

Treatment Options Proper Management of Periodontitis

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Abstract: This review aims to update the optional available effective therapy of periodontitis based on the most recent scientific evidence. We aimed to emphasis the different treatment approaches to this oral disease. We conducted a comprehensive review through the MEDLINE database by using of PubMed to identify articles containing “periodontitis” and “treatment” published in English language up to April 2017. Furthermore, references list of each included article were reviewed for more identical citation concerning our review. Evidence showed that antibiotic intake should begin on the day of debridement conclusion and be finished within a brief amount of time. Additionally, because of problems connected to the indiscriminate use of antimicrobials (i.e. systemic negative effects, negative effects and boost in bacterial resistance), the use of systemic antimicrobials in periodontitis ought to be restricted to patients with aggressive, extreme and advancing forms of periodontitis.

Keywords: Therapy of Periodontitis, Use of Antimicrobials.

1. INTRODUCTION

Periodontitis is a plaque-induced inflammatory problem that influences the periodontium; it is brought on by the adherence to tooth surfaces of pathogenic microbial species arranged in intricate areas that develop biofilms ^(1,2). Periodontitis and periodontal diseases hold true infections of the oral dental caries. There is a balance that exists between microbial obstacle and also host's immune response; any type of modification to that with enhancement of various other modifying factors is accountable for scientific indication of gum disease ⁽²⁾.

Gum microorganisms characterized by the manifestation of a slow irreversible damages of gum supporting tissue loss within of time ⁽³⁾. It has been revealed that deep periodontal pockets as a result of alveolar bone devastation have been related to the increase in the number of missing teeth ⁽⁴⁾. It is difficult to specify accurate prognosis for every private tooth as well as the total dentition, however, the trick for the success in forecasting the prognosis is normally based on expertise of the literary works, precise compilation of medical and radiographic criteria, past clinical as well as surgical experiences and also factor to consider of patient's worth's and also compliance ⁽⁵⁾.

Chronic periodontitis is much more prevalent compared to the general population acknowledges. Around 80% of adults in the US have at the very least one site with add-on loss. Much more serious chronic periodontitis influences approximately 35% of the United States population ^(6,7). Surprisingly, only a little percent of this population look for periodontal care. This comes to be the first obstacle of dealing with periodontitis.

The reliable therapy of a transmittable disease depends on precise diagnosis of the bacterium(s) linked in its etio-pathogenesis ⁽⁷⁾. This is not constantly a simple goal to attain, especially in cases of mixed infections in areas of the body that are normally infected with microorganisms, such as the intestinal system and also mouth. Technical problems in reviewing the facility subgingival microbiota, which is highly conquered by numerous species of fastidious microorganisms and stringent anaerobes, have actually significantly delayed the correct diagnosis as well as treatment of periodontitis ⁽⁸⁾. Requirement periodontal treatment consists of mechanical debridement to get rid of biofilm and also calculus from the influenced origin surfaces. This technique has shown successful for many patients ^(9,10,11).

This review aims to update the optional available effective therapy of periodontitis based on the most recent scientific evidence. We aimed to emphasis the different treatment approaches to this oral disease.

2. METHODOLOGY

We conducted a comprehensive review through the MEDLINE database by using of PubMed to identify articles containing “periodontitis” and “treatment” published in English language up to April 2017. Furthermore, references list of each included article were reviewed for more identical citation concerning our review.

3. RESULTS

Basis of Pathogenesis of periodontitis:

Periodontitis is a complicated disease in which disease expression entails complex interactions of the biofilm with the host immune-inflammatory action and subsequent alterations in bone and connective cells homeostasis^(8,10,11). Thus, conceptual models of the pathogenesis of periodontitis may benefit from a systems approach, in which biologic mechanisms are researched as well as translated in an ordered set of functional modules, such as the microbial ecosystem or the immune-inflammatory response, which might be changed by factors (e.g., smoking) that operate at the patient degree. A version of the pathogenesis of periodontitis based on systems biology approaches ought to enable detectives to much better communicate the interrelatedness of numerous biologic parts involved in the initiation as well as resolution of disease⁽¹¹⁾ (Figure 1).

