

EFFECTIVENESS OF TARGET ANTIMICROBIAL THERAPY OF SEVERE CHRONIC PERIODONTITIS PART II: PREVALENCE OF RESIDUAL POCKETS

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ABSTRACT:

Comprehensive treatment of periodontitis is very different from the treatment of most bacterial infections. While periodontitis is traditionally considered a bacterial infection, many variables influence treatment outcomes.

The reduction of the probing depth of the periodontal pockets is one of the main criteria for the success of the periodontal treatment. The prevalence of the residual pockets with probing depth greater than 4 mm determines the risk of disease progression. The reduction of the periodontal sites with PD above 7mm with non-surgical periodontal treatment could limit the necessity of periodontal surgery.

Aim: Evaluation of the effectiveness of treatment of severe chronic periodontitis with additional target antibiotic administration in comparison with the therapy with adjunctive antimicrobial combination amoxicillin+metronidazole and conventional mechanical periodontal treatment regarding the prevalence and the achieved mean reduction of PD of periodontal pockets with initial PPD below 3mm, from 3 to 5mm, from 5-7mm and above 7mm.

Results: In all study groups a reduction of the mean PD has been achieved. The prevalence of periodontal sites with PD above 7mm after therapy is the lowest in the group with target antibiotic administration. These results advocate the effectiveness of the target adjunctive antimicrobial treatment in order to limit the extent of the surgical procedures in the therapy of the periodontal disease.

Key words: periodontitis, adjunctive antibiotic therapy, target antibiotic administration, PPD reduction, long-term maintenance.

BACKGROUND:

Comprehensive treatment of periodontitis is very different from the treatment of most bacterial infections. While periodontitis is traditionally considered a bacterial infection, many variables influence treatment outcomes. These include systemic factors, psychological influences, diet, genetic and/or intrinsic individual attributes, and environmental circumstances. Bacterial flora within the periodontal pocket exist in a complex heterogeneous biofilm that is incongruous from individual to individual in both the species and the proportions present (3, 5, 9).

Often, within an individual barely detectable differences exist in the cultivable flora associated with a clinically healthy site vs. an inflamed diseased site. Although a tremendous amount of effort has been expended over the past 30 years to elicit the causative agents of periodontitis, rarely has a single bacterial species been directly linked to periodontal diseases as its single etiologic factor (3, 5, 7, 12).

The vast majority of periodontitis cases respond well to conventional nonsurgical periodontal therapy, i.e. scaling and root planing (SRP), improved oral hygiene and supportive periodontal recall. However, certain patients, for various reasons, do not respond favorably to mechanical therapy alone (2, 8).

For these patients, the use of an appropriate adjunctive antimicrobial is often beneficial (10, 11). Two questions arise. First, how does the practitioner recognize patients who will benefit from adjunctive antimicrobial therapy? Second, which antimicrobial agent is most likely to provide the beneficial response desired with minimal adverse effects?

The reduction of the probing depth of the periodontal pockets is one of the main criteria for the success of the periodontal treatment. The prevalence of the residual pockets with probing depth greater than 4 mm determines the risk of disease progression. The reduction of the periodontal sites with PD above 7mm could limit the necessity of periodontal surgery (1, 6).

AIM: Evaluation of the effectiveness of treatment of severe chronic periodontitis with additional target antibiotic administration in comparison with the therapy with adjunctive antimicrobial combination amoxicillin+ metronidazole and conventional mechanical periodontal treatment regarding the prevalence and the achieved mean reduction of PD of periodontal pockets with initial PPD below 3mm, from 3 to 5mm, from 5-7mm and above 7mm.

MATERIALS AND METHODS:

Patients with active periodontal disease with 3468 affected sites were recruited in this study. Inclusion criteria were at least 20 teeth, 6 sites with PD>5mm, 2 sites with PD>7mm in different dentition quadrants. Exclusion criteria

were pregnancy, lactation, systemic antibiotic treatment in the previous 3 months. The patients were divided in three groups:

- Test group 1 (TG1) – patients with 834 affected sites - conventional mechanical periodontal therapy and adjunctive broad spectrum systemic antibiotic treatment (Amoxicillin 500mg/Metronidazol 250mg – tid for 10 days.
- Test group 2 (TG2) – patients with 1110 affected sites - conventional mechanical periodontal therapy and adjunctive specific systemic antibiotic administration after microbiological testing for susceptibility.
- Control group (CG) - patients with 1524 affected sites - conventional mechanical periodontal therapy only.

