THE EFFICIENCY OF INITIAL PHASE TREATMENT IN CHRONIC MARGINAL PERIODONTITIS

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Abstract

Aim of the study. To evaluate the efficiency of initial periodontal treatment by measuring indices of oral hygiene, gum inflammation and periodontal pocket depth before and after treatment.

Material and methods. 20 adult subjects were included in the study. Clinical examination included measurements of attached gingiva width, gum inflammation (GI), oral hygiene (OHI), periodontal pocket depth (PD), gingival recession (GR) and tooth mobility. The treatment had consisted of plaque control, supra- and subgingival scaling and root planing (SPR). Treatment success was quantified by measuring of the above indices before and after treatment. **Results.** OHI values decreased with 28,64% after DRP and GII decreased with 51,11%. From the total of 1289 sites with values ≥4mm, 512 sites got normal values at probing after initial treatment, the rest of 777 sites still had pathologic values, requiring further pocket reduction treatment.

Conclusions. Initial therapy is the only therapy needed for patients with superficial periodontal disease, but patients with aggressive or deep forms of periodontitis would require further pocket depth reduction treatment.

Keywords: Periodontitis, scaling and root planing, periodontal indices

Introduction

Data from literature consider subgingival microflora as the main etiologic factor of different forms of periodontal disease (Carranza, 2001).

This, the first phase of treatment is represented by the initial or antiinflammatory phase, which aims at total physical elimination of subgingival microflora and risk factors that favor dental plaque accumulation.

The initial treatment of periodontal disease comprises the following phases: personal control of dental plaque accumulation, supra- and subgingival scaling and root planing and additional odontal, prosthetic or endodontic treatments.

The aim of our study is to evaluate by clinical methods the efficiency of initial phase therapy of periodontal disease by scaling and root planning. We used different indices measured before and after treatment, in order to assess the amount of dental plaque accumulation, the degree of gingival inflammation and the alveolar bone level.

Material and methods

In this study we included 20 patients with different forms of chronic marginal periodontitis who received treatment in the Clinic of Periodontology, Faculty of Dentistry Tg. Mures. Clinical examination was done using a specific algorithm, by registration of personal data, anamnestic information, extra- and intraoral examination.

Thus, we determined the degree of gingival inflammation(GI) by measuring the gingival bleeding index of Ainamo et Bay (Ainamo J, Bay J, 1975), the oral hygiene status using the oral hygiene index (OHI) of O'Leary (O'Leary TJ, Drake RB, Nayor JE, 1972), periodontal pocket depth in millimeters measured in six sites for each tooth, gingival recession and tooth mobility. The complementary examinations used were panoramic X-rays and serial retroalveolar radiographs (Condor D, Buduru R., Smaranda Buduru, 2005).

The initial phase of periodontal treatment was represented by professional cleaning, scaling and root planning (SRP) and management of local risk factors. All patients were instructed about hygiene methods needed to be used in order to avoid further dental plaque accumulation.

The results of this phase were evaluated by measuring the plaque index variations measured before and after treatment. The supra-gingival scaling was done with ultrasonic devices in one visit; in the case of small deposits it was accompanied by sub-gingival scaling and root planning. It was followed by professional cleaning which eliminated all irregularities present on tooth surfaces after this instrumentation (Fouque-Deruelle C, Monnet-Corti V, 2003). It was done with tooth brushes, rubber cups and fluoride abrasive dental pastes.

For sub-gingival scaling and root planning we used local anesthesia (Fouque-Deruelle C, Monnet-Corti V, 2003); it was done in two consecutive

appointments at an interval of 24-48 hours, firs in the maxilla and second on the mandible. We used ultrasonic instruments adapted to pocket depths and Gracey curettes for root planning. The absence of pain was considered good clinical result of the procedure. All patients received antibiotherapy (Augumentin® 2 x 625 mg/day+ Metronidazol® 2 x 400 mg/day) for 7 days, beginning with the first day of treatment.

Postoperatively the patients were instructed to use soft dental brushes for at least 5 day after scaling and root planning; if necessary they could use also antialgic medication like ibuprofen; in case of sensitive teeth specific therapy could be used in the form of tooth pastes. For better plaque control we prescribed mouth rinses with chlorhexidine 0,12% or 0,2% (10 ml solution 0,2% or 15 ml 0,12%) which was proved to reduce the visible dental plaque by 50% and gingival inflammation by 45% (Grossman E, et al., 1986).

During the reevaluation phase we made an evaluation of initial treatment by re-measuring the clinical indices and radiographs. All data registered were introduced in a special statistical analysis system using Microsoft Excel 2007 and GraphPad In-Stat programs.

Results

The age of the patients included in this study varied between 40 and 67 years, with a mean of 52.95 +/- standard deviation of 7.944, which demonstrates the viability and extended limits of the study group. There were 12 men and 8 women, with 14 patients from urban enviroment.

