

USE OF ANTIMICROBIAL AND ANTISEPTIC PREPARATIONS AS A COMPLEMENTARY METHOD DURING CONVENTIONAL BASAL THERAPIES IN CHRONIC PERIODONTAL DISEASE

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Abstract

Aim: Realization of comparative study on the treatment of periodontal disease between the conventional basal method and the convective basal method supplemented with antimicrobial and antiseptic preparations.

Materials and Methods: For the realization of this study have been taken 30 patients from both sexes aged 20-50 years have been diagnosed through radiology and clinical diagnosis of the second clinical stage. The researchers are divided into two groups where one group is treated with the standard method while the other with the standard method supplemented with antimicrobial and antiseptic preparations.

Clinical examination was performed in all patients and material was obtained for microbiological analysis. The material was dotted with dental tablets from the teeth and pocket with scratches from the tooth surface with the probe and before and after treatment of both study groups and was delivered for analysis at IPSH and the chemical application laboratory at the Pharmacy faculty in Skopje.

Results: Results show the reduction of periopathogenic microorganisms following the application of the standard method using antimicrobial and antiseptic preparations unlike the group treated only with the standard method.

Based on the tabular display, the results show that pre and post-treatment data with the standard method do not show significant differences in percentages, as opposed to a method complemented by antimicrobial and antiseptic preparations, where the microbiological data show major changes in pre-and post-treatment ranges.

Conclusion: The application of the method supplemented with antimicrobial and antiseptic preparations has significant efficacy against periopathogenic microorganisms in patients with chronic parodontopathy.

Keywords: Chronic parodontopathy, microbiological data, conventional treatment, use of antimicrobial preparations and antiseptics

INTRODUCTION

Dental biofilm, as unavoidable etiologic factor in its content and structure, contains bacterial conglomerate with toxins, enzymes and other associated factors which cause progressive destruction of connective tissue attachment and alveolar bone (Haffaeje *et al.*, 2008).

Control of dental plaque through daily oral hygiene, removal of newly supragingival and subgingival deposits in clinical conditions are one of the ways to act preventively and to preserve the achieved treatment success (Newman *et al.*, 1977). Certainly improper and unprofessional mechanical instrumentation can be the cause of damage the hard tissues and the occurrence of gingival recession (Ljushkovic 2009, Gurindki 2009). Besides the mechanically removal of plaque microorganisms, in clinical practice are used local or systemic antimicrobial chemotherapy.

CIST- protocol or otherwise called, modification of conventional (basal) periodontal method as therapeutic procedure includes antimicrobial agents or modern antiseptic agents in form of a gel, in which the primacy belongs to chlorhexidine. In dentistry, chlorhexidine is used as a disinfectant before the surgery, but later is being used as an anti-plaque agent (Sbordone *et al.*, 2003). After its presentation to the American market in 1986, started the first attempts of its use as an adjuvant agent in non-surgical treatment of chronic periodontitis (Noyan *et al.*, 1997)

Soskolne (Soskolne *et al.*, 2002) found that subgingivally controlled and prolonged release of antibacterial agents (gels) in the treatment and control of periodontitis is superior compared with the use of antimicrobials in the form of rinse solution or spray. Greenstein (Greenstein *et al.*, 1998) using several systems for local therapy, has verified the effectiveness of the mono therapy combined with conventional method. Application of chlorhexidine chips significantly improves clinical parameters of periodontal disease (Killooy *et al.*, 1999) due to their impact on microorganisms *Porphyromonasgingivalis*, *Prevotella Intermedia*, *Fusobacterium nucleatum*, *Eikenellacorrodens*, *Campylobacter rectus* (Schwach-Abdellaoui, 2000)

Considering literature data and modern scientific knowledge, and starting from the fact that the use of antiseptics in the form of solutions has an effect on microorganisms, was a challenge for us to set the goal of this research: to perform comparative microbiological analysis and quantification of microbiological finding in patients who received conventional therapy and in patients with standard therapy supplemented with antimicrobial and antiseptic preparations.

MATERIAL AND METHOD

To realizethis goal, at the dental office "Fjolla Medica", in cooperation with the Clinic of Oral pathology and periodontology, at Faculty of dentistry in Skopje, were followed 30 patients of both sexes, aged 20-50 years in who clinically and Rtg were diagnosed chronic periodontitis at second clinical stage. Patients were divided in 2groups:

Subjects in the first group were treated with conventional (standard) method, removal of local irritants, dental plaque and calculus, periodontal pockets curettage, rinsing with 3% hydrogen and saline, and giving guidelines for maintaining oral hygiene.

Subjects in the second group were treated with combined conventional method and application of antimicrobial and antiseptic preparations..

At all subjects were taken anamnesis data, conducted clinical examination and X-ray analysis and material was taken for microbiological analysis. Determination of microorganisms is conducted through the material obtained from each subject. The material in both groups was obtained with the swab from dental plaque from teeth surface and with probe, scratching the wall of periodontal pocket, before and after the therapy. Material was stored in sterile test tubes, and then in the shortest period of time, was taken for microbiological examination in the appropriate anaerobic conditions. The growth of microorganisms was conducted on blood agar under aerobic conditions and the other growth on Shedler neo-vanko under anaerobic conditions.

Laboratory tests were performed at the IPM department for microbiological analyzes at Military Hospital and Institute of Public Health - microbiological department. The results are processed and displayed in percentages.

RESULTS

The data show the findings from swabs taken at admission and control after 30 days of therapy with conventional-standard method in respect of all tested bacteria, as presented in Table 1.

Table 1. Representation of microorganisms in swabs taken after the standard method and after the method supplemented with antimicrobial and antiseptic preparations.

