Investigation of the bactericidal action of inverted intrinsic fluctuations of periodontal pathogenic flora

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Periodontal disease is one of the most difficult problems in dentistry. The periodontium is constantly at the center of research; it is a complex of tissues that have a genetic and functional commonality: the gum with the periosteum, periodontium, alveolar bone and tooth tissue. The object of the study is interesting in that pathological processes occur in it for several years with exacerbations and remissions.

Based on the analysis of WHO (World Health Organization) data collected in 35 countries, in persons aged 31-44 years old in 7 countries it was noted very high (over 75%), in 13 countries - high (40 - 75%) and 15 countries - moderate (less than 40%) prevalence of periodontal disease; in the structure of which inflammatory- gingivitis, periodontitis. Thus, high prevalence inflammatory diseases periodontium, significant changes in the dentition of the patient is a socially do this significant problem.

Modern antibiotic chemotherapy is not always effective and can cause allergic reactions. In addition, the non-specificity of antibacterial drugs contributes to the destruction of permanent microflora of the body, which makes it highly relevant to search for new, more specific and harmless methods of antibacterial therapy.

In early studies, we showed the possibility of using inverted natural oscillations of microorganisms as an alternative to bacterial chemotherapy. We have now expanded these studies, which we present in this communication.

Materials and research methods

Clinical strains of periodontal pathogens from patients with periodontitis were used. The studies were carried out at the Department of Microbiology of the Moscow State University of Medicine and Dentistry using the apparatus for bioresonance therapy (BRT) of the firm "IMEDIS". This device allows you to isolate the frequency spectra of physiological and pathological fluctuations in the magnetic field of living organisms, fix them and, if necessary, invert them during therapy. The operating frequency range of the apparatus is 10-500 kHz, the intensity of the magnetic field created by the apparatus is 1x10-fifteen T. Algorithms and modes of BRT are selected by the operator depending on the tasks (Bioresonance therapy. Methodical recommendations of the Ministry of Health of the Russian Federation No. 2000/74).

From a clinical strain periodontal pathogen filmed drawing natural magnetic vibrations followed by inverse notation of this drawing on saline [2, 3]. Next, a clinical strain of a periodontal pathogenic microorganism was inoculated into Petri dishes according to

Drygalsky. This type of inoculation allows to achieve a progressive decrease in the number of microorganisms and was used by us for clarity of the experiment. A suspension of microorganisms in 0.5 ml of physiological solution was introduced onto a nutrient medium, over which it was spread with a glass straight spatula. Then the same spatula was transferred into the second dish and the procedure was repeated, then into the third and fourth cups. The control cups were treated with pure saline, the investigated, hereinafter conventionally called "inverse", saline with inverse recording of magnetic field fluctuations of a clinical strain of periodontal pathogenic microorganism.

Research results

The research results were similar to the previous ones:

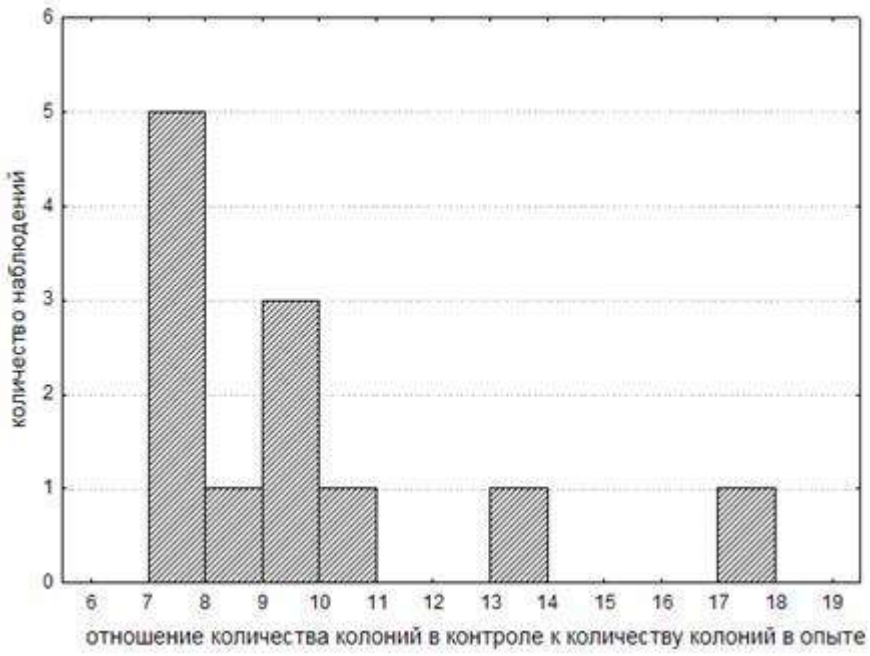
1) continuous growth was observed in the first inverted and control plates;

