

Features of Complex Treatment of Patients with Chronic Generalized Periodontitis of Moderate Degree

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Abstract Chronic periodontitis is a common oral disease characterized by inflammation and destruction of the supporting tissues around the teeth. If left untreated, it can lead to tooth loss. The main cause of chronic periodontitis is the accumulation of plaque (a biofilm containing bacteria) on the teeth and gums. In recent years, there have been advances in the treatment of chronic periodontitis. Personalized medicine approaches such as genetic and microbial analysis are being explored to develop personalized treatment plans. Regenerative treatments such as stem cell therapy and tissue engineering show promise in repairing damaged periodontal tissue. Host modulation therapy aims to control the immune response and limit tissue destruction.

Keywords Chronic periodontitis, Oral diseases, Periodontal tissue, Plaque, Scaling and root planing, Surgical interventions, Regenerative therapy, Host modulation, Oral microbiome, Personalized medicine

1. Introduction

Treatment of chronic periodontitis is a rather difficult task. The complex and highly variable anatomical and topographic structure of teeth, the presence of dentinal tubules containing protoplasmic processes in them, make it almost impossible to eliminate necrotic, infected and decaying tissue. Such tissue contributes to the emergence and maintenance of pronounced and persistent pathological changes in periodontitis. In these conditions, treatment should include the use of various means of influencing the bacterial flora and decay products, and also provide for the possibility of isolating the peri-apical tissues from influences from the canal to inactivate the inflammatory process and more quickly achieve recovery [1,2,3,9].

According to numerous literary sources, periodontal diseases can occur independently in practically healthy people and in people with various pathologies of organs and body systems. In addition, there are a number of socio-epidemiological prerequisites that contribute to the development of these diseases. If the clinical picture of periodontal diseases has a fairly clear idea, then the issues of the effectiveness of their treatment in the presence of associated pathology of the body are not sufficiently illuminated and require resolution. In this regard, we present below some materials on the treatment of periodontal diseases with associated pathology and aggravated genesis. [4,5,6,9].

Currently, juvenile and post-juvenile periodontitis is receiving much attention due to the active destruction of supporting tissues and resistance to traditional treatment methods. The current level of knowledge about the etiology of inflammatory diseases of the supporting apparatus identifies periodontal microflora as the main causative factor that acts in conditions of the host's immune response.

The presence of abundant gram-negative and gram-positive anaerobic and microflora in aggressive periodontitis forms an attitude towards it as an infectious disease. This in turn explains the need for the use of antibiotics in periodontal treatment.

In addition, the development of aggressive periodontitis is accompanied by changes in both local and systemic defense mechanisms, so immunocorrection for this pathology has a pathogenetic motivation.

2. Purpose of the Work

Is to evaluate the effectiveness of treatment of chronic generalized periodontitis with the combined use of the macrolide antibiotic "Rulitsin" and the immunocorrector "Licopid".

3. Material and Methods

53 patients aged 17-23 years with various forms of periodontitis received complex treatment. Of these, group I (conditionally control) consisted of 19 people with a typical

form of periodontitis (TFP), group II (control) - 12 people with an aggressive form of periodontitis (AFP), group III (main) - 22 patients also with an aggressive form of periodontitis.

Patients of all three groups underwent professional oral hygiene, functional selective grinding of the cusps, and local factors contributing to the accumulation of microorganisms were eliminated. All patients underwent curettage or "open" curettage of periodontal pockets. Temporary composite splints were applied to mobile teeth before curettage. In the control groups, in addition to local anti-inflammatory therapy, diplane films containing metronidazole were applied to the gingival margin in a clinical setting, while patients were simultaneously trained to use them independently at home. Patients in group II (AFP-control) were additionally prescribed oral metronidazole 250 mg 2 times a day for 15 days. In the main group of patients with AFP, the macrolide antibiotic "Rulitsin" 150 mg 2 times a day was used in combination with the immunocorrector of microbial origin "Licopid" 1 mg 2 times a day for 15 days. The prerequisite for the use of this particular immunocorrector was work indicating the stimulating effect of "Lykopid" on the anti-infective defense of the macroorganism.

The effectiveness of the treatment was assessed using clinical indicators of periodontal condition (hygiene indices according to Silness-Loe, bleeding according to Muhleman, PMA and periodontal index according to Russel (PI)).

To assess the effect of the treatment on the state of the microbiocenosis of the periodontal pocket, a quantitative study of the microflora was carried out using the anaerobic - cultivation technique. The migration of leukocytes in saliva was determined according to the method of Yasinovsky M.A. modified by Lakhtin Yu.V. (1990). In addition to determining the total number of leukocytes, we studied the functional and metabolic potential of neutrophils, namely the oxygen-dependent mechanism of antibacterial activity of salivary neutrophils in a cytochemical version of the test with nitroblue tetrazolium (NST test), as well as their phagocytic activity. The SIgA titer in saliva was examined using an enzyme immunoassay analyzer.

According to the results of the study, in all observation groups at the end of treatment there was an improvement in the condition of periodontal tissues compared to the initial data. The most significant positive changes in the clinical condition of the periodontium were in the group with typical periodontitis. Hyperemia and swelling of the gums were almost absent, the gums fit tightly to the tooth.

A decrease in the hygiene index according to Silness-Loe, a high degree of reduction in the Mühlemann index, as well as a recession in the PMA and PI indices indicate the relief of inflammation in the periodontium and the transition of pathological processes to a new stage - the stage of remission.

