standardized session of gentle mastication for detection of circulating endotoxins. Blood samples were tested with a chromogenic *limulus amoebocyte* lysate assay.

Results: Overall, blood levels of endotoxin after mastication were found to be significantly higher than before mastication (0.89 ± 3.3 pg/ml versus 3.0 ± 5.8 pg/ml; $P = 0.0002$). Likewise, the incidence of positive endotoxemia rose from 6% before mastication to 24% after mastication ($P = 0.001$). When accounting for the PIRI index, endotoxin levels and positive endotoxemia proved to be significantly higher in patients with severe periodontal disease than in the subjects with low or moderate periodontitis.

Conclusions: Gentle mastication is able to induce the release of bacterial endotoxins from oral origin into the bloodstream, especially when patients have severe periodontal disease. This finding suggests that a diseased periodontium can be a major and underestimated source of chronic, or even permanent, release of bacterial pro-inflammatory components into the bloodstream. *J Periodontol 2002;73:73-78.*