Clinical parameters:

A full range of periodontal diagnostic measurements were registered before and after treatment. The collected data includes: Hygiene Index (HI), Gingival bleeding index (GBI), Probing depth (PD), Clinical attachment level (CAL), Gingival recession (R), Furcation involvement (F) and Mobility (M) were carried out all patients. The measurements were registered on six points on every tooth (mesiobuccal, buccal, distobuccal, distolingual, lingual, mesiolingual) with Williams periodontal probe. The alveolar bone loss was registered on panoramic, segment and bite-wing x-rays.

RESULTS:

The mean initial values of the probing depth are very close in all groups thus demonstrating the standardization of the patients (4,12mm for TG1; 3,73mm for TG2 and 3,82mm for CG). These values presented significant reduction on the reevaluation after treatment – 2,64mm TG1, 2,57mm TG2, and 2,82mm CG respectively with mean reduction of the probing depth of 1,48mm for TG1, 1,16mm for TG2 and 1,1mm for CG. These results show the highest mean reduction of the probing depth in the patients of TG1.

The reduction of the probing depth is one of the fundamental goals of the periodontal therapy. This study confirms the efficiency of the initial periodontal treatment to achieve reduction of the periodontal pockets and to ensure proper conditions for effective plaque control and stable levels of the periodontal attachment.

The collected data presents a higher degree of prevalence reduction of the deep periodontal pockets (PD>7mm) in the patients with adjunctive antimicrobial treatment (TG1 and TG2) compared to the patients with scaling and root planing alone (CG). The distributions of the deep periodontal pockets on the reevaluation after treatment (PD>7mm) is 2,54% in the CG, 1,02% in TG1 and 0,29% in TG2. These results advocate the administration of target antimicrobials to patients with high prevalence of deep periodontal pockets. Another positive result from this administration and the achieved reduction of the probing depth is the decreasing the necessity of periodontal surgery for the elimination of the infection in deep periodontal pockets.