2) in the second inverse dish, a decrease in the amount of microorganisms by 1/3 compared to the control dish;

3) in the third cups, a further decrease in the amount of microorganisms, and in inverted plates compared with control microorganisms were two times less or no growth was completely absent;

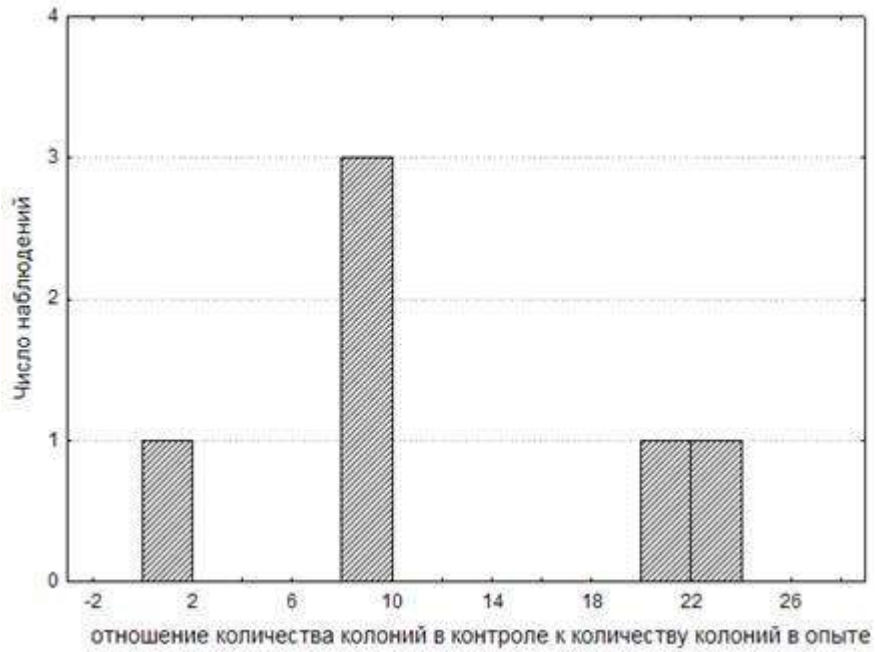
4) growth was completely absent in the fourth inverse dish, or single colonies remained, while in the control fourth dish the number of microorganisms decreased slightly.

Similar studies have been conducted with clinical strains Candida albicans, Actinobacillus spp., Streptococcus sanguis. The difference in inoculation results in the fourth dishes is shown in Figures 1-4. The reliability of the results was assessed by the paired comparison Wilcoxon (p made up 0.0022, 0.0028 and 0.068, respectively). As can be seen from Figures 1 and 4, growthCandida albicans in the experimental group, compared with the control, it decreases 7–18 times, from 63.3 ± 17.2 (M ± δ) to 6.9 ± 2.5 colonies (Fig. 4).