Throughout the same period of time, there were considerable advancements in knowledge regarding chronic diseases as a whole that have influenced our thinking of the pathogenesis of periodontitis. Inflammatory systems were acknowledged as being usual to several chronic diseases of aging, such as cardiovascular disease^(12,13,14). Second, periodontitis as well as other chronic diseases were recognized as "facility" in character. This indicates that the total biologic system has a unique actions that is more than the sum of its parts, i.e., it displays "emerging homes." A current research⁽¹⁵⁾ emphasized that complex biologic attributes, such as excessive weight, have molecular networks that display rising residential properties as a result of payments from environmental as well as genetic factors. Third, although the biology is complicated, the integrated behavior of the whole system can be studied using new simulation devices^(16,17). Molecular networks of particular biologic components, e.g., the immunoinflammatory feedback, could be examined as an useful component. Mixes of modules can be incorporated to examine the overall system behavior that translates into scientific outcomes. Each module is defined in terms of cellular as well as molecular outcomes as well as inputs. The bacterial components that activate the immunoinflammatory systems are inputs to the component. In addition, the genetic and also environmental factors that change that component's reactions are inputs. The antibodies, cytokines, growth factors, prostanoids, responsive oxygen varieties, as well as various other moderators that are generated by the cells of the immunoinflammatory responses are the component's internal responses mechanisms and results that supply inputs to various other modules. There are many various combinations of inputs to a component, there are limited ranges of feedbacks and also outputs since biologic processes are well managed within limits that are constant with life⁽¹⁷⁾.