For the total number of patients with chronic marginal periodontitis monitored (20 persons) the values of oral hygiene index (OHI) decreased from an initial 59.24% to 30.6% after reevaluation (Fig. 1), which allow us to consider the subjects as cooperatives. Gingival inflammation (GI) reduceed from 85.93% to 34.82% (Fig.2).

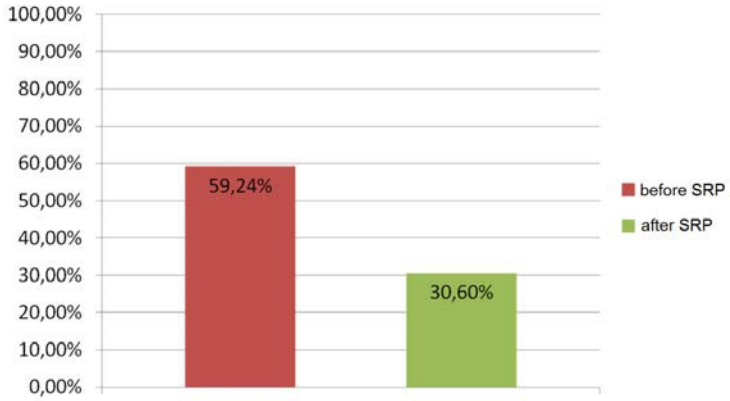

Figure 1.Modification of initial values of OHI after initial treatment

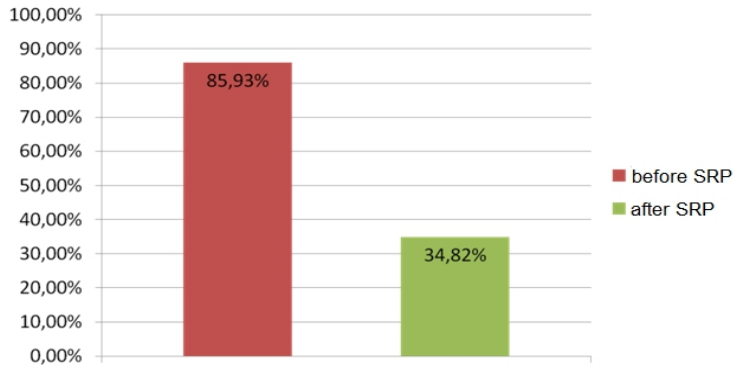

Figure 2.Variation of GI index after initial treatment

The mean pocket depth before treatment was 3.51 mm and after scaling it was 2.783 mm, which means a mean reduction of 0.727 mm.

Variation of pocket depths measurements after scaling, evaluated in teeth which had prior to treatment at least one site out of six with values ≥ 4 mm, showed a decreasing from 4.06 mm before initial treatment to 3.205 mm after treatment. Thus, the mean reduction of pocket depths in these cases was 0.855 mm.

When the efficiency of initial treatment was evaluated taking into consideration only sites that showed scores ≥ 4mm before treatment, we noted a reduction of mean values from 5.728 mm to 3.975 mm. This difference, meaning the mean reduction of pocket depths of these sites after treatment was calculated as 1,753 mm. (Table 1)

Table 1. Variation of periodontal pocket depths before and after treatment

	Mean PD before SRP	**Mean PD after SRP**	**Mean PD reduction**
All examined teeth	3.51 mm	2.783 mm	0.727 mm
Teeth with at least one of six values ≥ 4mm	4.06 mm	3.205 mm	0.855 mm
Sites ≥ 4mm	5.728 mm	3.975 mm	1.753 mm

For the study group, 540 teeth were examined, in each case 6 sites were measured, which means a total number of 3240 sites depths. If we eliminate the normal values of pocket depths considered to be between 2-3 mm, a number of 1289 pathological sites were found, which were evaluated before and after initial phase therapy.

From the total of 1289 sites with depths >4 mm, 512 had normal measurements of 2mm or 3 mm after treatment and the rest, meaning 777 sites remained with pathological scores, in need for further treatment of pocket depths reduction.

A global representation of sites examined is found in Figure 3. An uneven distribution of scores is seen, with a tendency of predomination

around 4 and 7mm before initial phase treatment and around 2 and 5mm after treatment. This fact demonstrates the efficiency of therapeutic measures.

