TO IMPROVE TREATMENT OF CHRONIC GENERALIZED PERIODONTITIS

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ABSTRACT

The article provides modern data on the problem of etiology, pathogenesis, clinical picture and treatment of generalized periodontitis. The authors came to the conclusion that treatment should be comprehensive and aimed at eliminating inflammation in the periodontal area, eliminating the periodontal pocket, stimulating reparative osteogenesis, restoring function, and preventing negative effects on the general health and quality of life of patients. The use of conductors in drugs for the treatment of inflammatory and destructive periodontal diseases is due to their ability to increase the transmucous conductivity of drugs to the inflammation focus, allowing you to create an effective concentration of the active drug component that is part of the composition in the entire volume of periodontal lesions and maintain it throughout the entire period of treatment.

Periodontal diseases range from the relatively benign gingivitis to chronic and aggressive forms of the disease. There is inconsistent use of criteria to define the different forms of periodontitis in literature. Throughout the 20th century, chronic periodontitis was considered as an inflammatory disease associated with local irritants and dental plaque on tooth surfaces [5]. This concept prevails today. What is now known as "generalized aggressive periodontitis" was not clearly described until the latter part of 20th century. The objective of this review is to update the current understanding of the chronic and aggressive forms of periodontitis and their implications for the diagnosis and treatment.

The initial stage of the complex treatment of inflammatory and destructive periodontal diseases is etiotropic therapeutic measures aimed at eliminating factors that contribute to the maintenance of inflammatory processes in the periodontium in connection with the attachment of biofilm, including: training and control of individual oral hygiene, removal of over- and subgingival dental deposits, closed curettage, treatment of caries and its

complications, elimination of overhanging edges of fillings. An integral element for achieving the effectiveness of therapy is the establishment of a trusting relationship with the patient [4, 9].

Chronic and aggressive periodontitis share many clinical features. They are both complex infections that occur in susceptible hosts and are caused by biofilms with indigenous oral microbiota on tooth surfaces [3]. The host response to the biofilms are primarily responsible for the loss of periodontal attachment and alveolar bone supporting the teeth [4] The eventual outcome of these untreated diseases is tooth loss.

In both generalized forms of chronic and aggressive periodontitis, the affected individuals have no known medical or general health conditions that might contribute to the development of their periodontitis. If the systemic disease profoundly impairs the ability of the host to cope with the bacterial challenge associated with periodontitis, the term "periodontitis as a manifestation of systemic disease" should only be used instead of and not "chronic or aggressive" according to the 1999 classification [6].

Although similar in many respects, chronic and aggressive forms of periodontitis have a number of significant clinical differences including: age of onset (i.e., detection), rates of progression, patterns of destruction, clinical signs of inflammation, and relative abundance of plaque and calculus. Indeed, combinations of these clinical differences are the primary basis for placing affected individuals into one of the three major categories of periodontitis (i.e., chronic periodontitis, localized aggressive periodontitis, and generalized aggressive periodontitis).

Currently, according to the results of numerous experimental and clinical studies, it has been scientifically proven that the drug of choice in periodontology is chlorhexidine, since it alone inhibits more than 80% of the biofilm [7, 22, 29]. The surface of teeth, implants and oral mucosa contains bacterial cells, the walls of which contain anionic groups (sulfates, phosphates, carboxyl groups) that have a negative charge, thus positively charged bisbiguanide has good absorption to them. It is known that the concentration of an antiseptic in the oral cavity after a single use lasts up to 8 hours, after a three-day use - up to 14 days, and use for up to 9 days - for 11 weeks, which is explained by the ability of chlorhexidine to bind the carboxyl groups of mucin and replace calcium ions secreted by the salivary glands. The antiseptic retains its activity in the presence of blood, pus, various secretions and organic substances. Chlorhexidine bigluconate has a pronounced effect against viruses, fungi of the genus Candida, gram-positive and gram-negative aerobic and anaerobic bacteria, without disrupting the functional activity of lactobacilli and Bifidobacteria [16, 20].

However, despite its high clinical efficacy, chlorhexidine in the form of a rinse solution has a number of undesirable effects: staining the surfaces of teeth, fillings, orthopedic structures, mucous membranes; unpleasant taste and impaired taste sensitivity, causes desquamation of the epithelium of the oral mucosa [21, 24]. Antimicrobial drugs of systemic action are used for aggressive and severe forms of periodontitis, accompanied by somatic pathology, complications after surgical interventions. According to the literature, the following antibiotics are most commonly used: metronidazole, lincomycin, clindamycin, azithromycin, midecamycin, roxithromycin, doxycycline, gramicidin C, amoxicillin, ofloxacin, ciprofloxacin [4, 19].

