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Short Communication

Nonsurgical Treatments in Periodontitis

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Abstract

Periodontal treatment modalities vary in a wide range, from nonsurgical scaling and root planning to invasive surgical ones such as bone graft and guided tissue regeneration. In all these procedures drug medications or mouth washes are as supportive additive therapies which seems to enhance outcomes or maintain the treatment achievements. In present study we review and categorize all nonsurgical therapies introduced for periodontal or gingival diseases in evidence based media and discuss the effectiveness of each upon the results of previous surveys.

Keywords: *Periodontitis; Medication; Laser; Photodynamic Therapy; Surgery*

Introduction

Periodontitis, or gum disease, is a common infection that damages the soft tissue and bone supporting the tooth. It happens when bacteria and plaque buildup around the tooth, and the immune system launches a reaction. Without treatment, the alveolar bone around the teeth is slowly and progressively lost. Periodontal treatment modalities vary in a wide range, from changing in life style and habits to nonsurgical scaling and root planning and eventually to invasive surgical ones such as bone graft and guided tissue regeneration. The main aim of treatment is to clean out bacteria from the pockets around the teeth and prevent further destruction of bone and tissue; in second step, remedies such as regeneration or reconstruction of the destroyed structures would be considered. It is believed that all types of mechanical periodontal treatment benefit from adjunctive antimicrobial chemotherapy [1]. In periodontitis drug delivery can be local or systemic; in a systematic evaluation the effectiveness of local antimicrobials in the non-surgical treatment of diabetic patients with periodontitis was assessed; the results showed that when local antimicrobials were used in adjuvant to SRP, the pocket depth reduction and clinical attachment level gain was significantly more than SRP alone, especially in well-controlled individuals and deep sites [2].

In present review study, all medical remedies, used to treat periodontal diseases are presented and discussed.

Locally use of antibiotics

Minocycline

In a study conducted by Tonetti., *et al.* [3], early and late changes in systemic inflammatory markers and endothelial function were compared in 120 patients with severe periodontitis upon treatment modality: one group was employed to basic conventional therapy of scaling and root planning and the other received locally injections of microspheres of minocycline, as well. Their results showed that intensive drug assisted periodontal treatment cause acute short term inflammation and endothelial dysfunction; however, 6 months after treatment the benefits were seen in vascular flow rates enhancement and inflammation suppression along with and correlated to improvements in periodontal status.

Metronidazole

Reise., *et al.* introduced an interesting class of resorbable drug delivery system, which made sustained release of metronidazole for locally treatment of periodontal disease [4].

Systemic use of antibiotics

Metronidazole and amoxicillin

Many studies reported beneficial effects of combined met/amoxi treatment adjunctive to non-surgical periodontal therapy [5-8]; however this supportive efficacy is said to be more prominent in nonsmokers than smokers with periodontitis [9]. In a systematic review conducted by Martin-Cabesas., *et al*. [10] the efficacy of adjunctive treatment with amoxicillin and metronidazole in low dose and short duration of antibiotic therapy was compared with high dose and long term use; the meta-analyzes showed no significant difference; though with a little higher incidence of drug adverse effects in high dose and long term use of the drugs. So, the best drug therapy dosage and duration was recommended as 500/500 or 400/500 mg of amoxicillin/metronidazole three times per day for seven days [10] this duration and dosage is also achieved as the optimum choice in another systematic review investigation [11]. Aral., *et al.* investigated the markers involved in periodontitis; they reported that p53 (the key marker of apoptosis) is reduced by adjunctive systemic antibiotic therapy up to 6 months however Caspase-3 and IL-1β were decreased only in 3months follow up without any change in 6 month; while TRAIL, TNF-α, and IL-10 were similar at baseline and 3 and 6 months [8].

This therapy was more beneficial in comparison to Azithromycin in moderate periodontitis [7]. Dabija., *et al*. in an *in vitro* investigation on microbial biofilm model simulated to periodontal pathogens proposed the equal efficacy of amoxicillin/metronidazole and penicillin V/metronidazole; so they believe that the substitution of penicillin v and amoxi in combination with metronidazole can decrease the risk of bacterial resistance to antibiotics [12].