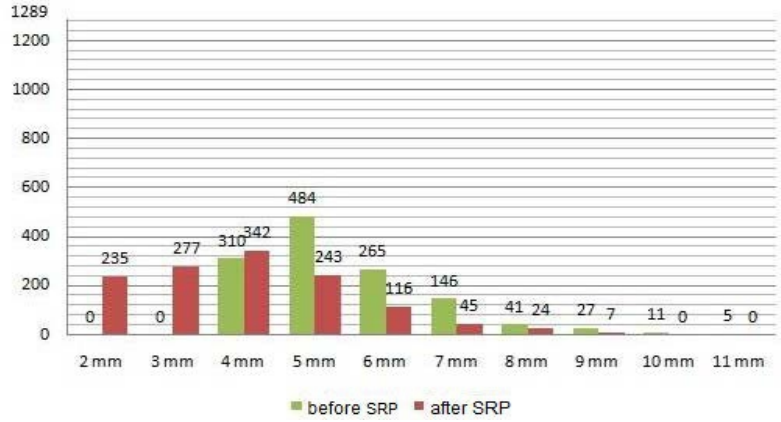

Figure 3. Global distribution of examined sites before and after initial phase treatment

Discussions

There is beyond any doubt that the initial phase treatment in any form of chronic marginal periodontitis is represented by scaling and root planning. Data from literature consider that physical disruption of biofilm by mechanical methods is essential in order to have an effective treatment against microorganisms (Darveau RP, Tanner A, Page RC, 1997).

Supragingival scaling is absolutely necessary as it induces modifications in subgingival microflora, in reducing the total number of bacteria, increasing the proportion between gram-positive cocci and bacilli, decreasing of important periopathogens as *Porphyromonas gingivalis, Prevotella intermedia, Tannarella forsythensis, Treponema denticola* (Ximenez-Fyvie LA et al., 2000). Sub-gingival scaling aims not only to eliminate local bacteria but also to physically disorganize of biofilm, meaning the disappearance of specific behavior properties of microorganisms.

Scaling and root planning were done in order to achieve the following results: absence of gingival inflammation, reduction in periodontal pocket depths and maintaining or increasing the level of epithelial attachment in time. Also, we aimed to obtain a better level of oral hygiene from all patients, elimination of toxin products that infiltrate root surfaces, which would offer a biologically compatible root cementum, suitable with new attachment formation (O'Leary TJ, 1986).

Thus, our results show a clear reduction of inflammation with 52.26%, in aggrement with data from literature that showed a decreasing of 42-86%. Also, in our study group the variations of pocket depth values were similar to other studies (Loos B, Kiger R, Egelberg J, 1987).

In cases with a slight loss of epithelial attachment, with pocket depths of 5-6 mm, we obtained values of 3.5-4.5 mm after initial treatment, meaning scores compatible with a healthy periodontium.

We can consider that in cases with superficial chronic marginal periodontitis, initial periodontal treatment might be the only type of therapy necessary in order to restore a healthy oral status.

Full mouth desinfection was described by Quirynen in 1995 (Quirynen M, et al., 1995) and represents complete subgingival instrumentation in two visits at 24 hours interval, combined with additional use of chlorhexidine in form of mouth rinses, subgingival irrigations, tonsils desinfection and tongue cleaning. As orientation, we used the therapeutic guide offered by Eberhard in his systematic review (Eberhard J.et al., 2009) regarding this procedure. In the attempt to evaluate the efficiency of classic mechanical treatment in comparison with full mouth desinfection, full-mouth scaling for treatment of marginal periodontitis, it was shown that full-mouth desinfection had slightly better results concerning reduction of pocket depths, compared with classical therapy. Nevertheless, in choosing our treatment method, we took into consideration that the patients in our study received antibiotics and we were aware of the possibility of recolonization of radicular sited by periopathogenic bacteria. Even though the aggressive full-mouth desinfection proposed by Quirynen (Quirynen M, et al., 1995) was not used, we found logical a two steps therapy at an interval of 24h- 48h, in the form of full-mouth scaling.

Numerous studies sustain the idea that mechanical methods do not eliminated in a predictable way true periopathogens from subgingival areas (Van Winkelhoff AJ., 2005), due to lack of accessibility, capacity of tisular penetration, or property to colonize radicular surfaces inaccessible to dental instruments. The persistence of these bacteria is the main cause of unsatisfactory results.

Taking into consideration all these aspects, the antibiotherapy seems to be a logical choice based on clinical evidence. In the design of our treatment plan we took into consideration recommendations of American Academy of Periodontology (Slots J., 2004), referring to patient groups that can benefit from systemic antibiotics.

Conclusion

Proper use of mechanical and chemical methods against dental plaque leads to elimination of microbial deposits, which is the part of prophylaxis or treatment absolutely necessary in any form of periodontal disease.

Mechanical treatment is essential in periodontitis, due to its effect of disruption upon biofilm and it has to be done before antimicrobial therapy.

Antibiotic therapy alone is insufficient for treating periodontal infections.

In cases of superficial chronic marginal periodontitis, initial therapy alone can provide a healthy oral status, being the only treatment method necessary in these patients.

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