According to the results of the latest scientific research, the most effective antibiotic

acting on the anaerobic microflora is metronidazole. The pharmacy network today presents a variety of topical drugs containing metronidazole in combination with other antibiotics, antiseptics, NSAIDs: Metrogyl Denta, Asepta adhesive balm, Hialudent gel, Diplen films [3, 15].

It should be noted that today the introduction of phage preparations in the treatment of inflammatory and destructive diseases of periodontal tissues is promising. The advantage of bacteriophages over antibiotics is their selective action on pathogenic microflora [7, 16, 21]. In recent years, in many areas of clinical medicine, a structural analogue of compounds of the vitamin B6 group has been used, which has antioxidant, immunomodulatory and antimicrobial effects. The drug is used in the form of injections and / or instillations into periodontal pockets. The main effect of the drug is membrane-protective, determined by a decrease in the intensity of the main lipid-modulating membrane-destructive factors. In the domestic literature, there are data on the use of the drug in chronic generalized periodontitis against the background of gastric ulcer and duodenal ulcer [15, 26, 30].

The effect of ozonized oil "Ozonide" on the state of mucosal immunity of the oral cavity in patients with chronic periodontitis has been proved. Ozone affects microcirculation, the activity of the antioxidant defense system and the correction of lipid peroxidation disorders. The drug is an oily solution of products of deep oxidation of unsaturated carbolic acids of natural origin; it is used as applications in periodontal pockets [10, 19, 30].

Currently, the use of physiotherapeutic methods of treatment in the complex therapy of inflammatory and destructive periodontal diseases has been scientifically proven. Laser therapy is used as an independent procedure or in combination with an electromagnetic field [21]. The use of photodynamic therapy leads to the formation of a photocoagulation film with anti-inflammatory and conditionally disinfecting properties, which makes it possible to accelerate the regeneration of periodontal tissues [5]. It is known that under the influence of transcranial electrical stimulation, endogenous opioid peptides are released, which are immunostimulants and can regulate the severity of the immune response [7]. The next stage is surgical treatment according to indications, which includes open curettage of periodontal pockets, flap operations, gingivectomy, plastic surgery of the upper and / or lower lip frenum, vestibuloplasty, and extraction of teeth that cannot be preserved [9, 18]. This is followed by orthopedic treatment in order to restore the integrity and function of the dentition, stabilize the periodontium, and includes selective grinding, temporary splinting, and the manufacture of removable and non-removable dentures [17, 23].

According to indications, orthodontic treatment is also used, aimed at eliminating dentoalveolar anomalies and secondary deformities of the dentition, stabilizing the periodontal complex [19].

The last step is restorative therapy to stimulate bone regeneration. This process is facilitated by the use of means and methods that affect metabolism, microcirculation, and the immune system [4].

The peculiarities of the pathogenesis of inflammatory and destructive periodontal diseases interpret the need for the use of drugs that affect the immune system in order to increase the period of remission and reduce the duration of treatment of diseases. An analysis of the modern literature allows us to conclude that the use of immunomodulators in the treatment of periodontitis is not widespread enough at present, despite its high efficiency [25].

Scientifically proven the effectiveness of "Polyoxidonium" is a domestic, chemically pure, high-molecular immunomodulator, which also has an antioxidant effect. It is applied topically in the form of lozenges. The main distinguishing feature of the drug is its ability to stimulate the anti-infectious resistance of the body, while the formation of TNFa increases if its content is at a low or medium level, and slightly decreases with an increased content of this cytokine. Thus, the factors of specific and nonspecific defense of the organism are activated [17, 28].

Immunomodulator "Gepon" is a synthetic peptide consisting of 14 amino acid residues. It is used in the form of applications on the gums and instillations into periodontal pockets. The activation of local immunity is associated with the ability of the drug to change the spectrum of cytokines synthesized by cells, as well as to increase the functional activity of fibroblasts and epithelial cells, which promotes bone tissue regeneration [25, 26].

Of interest is also the gel-like form of chitosan Ascorbate (salts of ascorbic acid and chitosan). Chitosan is a natural biopolymer obtained from a component of the arthropod exoskeleton chitin by deacetylation. It has been proven that this polysaccharide has an immunotropic effect, as well as antioxidant, detoxifying, antibacterial and regenerating activity. However, to date, very little is known about the mechanism of modulation of the immune response of this drug [6, 28]. "Betaleukin" is a drug cytokine immunomodulator, which is a recombinant human interleukin-1p. A small molecule of IL-1p is the main mediator of the local inflammatory response, suppresses the spread of infection, improves the elimination of pathogenic microorganisms and the regeneration of damaged tissue. Local application of Betaleukin increases the functional activity of neutrophilic granulocytes, induces differentiation of the precursors of immunocompetent cells, increases the proliferation of lymphocytes and activates the production of cytokines [14, 25].