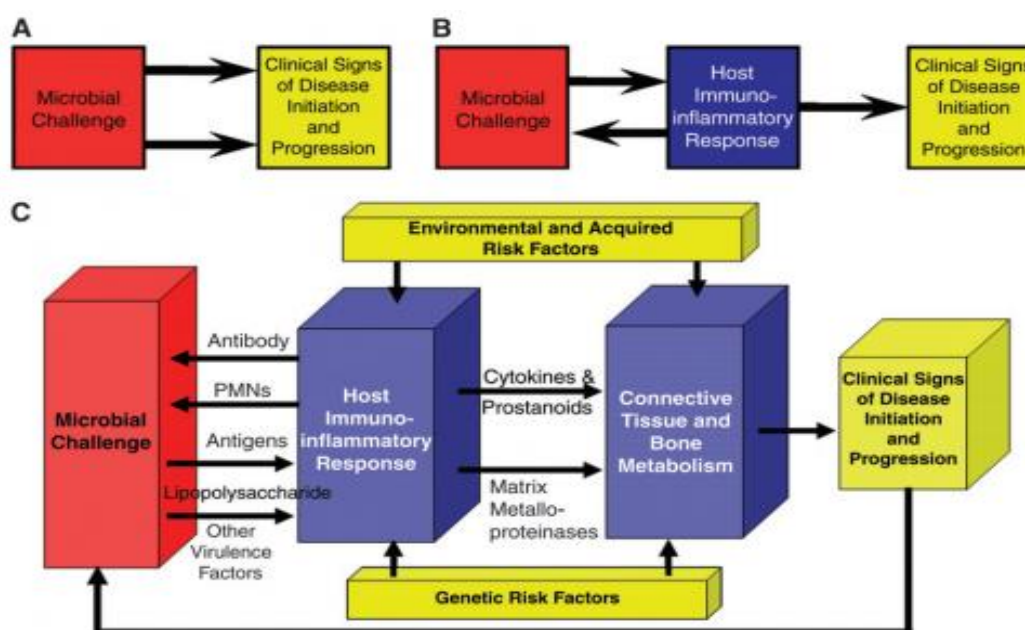


Figure 1: Concepts of pathogenesis of periodontitis

- **First step as Diagnosis and treatment planning of periodontitis:**

Given the quick progression of the disease and the high degree of problem in gaining control of the disease, medical diagnosis and treatment of aggressive periodontitis ought to preferably be performed by a periodontist^(17,18). However, the general dental professional does play an essential function in the early detection of patients who potentially have aggressive periodontitis. For a correct diagnosis, a comprehensive review of the patients' case history, medications, family history and social history is needed. In addition to an anamnesis, screening tests can be carried out to establish systemic modifying factors such as diabetes and hematological conditions. Ought to a systemic disease exist, for example poorly controlled diabetes, professional medical assessment need to be sought. Furthermore, risk factors, such as smoking and tension, need to be identified. The medical diagnosis needs to be made based on the abovementioned requirements and considerations, together with an extensive mapping of the gum condition, that includes the recording of penetrating pocket depths, medical attachment levels, bleeding on penetrating, furcation suppuration, participation and tooth mobility, and an evaluation of the patients' level of oral health. These information, together with a radiological analysis, are of utmost significance for screening and for establishing the correct diagnosis and a differential diagnosis. The diagnosis will also be a clear starting point for proper treatment preparation, for discussing and assessing treatment impacts to the patient and for patient education. It is necessary to realize that even the most sophisticated and aggressive cases of periodontitis are treatable. Case reports have been published with a follow-up of up to 19 years for patients with localized aggressive periodontitis⁽¹⁸⁾ and a follow-up of as much as 40 years for patients with generalized aggressive periodontitis⁽¹⁹⁾. It is essential for the patient to be highly compliant and extremely inspired to do his part in order to acquire control of the disease. A collective effort should for that reason be made by the clinician to notify the patient about the severity of the risk and the disease factors, and the function of the patient in the treatment. Also, the patient should be advised extremely precisely about the needed oral-hygiene steps⁽²⁰⁾. Furthermore, the clinician should assist the patient in controlling risk factors, such as smoking. Considerable proof indicate a familial aggregation of aggressive periodontitis. For that reason, it is the practitioners' task to notify the patient of this aspect and at least suggest evaluating other relative once the diagnosis has been developed. The patient ought to be asked about the gum condition of their close relatives and, if possible, these family members should seek consultation with a periodontist⁽²¹⁾. Treatment of periodontitis begins with patient education and ensuring patient compliance. A significant quantity of time should be purchased developing a good patient-- clinician relationship. The time dedicated to this, before beginning any form of active treatment and during the entire process of gum treatment, will have an effect on treatment success that need to not be underestimated. The patient must be plainly notified about the disease process, contributing factors, the various stages and goals of the treatment, the predictability of treatment success and the patient's own essential function in the treatment. The patient must know that, for success, it is important for optimum compliance in plaque control and maintenance and for possible modifiable risk factors to be addressed. If the clinician questions the compliance of the patient, numerous pretreatment visits could be consisted of in the treatment strategy, where compliance with oral-hygiene guidelines can be kept an eye on and improved, together with compliance to, for instance, a smoking-cessation procedure⁽²¹⁾.

- **Effects of adjunctive systemic antibiotics on periodontitis:**

A vast array of systemic prescription antibiotics, including amoxicillin (with or without clavulanic acid), azithromycin, clindamycin, doxycycline, tetracycline, spiramycin and metronidazole, have been evaluated in medical research studies. The impacts of such adjunctive systemic antimicrobial therapy in aggressive and chronic periodontitis have actually been assessed in a number of evaluations and organized evaluations with meta-analysis^(22,23,24,25,26,27). Herrera et al.⁽²⁸⁾ carried out a meta-analysis of 25 clinical trials (randomized regulated trials and regulated clinical trials) of ≥ 6 months' duration, comparing subgingival debridement (scaling and root planing) with adjunctive systemic antibiotics vs. scaling and root planing alone or with placebo. The authors reported statistically significant fringe benefits for spiramycin (probing-depth change = 0.41 mm) and amoxicillin plus metronidazole (scientific attachment level change = 0.45 mm) in deep pockets (> 6 mm). They concluded that in specific clinical situations, such as patients with deep pockets or with progressive 'active' disease or with particular profiles, use of adjunctive systemic antimicrobials could be scientifically relevant. Haffajee et al.⁽²⁵⁾ published an organized evaluation consisting of 29 studies (26 randomized regulated trials and 3 cohort research studies) with a duration of more than 1 month. Gum conditions were aggressive, frequent or chronic periodontitis, along with gum abscesses. The authors concluded that metronidazole, tetracycline and the combination of metronidazole plus amoxicillin attained the best outcomes but the aspects related to proper dosage and duration remained unclear. Herrera et al.⁽²⁸⁾ upgraded their previous work to include 32 publications and 45 contrasts. The agreement paper of the

corresponding workshop for this paper⁽²⁹⁾ concluded that, if systemic antimicrobials were used, this need to be as part of nonsurgical gum treatment.

