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


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 Purwakartan tea estate on West Java, Indonesia. A full set of dental radiographs was obtained from each subject and amount of ABL was assessed. In addition, the following parameters were evaluated: plasma vitamin C, vitamin D3, HbAlc and CRP, the hypothalamic phenotype, presence of putative periodontopathogenic bacteria and viruses, dietary habits, smoking and anthropometric.

Results: In this population 45% showed vitamin C deficiency, 82% had vitamin D3 deficiency, 70% were in a pre-diabetic state, 6% had untreated diabetes, 21% had elevated CRP values ranging from 3.1 to 12.0 mg/L. Results of the regression analysis, including all above mentioned parameters, showed four significant predictors, explaining 29.8% of the variance of ABL. The 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.

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 hyperreactive 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