Azithromycin

AZ exhibited greater reductions in PPD than SRP alone for baseline severe sites whilst AMX+MTZ showed significant improvements in PPD and CAL than SRP alone for baseline moderate and severe sites. Of the two antibiotic therapies, AMX+MTZ showed greater reductions in PPD compared with AZ in baseline moderate sites only [7]. When the disease is severe AZ+MTZ or AMX+MTZ both are effective; however in moderate degree of periodontitis AMX+MTZ showed better results than AZ+MTZ [7]. O'Rurke also reported when the pocket depth is greater than 6 mm the beneficial efficacy of systemic azithromycin as an adjunctive to nonsurgical periodontal therapy is appreciable [13]. Jagannathan and his coworkers examined different factors which affect azithromycin efficacy in treatment of periodontal disease [14]; the results showed that deeper study-level baseline periodontal pocket, full mouth scaling and root surface debridement compared to partial debridement, and post-therapy drug initiation (instead of pre-therapy drug initiation) are associated with greater periodontal pocket reduction [14].

Other modalities

In a clinical study conducted by Rampally., *et al.* the efficacy of aspirin and omega-3 as an adjuvant to nonsurgical periodontal treatment were compared in diabetic patients; the clinical periodontal indices and endocrine evaluation revealed that omega-3 would be better than low-dose aspirin and placebo after NSPT (non-surgical periodontal therapy) [15].

Probiotics were proposed for infectious diseases mainly in GI tract; however, its advantages can be examined in oral infections as well. Esteban-Fernandez., *et al.* conducted an *in-vitro* survey on the efficacy of *Streptococcus dentisani* as potential oral probiotic for periodontal diseases; though clinical re-examination of their results is needed [16]. Not only probiotics showed promising effects in *in-vitro* periodontal pathogens, but also their efficacy was proved as an adjunct to mechanical debridement against peri-implant mucositis of non-smokers [17].

Anti-microbial Mouth rinses and gels: Swain and colleagues developed an *insitu* loaded antimicrobial gel named Moxifloxacin Hydrochloride; many *in vitro* examinations are carried out and it is waiting for subsequent clinical studies to be introduced for clinical therapeutic approaches of periodontitis [18].

aPDT was also abundantly examined in recent literature as adjuvant to scaling and root planning; Still, in spite of promising clinical results, no specific meta-analyzes have not proved its sufficient potency to substitute conventional antibiotic treatment [19]. Yet, the evidence from the 118 human clinical studies cited in this narrative review remains conflicted and insufficient to suggest that integration of a laser in a periodontal treatment protocol will provide antimicrobial and healing outcomes superior to those achieved by traditional therapy [20]. Future clinical trials of high methodological quality are needed to establish the optimal laser parameters in combination to photosensitizer and patient specific factors.

Surprisingly orthodontic treatment when is combined to other remedies of periodontitis show better long standing results [21].

Bibliography

1. Graziani F., *et al*. "Nonsurgical and surgical treatment of periodontitis: how many options for one disease?" *Periodontology 2000* 75.1 (2017): 152-188.

2. Rovai ES., *et al*. "Efficacy of Local Antimicrobials in the Non-Surgical Treatment of Patients With Periodontitis and Diabetes: A Systematic Review". *Journal of Periodontology* 87.12 (2016): 1406-1417.

3. Tonetti MS., *et al*. "Treatment of periodontitis and endothelial function". *The New England Journal of Medicine* 356.9 (2007): 911-920.

4. Reise M., *et al*. "Release of metronidazole from electrospun poly(L-lactide-co-D/L-lactide) fibers for local periodontitis treatment". *Dental Materials* 28.2 (2012): 179-188.

5. Souto MLS., *et al*. "Efficacy of systemic antibiotics in nonsurgical periodontal therapy for diabetic subjects: a systematic review and meta-analysis". *International Dental Journal* 68.4 (2018): 207-220.

