Current Evidence Regarding Association between Periodontal Disease and Nutrition

Satoshi SHIZUKUISHI¹,², Muneo TANAKA³ and Hideki NAGATA³

¹Osaka University
²Sunstar Inc.
³Department of Preventive Dentistry,
Osaka University Graduate School of Dentistry

Abstract: Periodontal disease is a chronic infectious disease induced by bacteria residing in dental plaque. It is well-known that periodontal disease is modified by lifestyle-related factors including smoking. However, the role of nutrition in the development and progression of periodontal diseases is less well-defined. The aim of this paper was to review the available literature pertaining to the association between periodontal disease and nutrients or foods. We performed a systemic review of relevant English-language medical literature published from January 1995 to July 2010, with the critical appraisal of epidemiologic studies evaluating the association between periodontal disease and nutrition. In cross-sectional studies, it was found that there were significant associations between a decreased intake and serum level of vitamin C and increased risk of periodontal disease. A low intake and level of serum calcium were also associated with the risk of periodontal disease in cross-sectional and cohort studies. Serum levels of 25(OH)D were independently associated with inflammatory diseases such as periodontitis and gingivitis. Deficiencies of nutrients such as magnesium, folate, and antioxidants may contribute to the severity of periodontal disease. Intakes of fatty acids including ω-3 fatty acid and docosahexaenoic acid may decrease the risk of periodontitis. However, plasma triacylglycerols and low-density lipoprotein cholesterol showed a significant positive correlation with the status of periodontitis. On the other hand, there was an inverse association between the intake of foods such as whole grains, vegetables, green tea, soy, isoflavone, and dairy products and periodontal disease. Data collected from the literature suggest that nutrients including vitamin C, calcium, vitamin D, and ω-3 fatty acid may reduce the risk of periodontal disease. However, future research needs to generate conclusive evidence of the association between periodontal disease and nutrition.

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