The drug “Milife”, an adaptogen with immunomodulatory, antibacterial and anti-inflammatory activity, is also used orally as part of the complex treatment of moderate periodontitis. As a result of experimental studies and clinical trials, it was revealed that the drug, acting on immunocompetent organs, causes the effect of a colony-stimulating factor, increasing the renewal of lymphoid cells, thereby induction of cellular and humoral immunity [6].

Currently, a number of clinical and laboratory studies of the immunomodulator - interferonogen "Cycloferon" are being carried out. According to literary sources, little experience has been accumulated in the use of cycloferon liniment in practical dentistry. It is known that the drug stimulates bone marrow stem cells, phagocytosis, reduces the activity of pathogenic microflora, which helps to reduce endotoxicosis. Positive clinical effects are associated with the ability to restore the local nonspecific immune response and stabilize lipid peroxidation processes. In addition, Cycloferon liniment is used in the complex therapy of chronic generalized periodontitis against the background of hepatitis C, HIV infection, and brucellosis [19, 29].

Immunomodulator "Galavit" is used in the treatment of periodontitis in the form of sublingual tablets and injections. The drug of domestic origin increases the functional activity of macrophages, increases the synthesis of endogenous interferons, enhances the production of antibodies synthesized against a specific pathogen [10, 16].

The immunomodulator of local action "Imudon" has found wide application in

dentistry. It is a polyvalent complex of antigens containing bacterial strains of 13 bacteria, which are most common in inflammatory diseases of the oral cavity. The drug enhances phagocytic activity, increases the amount of lysozyme in saliva, immunocompetent antibody-producing cells, immunoglobulin A, which plays a major role in the oral cavity defense system, and also inhibits lipid peroxidation. Numerous clinical and microbiological studies have shown the high efficiency of this drug in the complex treatment of inflammatory periodontal diseases of varying severity, manifested in the normalization of the immune status of patients [4, 14, 29]. A separate group is made up of immunomodulators of plant origin. The interest in studying this group of drugs is associated with an increase in the number of patients who report adverse reactions after taking chemotherapy drugs, such as addiction, overdose, and allergic reactions. According to the data of modern foreign and domestic scientific - research literature in the treatment of inflammatory and destructive periodontal diseases, the following herbal preparations are used: chamomile, echinacea, eucalyptus, sage, St. John's wort, licorice, celandine, peppermint, yarrow, rhubarb, calendula, alfalfa. At the same time, only echinacea, St. John's wort, ginseng, celandine have immunostimulating properties [20, 23].

Among the immunomodulators of domestic production of plant origin, the main share, about 85%, are preparations based on Echinacea purpurea. Echinacea extract has an immunomodulatory effect due to the content of phenylpropanoids, the most likely active ingredients, of which chicoric acid, polysaccharides and alkylamides of unsaturated acids have. The drug promotes the stimulation of phagocytosis, due to the migration of phagocytes to the lesion focus and also the destruction of the antigen through the production of reactive oxygen species, thereby increasing the nonspecific activity of anti-infectious immunity. To date, echinacea extract is presented in the composition of toothpastes, rinses, tinctures, syrups, and lozenges [23, 31].

For the local treatment of inflammatory periodontal diseases, various forms of drugs are used: solutions, gels, ointments, films, confectionery forms [24, 30]. With the local use of drugs for the treatment of periodontitis, there is often a problem of delivery of active medicinal components and the creation of the required concentration of the drug in the lesion [15].

The effectiveness of these systems in the treatment of inflammatory periodontal diseases is insufficient due to their almost complete absence of high conductive activity together with the prolonged action of active medicinal components, and to eliminate this problem, some medicinal products contain a hydrophilic base, which is a conductor and / or protector. The use of conductors in drugs for the treatment of inflammatory and destructive periodontal diseases is due to their ability to increase the transmucous conductivity of drugs to the inflammation focus, allowing you to create an effective concentration of the active drug component that is part of the composition in the entire volume of periodontal lesions and maintain it throughout the entire period of treatment [12, 20].

