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ORIGINAL ARTICLE

Complex Procedure of Orthopedic Rehabilitation of Patients with Pathology of The Oral Mucosa

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ABSTRACT

Topicality: Removable orthopedic structures of dentures in the course of time irritate the oral mucosa. Competent manufacturing, timely correction, recommendations for professional and individual hygiene of the oral cavity and the dentures themselves do not always guarantee the absence of an inflammatory reaction of the prosthetic bed tissues. During orthopedic treatment, a dentist faces the challenge of preventing dysbiotic and inflammatory complications.

The Purpose: of this research is to study the influence of the basic material of removable orthopedic structures on the state of prosthetic bed tissues and to prove the effectiveness of the comprehensive method of oral dysbiosis prevention proposed by the authors.

Material and Methods of Research: Patients needed removable prosthetics were allocated to 3 equivalent study groups, each was offered specific therapeutic and preventive measures. The method of macrohistochemical reaction enabled to assess the mucous membrane condition under the bases of removable dentures made of acrylic polymer in a day, 7 and 14 days of applying a removable denture. The quantitative and qualitative composition of the oral mucosa microbiocinosis was also studied.

Results of the Study: The results of clinical and microbiological mucous membrane examination of the prosthetic bed indicate the expedience of using the orthopedic rehabilitation method proposed by the authors for the prevention of oral dysbiosis.

Conclusion: Studying these problems is especially significant for improving the effectiveness of orthopedic rehabilitation due to reducing inflammatory and dysbiotic dental complications.

MeSH words: removable dentures, oral mucosa, acrylic base plastic, dysbiosis, synbiotics, probiotics, dental gel, disinfectant solution.

TOPICALITY

The need of patients for orthopedic treatment with removable prostheses remains at a fairly high level [1,9]. The effect of removable dentures on the tissues and organs of the dental system is diverse, as well as the body's responses. The development of prosthetic field tissue reactions is based on various pathogenetic mechanisms due to the properties of the materials the prosthesis is modem of, the methods of its fixation, the characteristics of the transmission of masticatory pressure, the size of the prosthesis basis. The responses of the prosthetic bed are determined, on the one hand, by the characteristics, intensity and duration of the stimulus, and, on the other hand, by the organism reactivity [5,6].

Great attention in contemporary dentistry is given to the study of normal human microflora due to its established participation in the processes of digestion, metabolism, vitamin synthesis, developing the immune status and general nonspecific resistance of the body [2]. The course, outcome and prognosis of orthopedic treatment depend on microecological well-being [7]. Microbiocenosis of the oral cavity, both normal and pathological, is represented not only by bacteria, but also by viruses, fungi, yeast, spore forms of microorganisms, etc., which, as in other parts of the body, are in complex ecological relationships. The microflora of the oral cavity is a highly sensitive indicator system that reacts with quantitative and qualitative shifts to changes in the state of various organs and systems of the human body. Under the influence of various factors, including removable denture structures, the composition of the microflora can change, which can lead to the development of dysbiosis and inflammatory changes in the oral cavity, which worsen the results of orthopedic treatment. It is established that in patients with dysbiotic changes, the hygienic condition of the oral cavity and, accordingly, removable prostheses deteriorates [4,8]. This, in turn, accounts for the need to develop and introduce into dental practice the tools and methods that normalize biocenosis.

In recent years, there has been an active development of modern drugs - synbiotics, which include a complex of probiotics and prebiotics. Stimulation of probiotics with prebiotics contributes to the regulation of metabolic activity, the development of beneficial microbiota, the inhibition of potential pathogens and the ensuring of immune-modulatory effects [3].

Thus, the search and development of new comprehensive methods of the prevention of oral dysbiosis that occurs due to the use of removable dentures remains one of the topical issues of contemporary dentistry as a result of the prevalence of this problem.

The Purpose of the Research: To study the clinical effectiveness of organizational and methodological principles of the proposed complex of personalized therapeutic and preventive measures for oral dysbiosis in patients with removable orthopedic structures.

MATERIAL AND METHODS OF RESEARCH

To achieve this purpose, at the Propaedeutic Dentistry Department of Voronezh N.N. Burdenko State Medical University (VSMU), 60 patients of an equivalent age group with varying degrees of features of the prosthetic bed, both anatomical and topographic and anatomical and physiological, which are significant for the treatment in the orthopedic dentistry clinic, were allocated to 3 equivalent study groups: the first group included 20 patients who had a removable plastic prosthesis made of acrylic plastic «Ftorax» in Kharkov, Ukraine. When cleaning and disinfecting removable dentures, patients used a soft toothbrush, baby toothpaste and «Dentaseptin Ag+» solution (exposure in disinfection solution for 20 minutes); the second group consisted of 20 patients, they had removable prostheses made of acrylic base polymer «Belakril - MGO» Belgorod, Russia. They were recommended to use a soft toothbrush, baby toothpaste and «Dentaseptin Ag+» solution (exposure in disinfection solution for 20 minutes); the third group included 20 subjects who had removable plate prostheses made of acrylic base polymer «Belakril

- MGO» Belgorod, Russia. Patients were recommended to use a soft toothbrush, baby toothpaste and «Dentaseptin Ag+» solution (exposure in disinfection solution for 20 minutes). Patients of the 3rd study group were taught the technique of using adhesive dental gel with probiotic at home. A synbiotic was prescribed in the form of a tablet for dissolving 1 per day for 14 days.

In this regard, in order to analyze the indicators of orthopedic treatment with removable dentures made of acrylic base by different manufacturers and the correctness of the chosen method of therapeutic and preventive measures in patients, the total area of inflammation zones was studied after 1 day, 3 days, 1 week and 3 weeks.