Chart 1. Reduction in the distribution of the sites with PD >7 mm in all groups

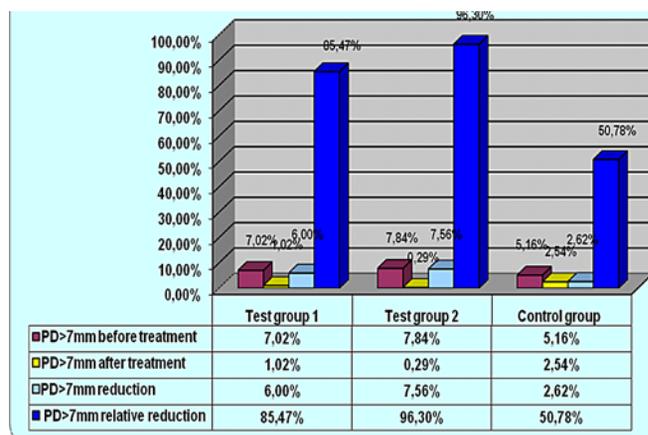


Chart 2. Reduction in the distribution of the sites with PD 6-7 mm in all groups

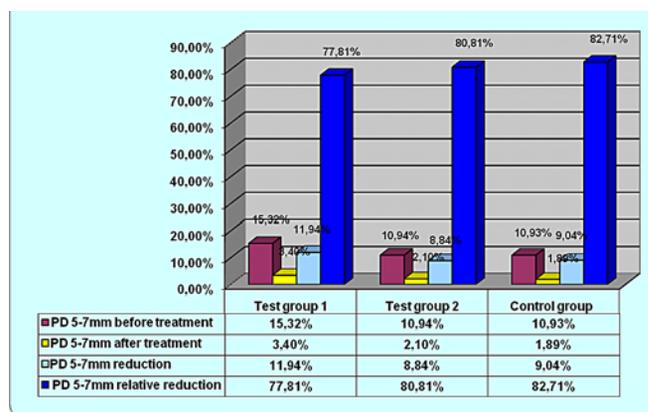


Chart 3. Reduction in the distribution of the sites with PD 3-5 mm in all groups

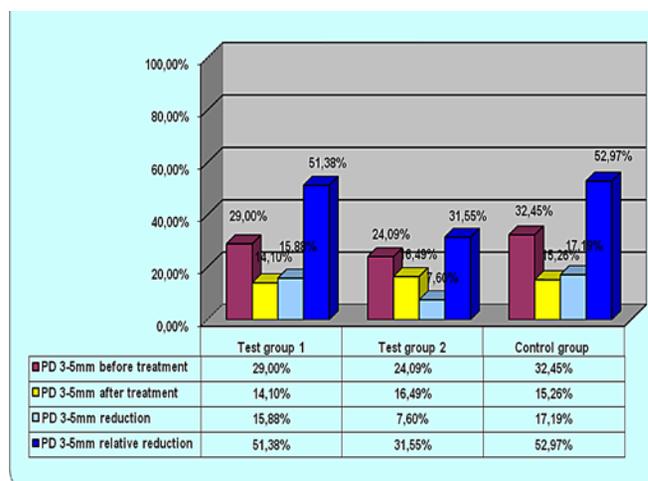


Chart 4. Increase of the sites with PD<3mm in all groups

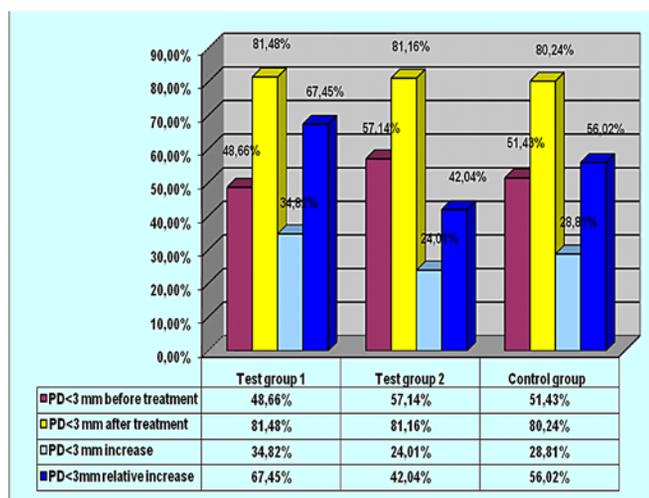


Chart 5. Reduction of the probing depth in all groups

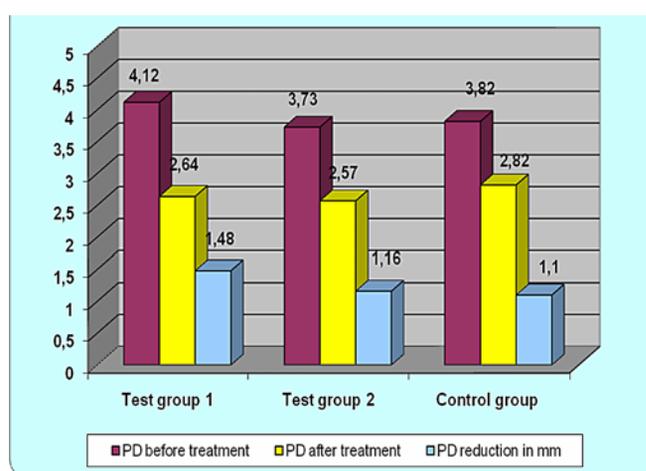
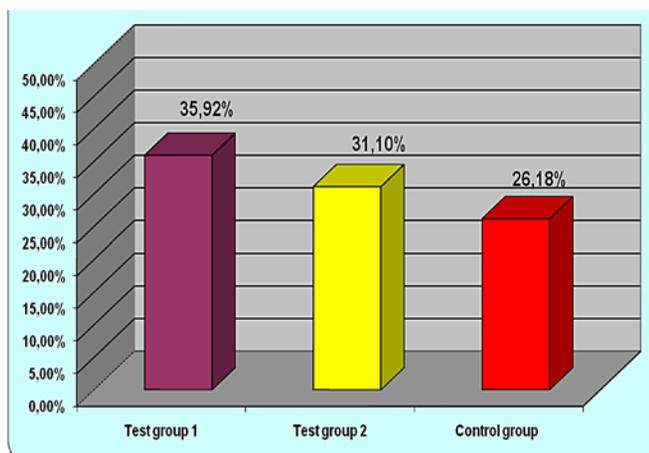


Chart 6. Relative reduction of the probing depth in all groups



CONCLUSION:

In all study groups a reduction of the mean PD has been achieved. The prevalence of periodontal sites with PD above 7mm after therapy is the lowest in the group with target antibiotic administration. These results advocate the effectiveness of the target adjunctive antimicrobial treatment in order to limit the extent of the surgical procedures in the therapy of the periodontal disease.

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