The most studied and often found in practical health care conductor is dimethyl sulfoxide - "Dimexide". The drug is a concentrate for preparing a solution for external use. Dosage forms with "Dimexide", as a rule, are simple to manufacture, composition and use, and the mechanism of action is associated with the ability to penetrate well through biological membranes and thereby increase their permeability to medicinal substances. In the treatment

of chronic generalized periodontitis, 10% "Dimexide" with a suspension of 1% ibuprofen, "Colegel" with metronidazole are used. However, the use of dimethyl sulfoxide in high concentrations can provoke tissue burns, an allergic reaction is also possible, and the unpleasant organoleptic properties of the solution and the complexity of storage and use, due to chemical instability, spreadability and washing out with oral fluid, limit the use of the drug in practical dentistry, namely in periodontology [7, 29].

Modern protectors include the aqua complex of titanium glycerosolvate - "Tizol". In addition to the ability to diffuse into the lesion focus (up to 8 cm) due to the gel structure due to the chemically bonded titanium atom with glycerin, the drug has a regenerating, antiseptic, anti-inflammatory and analgesic effect, which allows Tizol to be widely used in various fields of medicine, including dentistry. The drug is completely eliminated from the body within 24 hours, does not accumulate, is not metabolized and has practically no side effects. It is also known that "Tizol" refers to metal complex compounds, which contributes to a long shelf life and preservation of sterility throughout the entire storage period (up to 1 year) [5, 20].

Response of chronic and aggressive periodontitis to treatment. Protocols for treating chronic periodontitis are fairly well established. Protocols for treating aggressive periodontitis are largely empirical and have been subjected to few well-controlled comparative studies [31].

The clinical response and the microbiological response to nonsurgical therapy in the treatment of chronic periodontitis have been well documented. The response to periodontal treatment in aggressive periodontitis is much less well understood. The bottom line is that the patient with generalized aggressive periodontitis requires careful monitoring and close collaboration is necessary between all the members of a treatment team.

While the use of antibiotics in periodontal treatment will probably always be controversial, reports from both the American Academy of Periodontology [23] and the European Federation of Periodontology [24] suggests that patients with aggressive periodontitis appear to benefit from the adjunctive use of systemic antibiotics during treatment; however, both also emphasized that knowledge of the optimal drug, dosage and duration providing the greatest effect was unknown at this time.

Beyond isolated case reports, very little has been published about the surgical treatment of generalized aggressive periodontitis. There could be several logical reasons for this: Severe attachment loss on presentation; possible links with covert or undetected systemic disease; the inability to control risk factors; and a history of poor surgical outcomes with previous patients with generalized aggressive periodontitis.

Although little has been written about prognostic factors in aggressive disease [26], persistent deep pockets, loss of attachment, mobility, furcation invasion, suppuration, plaque, calculus, and other factors such as root grooves, cervical enamel projections, root fractures and poor restorations can help clinicians to predict the outcome of both diseases. These tooth-level factors could be used in the formulation of prognosis in conjunction with a number of subject-level factors including smoking, genetic predisposition, age, gender, race, and contributing medical conditions.

In general, it is likely that risk factors have similar long-term influences on both chronic periodontitis and aggressive periodontitis and they may dictate a poorer long-term prognosis in aggressive disease. Regardless, modulating and correcting these risk factors are

critical in the treatment of both chronic periodontitis and aggressive periodontitis. If risk factors, especially smoking, can be eliminated and if compliance with maintenance care is high, then therapy can be as beneficial to the patient with generalized aggressive periodontitis as it is to any other patient. The relatively high rate of sites breaking down over time in aggressive periodontitis patients suggests a likely need for retreatment during the maintenance phase.

Conclusion. Overall, while most clinicians would agree that aggressive forms of periodontitis exist as clinical entities, the clinical distinction between chronic and aggressive periodontitis (especially generalized) is not clear cut. However, from a research perspective, it is essential that these diseases be clearly distinguished in order to gain a complete understanding of their etiology and pathogenesis. The relative lack of clinical inflammation and the localized molar-and-incisor form is typical for localized aggressive periodontitis. In contrast, the presence of clinical inflammation in generalized aggressive periodontitis appears to be similar to that observed in chronic periodontitis, and in this situation, age of onset and family history are important additional criteria for either diagnosis or classification. One of the innovative transcutaneous and Transmucous conductors is a domestic development - silicon-containing Glycerohydrogel - "Silativit". This drug is represented by a hydrophilic base, which has high transcutaneous and transmucous activity, compatibility with many drugs, which allows small concentrations of Silativit to penetrate no less deeply into the affected tissues, increasing the effectiveness of active medicinal additives.

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