- **Non-surgical treatment of periodontitis:**

Although the result of nonsurgical treatment on chronic periodontitis is well documented⁽³⁰⁾, its impact on aggressive periodontitis is much less clear. In relation to the effect of nonsurgical therapy alone as a treatment for aggressive periodontitis, 2 aspects appear of value. The first aspect relates to the concern of whether, and to what root, level and scaling planing alone can lead to the wanted medical changes, such as penetrating pocket-depth reduction, gain in clinical accessory and decrease in bleeding on probing. Ideally, this aspect is derived from data on the magnitude of the impact on the clinical specifications (e.g. the amount of penetrating pocket-depth decrease) integrated with information on the predictability (e.g. the proportion of patients reacting to treatment). Regrettably, the latter is frequently not reported. The second aspect relates to the long-term stability of the results acquired. For this, longitudinal information are essential. For localized aggressive periodontitis, the impact of nonsurgical treatment alone can be stemmed from studies where scaling and root planing represent the very first stage of a staged combination therapy. In this regard, Slots & Rosling⁽³¹⁾, evaluated 20 deep pockets in six patients with localized aggressive periodontitis and reported a little reduction of 0.3 mm in the penetrating pocket depth 16 weeks after scaling and root planing. Reporting on 19 patients with localized aggressive periodontitis, Palmer et al.⁽³²⁾ showed a typical decrease of roughly 0.8 mm in penetrating pocket depth and a typical gain in clinical accessory of around 0.3 mm for the impacted teeth, 3 months after scaling and root planing. A reduction in bleeding on probing was observed. Asikainen et al.⁽³³⁾ even reported an average probing pocket-depth reduction of 1.4 mm in 8 patients, 2 months after scaling and root planing. Sadly, none of the above-mentioned research studies carried out a statistical analysis of the observed effects. Unsal et al.⁽³⁴⁾ evaluated EUR the medical effect of scaling and root planing alone in 9 patients with localized aggressive periodontitis consisted of in the control group of their study. 3 months after carrying out scaling and root planing, pocket-depth decrease of 1.8 mm and clinical attachment gain of 1.2 mm was tape-recorded. These impacts were accompanied by a considerable decrease in bleeding on probing, from 47.1% to 10.1%.

- **Surgical treatment:**

The efficiency of a customized Widman flap treatment in reducing penetrating pocket depths is shown in a number of small-sample-size research studies. Christersson et al.⁽³⁵⁾ dealt with 25 deep periodontal lesions in 7 patients with localized aggressive periodontitis using one of three treatments: scaling and root planing alone; scaling and root planing with additional softtissue curettage; or customized Widman flap surgical treatment. Microbiological and scientific results were monitored up to 16 weeks after treatment. The outcomes showed that scaling and root planing alone did not successfully suppress *A. actinomycetemcomitans* in gum pockets, whereas scaling and root planing combined with soft-tissue curettage and modified Widman flap surgical treatment did. In addition, the clinical reaction to treatment was significantly much better for scaling and root planing integrated with soft-tissue curettage and for modified Widman flap surgery⁽³⁶⁾. Lindhe & Liljenberg⁽³⁷⁾ dealt with 16 patients with localized aggressive periodontitis by means of tetracycline scaling, administration and root planing and customized Widman flap surgery, after which the patients were enrolled in a maintenance program for 5 years. Sores in the beginning molars and incisors in a group of patients with chronic periodontitis were treated in an identical way and worked as controls. The treatment resulted in the resolution of gingival inflammation, gain of clinical attachment and bone refill in angular bony defects. The healing of the sores in the patients with aggressive periodontitis was similar to the healing observed in patients with chronic periodontitis⁽³⁷⁾. In another research study, carried out by Mandell & Socransky⁽³⁸⁾, eight patients with localized aggressive periodontitis were treated using method- fied Widman surgical treatment and a doxycycline regimen. Twelve months after surgical treatment the treatment had actually been effective in getting rid of *A. actinomycetemcomitans* from the pockets and obtaining mean probing pocket-depth decreases of approximately 3.6 mm, in addition to a mean accessory gain of 1.3 mm⁽³⁸⁾.

4. CONCLUSION

Evidence showed that antibiotic intake should begin on the day of debridement conclusion and be finished within a brief amount of time. Additionally, because of problems connected to the indiscriminate use of antimicrobials (i.e. systemic negative effects, negative effects and boost in bacterial resistance), the use of systemic antimicrobials in periodontitis ought to be restricted to patients with aggressive, extreme and advancing forms of periodontitis. the slight additional

benefits of adjunctive antimicrobials, which have actually been shown for moderate kinds of periodontitis, need to be balanced versus their negative effects, and therefore their prescription ought to be restricted as much as possible.

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