RESEARCH RESULTS AND THEIR DISCUSSION

The analysis of the orthopedic treatment results in patients of 3 groups according to the state of the mucous membrane of the prosthetic bed in patients with removable acrylic prostheses showed that under the bases of removable prostheses in a day after application, the number of total areas of inflammatory reaction zones practically did not differ in patients of all 3 groups. It was 1372.9 mm² in the upper jaw and 850.2 mm² in the lower jaw.

7 days after the fixation of removable prostheses, an uneven decrease in the studied indicator was noted in all three groups. 2 weeks after the use of removable prostheses in group 1 patients who used removable plate prostheses made of acrylic polymer «Ftorax» and disinfectont solution «DentaseptinAg+» the dynamics of changes in the total area of mucosal inflammation zones in the upper jaw was 410.4 mm² and 376.1 mm² in the lower jaw.

In group 2 patients who used removable polymer prostheses of the acrylic group «Belakril - EGO» and the disinfectant solution «DentaseptinAg+», these values were 236.6 mm² in the upper jaw and 200.5 mm² in the lower jaw. In patients with removable dentures made of acrylic polymer «Belakril - EGO» and disinfectant solution «DentaseptinAg+», with the use of the therapeutic and prophylactic complex proposed by the authors, the smallest number of the total areas values of the pathological process zones was observed. The obtained values were 190.5 mm² in the upper jaw and 133.3 mm² in the lower jaw.

On the 21st day after the removable dentures fixation, the assessment of the mucous membrane condition of prosthetic bed showed that the smallest area of inflammation zones was observed in the 3rd group of patients with removable dentures «Belakril - MGO» using a disinfectant solution for dentures «Dentaseptin Ag+», adhesive dental gel with probiotic and synbiotic for dissolving in the oral cavity. The obtained values were 59.2 mm² in the upper jaw, and 46.5 mm² in the lower jaw.

In the 1st group of patients, this value was 120.1 mm² in the upper jaw and 116 mm² in the lower jaw. In patients of the 2nd group this value was 104 mm² in the upper jaw and 96 mm² in the lower jaw. The use of acrylic base plastic «Belakril - MGO» as a structural material in removable prosthetics, a disinfectant solution with silver ions for cleaning prostheses in a complex of therapeutic and preventive measures with the use of dental adhesive gel with probiotic, in combination with synbiotic in the form of a tablet for dissolving in the oral cavity, allowed to reduce the studied values. In addition, in patients of the 3d group, objectively, the oral mucosa turned pale pink, edema disappeared, patients noted the absence of bad breath, the disappearance of itching and burning of the oral mucosa.

When assessing the quantitative and qualitative composition of microbiocinosis of the oral mucosa, it was found that the following types of pathogenic and opportunistic microorganisms were identified in all groups of patients: Candida Albicans, St. Aureus, Str. Epidermidis, Str. Piogenes, E. Coli, Neisseria, Ent. Faecalis, Klebsiella, Str. Pneumania. The analysis of the results obtained of bacterial species in the studied material, taken from the mucous membrane of the alveolar ridge in the studied 1 st group of patients, showed that 10 days after the observation of patients, there was an increase in the growth of pathogenic and opportunistic flora, which was recorded in a month after the study. In the 1st group of patients, an increase in the growth of pathogenic and opportunistic flora was found. The revealed growth of pathogenic and opportunistic flora slightly decreased in 10 days in the 2nd group.

On the 10-th day of the studies conducted in the 3 group, the number of pathogenic flora colonies significantly decreased, or were not revealed at all. It was also noted that the degree of contamination of the studied material was significantly reduced. After 1 month of our studies, the pathogenic flora was not actually revealed.

Thus, based on the analysis of the conducted microbiological study, it can be concluded that in patients with the oral mucosa pathology the orthopedic treatment with acrylic removable dentures leads to a certain decrease in the anti-infective resistance of the oral cavity. Consequently, pathogenic and opportunistic pathogenic floras are activated. It was established that after cleaning and disinfection of removable prostheses made of polymer «Belakril - EGO» with a disinfectant solution «Dentaseptin Ag+» and using the complex proposed in combination with topical application of adhesive gel with probiotic and the use of synbiotic in the form of a tablet for dissolving, microbial contamination significantly decreased and the qualitative composition of the mucous membrane microflora of the prosthetic bed changed. In addition, the method proposed has been shown to be highly effective against Candida fungi, which play a significant role in the development of the mucous membrane normobiocenosis imbalance.

CONCLUSION

An important role in the development of the inflammatory process in the oral cavity belongs to the adhesion of microorganisms to the surface of the manufactured removable denture structure, determined by the physico-chemical properties of the structural materials it is made of. The use of the developed adhesive dental gel with probiotic in combination with the use of synbiotic in the form of chewing tablets made it possible to achieve the best result of the condition of the oral mucosa in a short time on the basis of macrohistochemical and objective studies and a positive assessment of the technique used in patients during the adaptation period, which confirmed its expedience. The analysis of the obtained results of the microbiological study gives reason to believe that a removable prosthesis made of acrylic polymer «Belakril - MGO», combined with the complex use of phage preparations and a disinfectant solution with silver ions, is a more effective orthopedic treatment, compared with the results obtained when studying this indicator in patients with removable prostheses made of acrylic polymers «Ftorax» and «Belakril- EGO», and fulfilling only individual recommendations on oral hygiene and removable dentures using a disinfectant solution «Dentaseptin Ag+».

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