

Letter to the Editor

Antibiotics as the only therapy of untreated chronic periodontitis: a critical commentary

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Dear Editor,

In recent issues of the *Journal of Clinical Periodontology*, a discussion has been initiated about the use of antibiotics as an adjunct in periodontal therapy or even as a sole measure in the treatment of periodontal diseases (Mombelli 2005, 2006, Haffajee 2006, Needleman et al. 2006).

In general, the revival of controversies discussed in scientific journals in the field of periodontology is highly appreciated. There are several aspects, which should be added to the discussion on antibiotics in the treatment of periodontitis as well as to the paper by Lopez et al. (2006).

(1) Today, periodontitis has been classified in a group of infectious diseases called biofilm diseases. A biofilm is briefly defined as a complex bacterial structure adherent to wet surfaces. From a clinical perspective it is important to recognize that this structure protects the bacteria from the immunesystem of the host as well as from antimicrobial agents. Therefore, a biofilm is a difficult therapeutic target (Socransky & Haffajee 2002). In the field of periodontal microbiology, it has been demonstrated recently that several antibiotics need to be much higher concentrated to reach the minimal inhibitory concentration (MIC) in a biofilm compared with microorganisms grown in a planktonic culture (Eick et al. 2004). To date, the only predictable way to disturb the dental biofilm is by using mechanical means.

(2) In developing countries, antibiotics are discussed for treatment of periodontitis as the only therapy and justified by the intention 'instead of doing nothing'. In addition to the periodontist's abilities to perform the treatment, the successful periodontitis therapy depends on the patient's compliance to maintain supragingival plaque control during the active phase of treatment and, particularly, in the long term.

Antibiotic treatment depends on the regular intake of the prescribed drugs. Based on the findings from studies on tuberculosis therapy in developing countries, the therapeutic response was not satisfactory and resistant strains increased dramatically. Therefore, in this particular population 'directly observed treatment (DOT)' has been recommended by the WHO. DOT is a form of drug therapy during which the patient takes every single dose of the medication under direct observation of health care staff (Soares et al. 2006). This treatment approach has also been discussed for HIV positive patients (Stenzel et al. 2001). In order to prevent antibiotic resistance due to periodontal therapy, DOT seems to be an interesting approach for patients in need for antibiotic therapy.

(3) Antibiotic treatment as a sole or adjunctive therapy has been suggested as an effective treatment from a strictly economic point of view. However, the following aspects must be recognized: (i) the problem

of patient compliance (DOT?), (ii) the need for mechanical biofilm disruption as initial as well as repeated maintenance treatment, and (iii) the increasing antibiotic resistance with a further need for expensive development of more effective antimicrobial drugs. Therefore, antibiotic treatment as a sole therapy does not seem to be a low-cost approach to reach long-term periodontal health. Of course, the points mentioned above need to be further evaluated within clinical trials or other analyses.

(4) In the study by Lopez et al., the use of antibiotics resulted in a reduction of subgingival bacterial counts, and it was concluded that this regimen may be useful in controlling untreated chronic periodontitis in populations without access to dental care. From a traditional point of view, the conclusion of this study is surprising. In the observed subjects, the mean probing depth and the percentage of sites with PD 4–6 mm as well as PD > 6 mm was quite low and, therefore, the periodontitis may be classified as slight rather than moderate to advanced disease severity. Supragingival scaling (SGS) has been performed by an experienced periodontist using an ultrasonic scaler on all teeth in two sessions of 45 minutes each. It can be assumed that especially in sites with slight and moderate pocket probing depths, a subgingival biofilm will also be disturbed by SGS. Therefore, the treatment performed might be an adjunctive antibiotic

therapy instead of a sole antibiotic therapy at least in these sites. Moreover, there are significant differences between the groups concerning percentages of sites with PD 4–6 mm and mean probing depth. Both are higher, respectively deeper in the test group than in the control. The fact that probing depth reduction is generally more pronounced in deeper pockets following mechanical periodontal treatment, favours the outcome in the test group. Some other aspects would be interesting to know: What about differences between the results in multi-rooted versus single-rooted teeth? What about long-term stability of the results – this aspect, however, was not possible to evaluate in the cited study for good ethical reasons.

The treatment of periodontitis including the establishment of adequate, self-performed supragingival plaque control in combination with mechanical instrumentation of the root surface and supportive therapy has been demonstrated to be successful in order to maintain periodontal health for more than 20 years (Axelsson et al. 2004). This treatment can be classified as the “gold standard” of periodontal care. Therefore, any treatment alternative used in daily dental practise should be superior to the gold standard and well proven in long-term clinical trials. Above all, this is true for those treatment modalities, which present certain side effects and possibly affect the efficacy when used

subsequently as therapy for more severe diseases. Based on the current understanding and the limited evidence, in particular for long-term periodontal health (Herrera et al. 2002, Haffajee et al. 2003), we feel that adjunctive antibiotics should be prescribed only for a very limited collective of subjects – only for patients with specific clinical features, namely for those with aggressive forms of periodontal disease, in order to prevent antibiotic resistance due to periodontal therapy.

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Yours sincerely

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