6. Mestnik MJ., *et al*. "The effects of adjunctive metronidazole plus amoxicillin in the treatment of generalized aggressive periodontitis: a 1-year double-blinded, placebo-controlled, randomized clinical trial". *Journal of Clinical Periodontology* 39.10 (2012): 955-961.

7. Liaw A., *et al*. "Comparing the periodontal tissue response to non-surgical scaling and root planing alone, adjunctive azithromycin, or adjunctive amoxicillin plus metronidazole in generalized chronic moderate-to-severe periodontitis: a preliminary randomized controlled trial". *Australian Dental Journal* 64.2 (2019): 145-152.

8. Aral K., *et al*. "Six-month clinical outcomes of non-surgical periodontal treatment with antibiotics on apoptosis markers in aggressive periodontitis". *Oral Diseases* 25.3 (2019): 839-847.

9. Faveri M., *et al*. "Clinical and microbiologic effects of adjunctive metronidazole plus amoxicillin in the treatment of generalized chronic periodontitis: smokers versus non-smokers". *Journal of Periodontology* 85.4 (2014): 581-591.

10. Martin-Cabezas R and Huck O. "No evidence to support benefit of 14-day courses of amoxicillin-plus-metronidazole as adjunct to non-surgical periodontal treatment at three months". *Evidence-based Dentistry* 20.1 (2019): 16-17.

11. Wang JC. "The Use of Amoxicillin (500 Mg) Plus Metronidazole (500 Mg) for 7 Days Adds Adjunctive Benefits for Nonsurgical Periodontal Therapy, but Limited Evidence Supports Higher/Longer Dose". *The Journal of Evidence-Based Dental Practice* 18.3 (2018): 249-251.

12. Dabija-Wolter G., *et al*. "The effect of metronidazole plus amoxicillin or metronidazole plus penicillin V on periodontal pathogens in an in vitro biofilm model". *Clinical and Experimental Dental Research* 4.1 (2018): 6-12.

13. O'Rourke VJ. "Azithromycin as an adjunct to non-surgical periodontal therapy: a systematic review". *Australian Dental Journal* 62.1 (2017): 14-22.

14. Jagannathan N., *et al*. "Disease severity, debridement approach and timing of drug modify outcomes of adjunctive azithromycin in non-surgical management of chronic periodontitis: a multivariate meta-analysis". *BMC Oral Health* 19.1 (2019): 65.

15. Rampally P., *et al*. "Comparison of effectiveness of low-dose aspirin versus omega-3 fatty acids as adjuvants to nonsurgical periodontal therapy in Type II diabetic patients with chronic periodontitis". *Journal of Indian Society of Periodontology* 23.3 (2019): 249-256.

16. Esteban-Fernandez A., *et al*. "In vitro beneficial effects of Streptococcus Dentisani as potencial oral probiotic for periodontal diseases". *Journal of Periodontology* (2019).

17. Alqahtani F., *et al*. "Efficacy of mechanical debridement with adjunctive probiotic therapy in the treatment of peri-implant mucositis in cigarette-smokers and never-smokers". *Clinical Implant Dentistry and Related Research* (2019).

18. Swain GP., *et al*. "Development of Moxifloxacin Hydrochloride loaded in-situ gel for the treatment of periodontitis: In-vitro drug release study and antibacterial activity". *Journal of Oral Biology and Craniofacial Research* 9.3 (2019): 190-200.

19. Akram Z., *et al*. "Efficacy of photodynamic therapy versus antibiotics as an adjunct to scaling and root planing in the treatment of periodontitis: A systematic review and meta-analysis". *Photodiagnosis and Photodynamic Therapy* 19 (2017): 86-92.

20. Cobb CM. "Lasers and the treatment of periodontitis: the essence and the noise". *Periodontology 2000* 75.1 (2017): 205-295.

21. Zhang J., *et al*. "Efficacy of combined orthodontic-periodontic treatment for patients with periodontitis and its effect on inflammatory cytokines: A comparative study". *American Journal of Orthodontics and Dentofacial Orthopedics* 152.4 (2017): 494-500.

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