A significant improvement in clinical parameters was also observed in the main group. The reduction in the Mühlemann index in the main group, $77.6 \pm 1.8\%$, approached the value in the group with TFT - $78.3 \pm 2.1\%$ (conditionally control). The PI index in the last group, where treatment was carried

out without the use of systemic antimicrobial drugs, decreased by 10 times (0.8 ± 0.1). In the main group (AFP), this indicator also decreased by almost 10 times (1.1 ± 0.2). But to achieve such an effect in this group, the systemic use of "Rulitsin" together with the immunocorrector "Licopid" was required. This once again indicates the severity of the inflammatory -destructive process in aggressive periodontitis.

The results obtained in the control group indicate a decrease in the phenomenon of inflammation in soft tissues, a slight but statistically significant decrease in indicators of periodontal condition compared to the initial ones. However, a re-examination 3 months after treatment showed a relapse of the disease in the control group, despite complex treatment using surgical methods and systemic administration of Metronidazole. The low effectiveness of treatment in this group may be associated not only with the initially detected reduced functional activity of the immune system, but also with a decrease in the sensitivity of most periodontal pathogens to Metronidazole preparations, as evidenced by some reports. The results of our bacteriological studies confirm this position.

Information about the state of the microbial landscape of the PC is fully consistent with changes in clinical indices of periodontal condition.

After a course of complex therapy, it was revealed that the treatment contributed to the elimination of convoluted forms of microorganisms, gram-negative rods, and non-spore anaerobes from the periodontal pocket. It is noteworthy that in the initial state, the inoculation rate of these microorganisms in the group with TFP was 4-5 times lower than in patients with AFP. Before treatment, it was also revealed that, unlike typical forms of periodontitis, in which the body of cocci is relatively stable, with AFP there was a 1.5-2-fold decrease in their number, and bifidobacteria and lactobacilli were completely absent.

The high therapeutic effect in the main group is explained not only by the elimination of aggressive flora from the PC, but also by the restoration of stabilizing, saprophytic species that colonize the ecological niche of the periodontal groove and are antagonists of periodontopathogens.

In the control group, in parallel with a slight decrease in the amount of aggressive microflora, the sowing rate of stabilizing species also decreased. The bacteria *S. sanguis* and *S. salivaris* decreased to 1.8 ± 0.1 and 2.2 ± 0.1 , respectively. Saprophytic species were sown in the smallest quantities: 1.2 ± 0.1 and 1.3 ± 0.1 . But yeast-like fungi *Candida* were found in large quantities albicans 14.0 ± 1.6 CFU/ml. Before complex treatment, patients with periodontitis showed suppression of local resistance, manifested by a decrease in the bactericidal potential of neutrophil leukocytes and a low level of SIgA in saliva, which was more pronounced in young people with AFP.

A macrolide antibiotic in complex therapy, in combination with an immunocorrector in the main group, made it possible to significantly change the indicators of phagocytosis activity and reduce the total number of leukocytes in saliva. The increase in phagocytic activity of cells in saliva that

we observed occurs due to an increase in the percentage of active neutrophils (FP - phagocytic indicator) participating in phagocytosis. If before treatment only $46.8 \pm 2.2\%$ were used in phagocytosis, then after treatment this figure rose to 1.1%. After treatment, the intensity of phagocytosis (PF - phagocytic number) also increased in the main group: the number of microbes absorbed by one was 3.88 ± 0.5 , in healthy people this figure was 4.0 ± 0.5 . In our opinion, "Lykolid" not only activates the absorption capacity of neutrophilic leukocytes. This is expressed in an increase in NBT-positive cells to $7.1 \pm 1.2\%$ in the spontaneous test and to $9.1 \pm 1.32\%$ in the stimulated test. The above indicates a significant increase in the metabolic activity of leukocytes, accompanied by an increase in oxygen-dependent mechanisms inside the cells.

Of the immunocorrector "Likolid" into the complex treatment program also contributed to an increase in the SIgA titer, which was not significantly different from that in healthy people.

The increased expression of SIgA is associated, on the one hand, with the direct immunocorrective property of "Licolid" on the production of this opsonin, and on the other hand, with the activation of phagocytosis, which is expressed in increased bactericidal activity of leukocytes. Aggressive microflora, also suppressed by the action of a macrolide antibiotic, are no longer able to break down SIgA with their protease activity. As a result, the protective function of the latter increases, manifested by the ability to prevent the attachment of bacterial antigen to the surface of the epithelium, without which the implementation of its pathogenic properties is impossible.

Less significant changes were detected in the control group, where traditional treatment with systemic administration of Metronidazole was carried out. Clinical and laboratory studies have shown that in this group of patients, although there is some correction of local resistance in the oral cavity, the differences in values compared to the initial ones (before treatment) are not significant.

4. Conclusions

Thus, the studies have shown that an increase in the level of phagocytosis activity and SIgA titer in the saliva of patients in the main group fully reflects the severity and dynamics of the reduction of the inflammatory-destructive reaction of the periodontium. The use of the macrolide antibiotic "Rulitsin" and the immunocorrector "Licolid" in the complex therapy of aggressive periodontitis contributed

to the stabilization of clinical indicators, shortening the treatment period and, no less important, prolonging the remission phase.

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