

Java project on periodontal diseases: periodontal bone loss in relation to environmental and systemic conditions

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Abstract

Objective: To assess in a population deprived from regular dental care the relationship between alveolar bone loss (ABL) and environmental/systemic conditions.

Material & Methods: The study population consisted of subjects from the Purbasari tea estate on West Java, Indonesia. A full set of dental radiographs was obtained of each subject and amount of ABL was assessed. In addition, the following parameters were evaluated: plasma vitamin C, vitamin D₃, HbA1c and CRP, the haptoglobin phenotype, presence of putative periodontopathic bacteria and viruses, dietary habits, smoking and anthropometrics.

Results: In this population 45% showed vitamin C depletion/deficiency, 82% had vitamin D₃ insufficiency/deficiency, 70% were in a pre-diabetic state, 6% had untreated diabetes, 21% had elevated CRP values ranging from 3.1 to 16.1 mg/l. Results of the regression analysis, including all above mentioned parameters, showed four significant predictors, explaining 19.8% of the variance of ABL. Number of *Porphyromonas gingivalis* cells and CRP values showed a positive relationship with ABL, whereas BMI and number of guava fruit servings were negatively related.

Conclusion: Results confirm previous findings that elevated levels of *P. gingivalis* may be indicative for periodontitis progression. A new finding is that guava fruit consumption may play a protective role in periodontitis in a malnourished population.

Key words: BMI; bone loss; CRP; haptoglobin; HbA1c; periodontal pathogens; periodontitis; untreated disease; viruses; vitamin C; vitamin D

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Periodontitis is a multifactorial disease; in essence it is caused by an imbalance between environmental factors and the host defence. The environmental factors include the infectious component (bacterial

pathogens) and unfavourable life style factors and living conditions. The host response, in particular the innate immunity part, may be hyper-reactive resulting in an exuberant inflammatory response. In addition, genetic factors and certain systemic diseases can reduce the host defence and therefore may play a role in the development of the disease. The pathogenic bacteria that have been

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