Bacteria	Conventional (standard) method				Conventional (standard) method with gel application			
	negative after 30 days		positive after 30 days		negative after 30 days		positive after 30 days	
	n	%	n	%	n	%	n	%
<i>Aggregatibacter actinomycetemcomitans</i>	5	33,33	10	66,67	6	40,00	9	60,00
<i>Bacteroides gingivalis</i>	3	20,00	12	80,00	6	40,00	9	60,00
<i>Bacteroides intermedius</i>	3	20,00	12	80,00	6	40,00	9	60,00
<i>Peptostreptococcus micros</i>	5	33,33	10	66,67	7	46,67	8	53,33
<i>Fusobacterium nucleatum</i>	4	26,67	11	73,33	6	40,00	9	60,00
<i>Eikenella corrodens</i>	6	40,00	9	60,00	6	40,00	9	60,00

The results showed a reduction in periopathogenic bacteria after applying the conventional method with application of antimicrobial and antiseptic preparations.

Table 2. Representation of microorganisms on admission and swabs taken after the standard method and the method followed by application of gel agent

Bacteria	On admission		Conventional (standard) method				Conventional (standard) method with gel application			
	Positive findings		negative after 30 days		positive after 30 days		negative after 30 days		positive after 30 days	
	n	%	n	%	n	%	n	%	n	%
<i>Aggregatibacter actinomycetemcomitans</i>	11	73,33	5	3,33	10	66,67	6	60,00	9	60,00
<i>Bacteroidesgingivalis</i>	11	73,33	3	20,00	12	80,0	6	40,00	9	60,00
<i>Bacteroidesinternedius</i>	12	80,00	3	20,00	12	80,00	6	40,00	9	60,00
<i>Peptostreptococcus micros</i>	11	73,33	5	33,33	10	66,67	7	46,67	8	53,33
<i>Fusobacterium nucleatum</i>	11	73,33	4	26,67	11	73,33	6	40,00	9	60,00
<i>Eikinelacorrodens</i>	10	66,67	6	40,00	9	60,00	6	40,00	9	60,00

The results in the table indicate that periopathogenic bacteria on admission and after the conventional method have not high percentage differences, unlike the findings after the use of conventional therapy with application of antimicrobial and antiseptic preparations.

DISCUSSION

In this study, microbiological analysis showed that there is a difference in the qualitative composition of bacteria in periodontal pockets in group with standard therapy and in group with standard therapy with application of antimicrobial and antiseptic preparations.

Combined method (conventional method and application of antiseptic gel vehicle) showed a moderate difference in the composition of perio-pathogenic bacteria in patients with chronic periodontitis, compared with patients under standard method and composition of bacteria before the combined treatment. Our findings are in agreement with other authors (Haffajee *et al.*, 2008, Abrishami *et al.*, 2008, Senel *et al.* 2000, Benedettis *et al.* 2008). Findings for perio-pathogenic bacteria in patients with chronic periodontitis after 30 days therapy with conventional-standard method, showed no major differences in the composition of bacteria in the pathological substrate of periodontal pocket for *Aggregatibacter Actinomycetemcomitans* (Aa), *Bacteroidesgingivalis* (BG), *Bacteroidesintermedius* (BI), *Peptostreptococcusmicros* (PM), *Fusobacteriumnucleatum* (FN), and *Eikenella Corrodens* (EC). The obtained qualitative microbiological findings show that periodontal treatment without additional application of antimicrobial therapy does not alter the qualitative composition of bacteria significantly, not for the period during the course of the examination. In this examination was made only qualitative microbiological analysis, but not quantitative. Qualitative reduction of *Aggregatibacteractinomycetemcominitans* after local application of antiseptic was found in several studies (Bollen *et al.*, 1996, Chetan *et al.* 2010) which coincides with our obtained results.

The results of microbiological analysis for perio-pathogenic bacteria in patients with chronic periodontitis in relation admission/control after 30 days of combined therapy method (conventional method and application of antimicrobial and antiseptic preparations) showed that: *Aggregatibacteractinomycetemcominitans* (Aa) in relation, admission/control 30 days after treatment was negative at 93,33% of the patients examined after completion of therapy, and there was a significant difference; for *Bacteroidesgingivalis* (BG) in relation, admission/control 30 days after treatment, the findings were negative at 86.67% and there was significant difference; identical results were found for *Bacteroidesintermedius* (BI) in relation admission/control 30 days after treatment (86.67%) and there also existed significance of differences. Results for *Peptostreptococcus micros*(PM) on day 30 after the therapy showed a 100% negative findings and there was significant difference; in terms of *Fusobacterium nucleatum* (FN) in relation admission / control 30 days after treatment noted 93,33% negative findings, and there also was a significant difference; findings of *Eikenella Corrodens* (EC) in relation admission / control 30 days after treatment were negative 100% and no significant difference;

Our results are consistent with the results of the study (Abrishami *et al.*, 2008) in which subgingival application of antimicrobial and antiseptic preparations, resulted in a significant reduction in the number of colonies versus group where periodontal therapy consisted only root planning. The test results showed that there are significant differences between the two methods applied, where the combined method showed significant difference ($p < 0.001$), compared to the standard method where there was no significant difference ($p = 0.71$). These findings are in agreement with Senel *et al.* who found satisfactory clinical effects after long stability of bio adhesive gels in the periodontal pocket and high therapeutic efficacy. Identical findings are obtained from other researchers (DaDeneshmand *et al.*, 2002, Jones *et al.*, 1994, Kornman *et al.*, 1993).

Based on the obtained results, we can conclude that the use of combined method (conventional-standard method with addition of antimicrobial and antiseptic preparations, has a significant effect on periopathogenic bacteria in patients with chronic periodontitis.

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