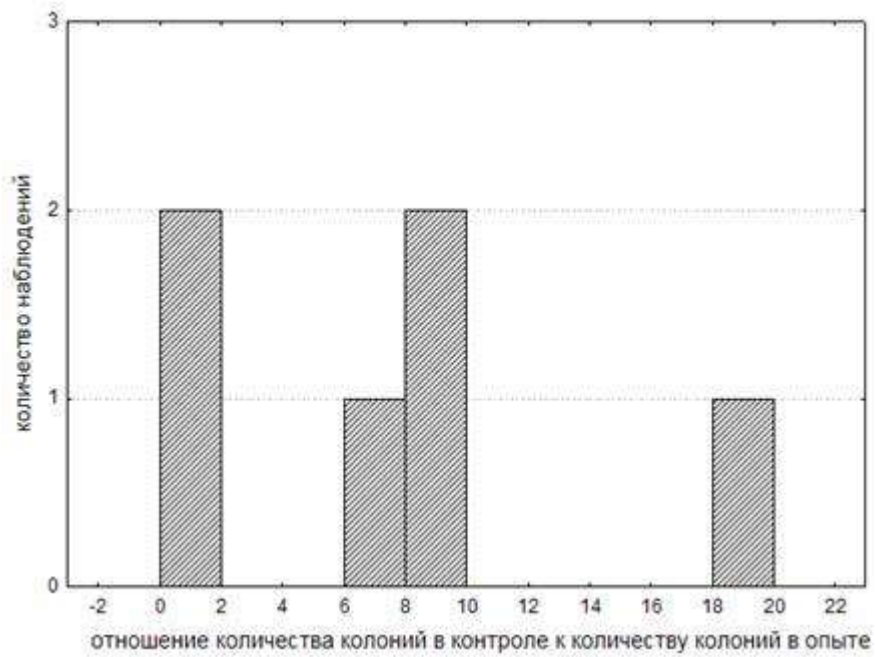
Rice. one.Colony ratio Candida albicans in control dishes to the number of colonies in the corresponding inverse dishes

Reducing the number of colonies Actinobacillus spp. in the inverse fourth plates compared with the corresponding controls varied in the range from 1 to 24 times, in one case, there were no colonies in the inverse plate. In the control group, there were 52.6 ± 22.8 (M ± δ) colonies, while in the experimental group, only 11.0 ± 17.8 colonies grew (Fig. 2, 4).

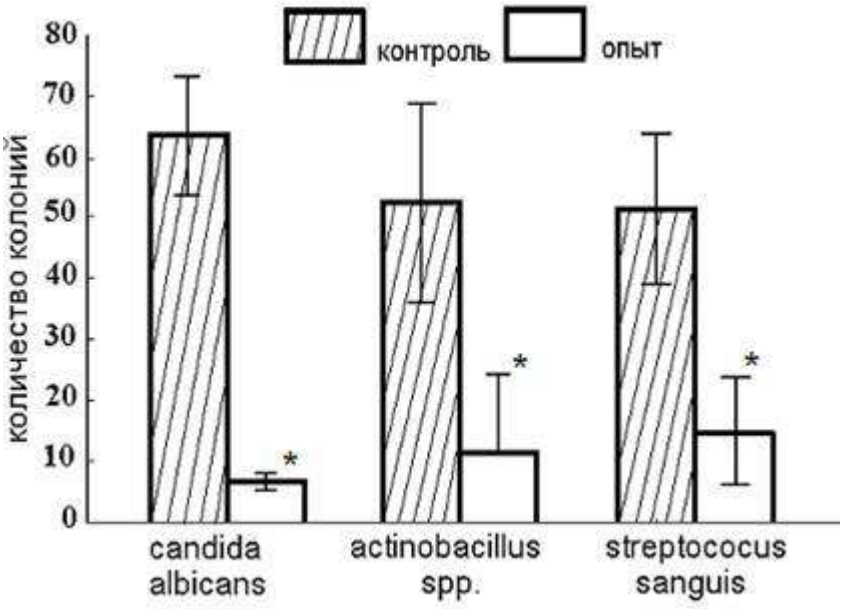


Rice. 2.Colony ratio Actinobacillus spp. in control dishes to the number of colonies in the corresponding inverse dishes

Similar results were obtained in colony studies Streptococcus sanguis. So, in the experimental group, compared with the control, the number of colonies Streptococcus sanguis decreased from 1 to 19 times: in control 51.2 ± 30.8 (M ± δ) colonies, in the experimental group - 14.7 ± 21.4.



Rice. 3.Colony ratio Streptococcus sanguis in control dishes to the number of colonies in the corresponding inverse dishes



Rice. 4.Average number of colonies grown under experimental conditions compared to control (M ± δ)

The studies carried out indicate the universality of the destructive effect of the carrier of inverted natural oscillations of the magnetic field on microorganisms and open up new possibilities in the fight against pathogenic flora.

Literature

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