

INFLUENCE OF THE OZONIZED SOLUTION OF FURACILLIN ON MICROBIOLOGICAL INDICES OF THE PATIENCE OF THE MOUTH IN PATIENTS WITH ACUTE PURULENT PERIOSTITIS

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It is known that in most people the source of purulent periostitis is exacerbation of chronic periodontal disease. According to research, it is known that the diagnosis and treatment of inflammatory diseases of the maxillofacial area is one of the main problems of dentistry. According to a number of researchers, inflammatory diseases of the maxillofacial region constitute up to 40% (6).

In the study of pus find a mixed microflora, consisting of streptococci and staphylococci of various species, gram- positive and gram-negative bacteria and often putrefactive bacteria. Among them, up to 75% is anaerobic bacteria and 25% is aerobic flora (8).

Despite active medical measures, in the last few years there has been an increase in the prevalence of this pathology among the population. According to the research of several authors, this is due to a change in the species composition of microorganisms causing acute purulent-inflammatory diseases of the maxillofacial region and the emergence of resistant strains to antibiotics (7). Also significant changes on the part of the human body, which is mainly expressed in changes in the immune status, under the influence of various environmental and social factors. In this regard, the introduction of the most effective drugs for local treatment of acute purulent periostitis remains an urgent problem.

The purpose of this study was to study the effect of the ozonized furacillin solution on the microbiological parameters of the oral cavity in patients with acute odontogenic purulent periostitis.

Material and methods

The results of the clinical study are based on the results of treatment of 55 patients treated in the surgical dentistry clinic of Tashkent State Dental Institute in 2016-2017.

To take into account anamnestic, clinical and laboratory studies of the course of the disease, we developed a map of the patients examination with acute purulent periostitis, which included anamnestic information, general and local signs of the disease, and laboratory data.

The clinical examination included an anamnesis collection - it was established how long the tooth had been destroyed, whether the treatment had been administered prior to hospitalization, where the seal was applied. When and under what circumstances there was a pain in the tooth. They found out which premorbid factors could influence the development of the disease. An external examination was performed, the localization of the inflammatory process in the near jaw tissues

and the palpation of the altered areas were determined, paying attention to the consistency of the swelling, the skin turgor, and the color.

From the side of the oral cavity, attention was paid to the condition of the teeth, the oral mucosa, taking into account the CFR + CF, the hygienic state of the oral cavity, focused attention on the state of the "causal" tooth, the degree of crown destruction, the depth of the carious cavity, the mobility of the tooth, the discharge from the tooth-gingival pocket, determined the prevalence of the inflammatory process along the transitional fold. According to the indications, X-ray studies were performed (dental image, orthopantomography, jaw projection in lateral projection). In saliva, the indices of nonspecific factors of oral cavity protection. Along with clinical and dental methods, microbiological studies were conducted in 55 patients with acute odontogenic periostitis. Prior to conducting emergency surgical care, patients were taken into a sterile tube with oral fluid. During the operation, immediately after opening, a smear was taken from the wound to be separated, which was introduced into a sterile test tube.

In the laboratory of the obtained material, using a phosphate buffer, for the best survival of asporogenic anaerobes, serial dilutions were prepared. Subsequently, under the conditions of boxing, a certain volume was taken from a suitable dilution and seeded on the surface of differential diagnostic and selective nutrient media, such as agar for anaerobes, medium for lactobacilli - MRS-4, for escherichia, Endo, milk-salt agar - for staphylococcus, environment Kalina for enterococci, blood agar - for determination of hemolytic activity, for fungi of the genus Candida Saburo environment.

All the crops were incubated for 24-72 hours under a thermostat at 37°C. Anaerobic anaerobic was used for the cultivation of anaerobes. After a certain time of cultivation, Petri dishes were taken out, counted the number of colonies. The number of bacteria of each species was expressed in lg CFU / ml.

Complex therapy of periostitis was initiated immediately after surgery by intramuscular or intravenous administration of antibiotics.

The above medication (traditional) was received by all 25 patients. Along with this, 30 patients immediately after the completion of periostomy and irrigation of the wound on its surface and surrounding the mucous membrane of the oral cavity were treated with an ozonized solution of furacillin. To assess the effectiveness of using an ozonized solution of furacillin in the treatment of acute purulent periostitis, the dynamics of the disappearance of clinical signs of the disease, microbiological indices at the 3 and 6 days of treatment, was monitored.

Statistical processing of the results of the study was carried out by the method of the Students variation statistics with the calculation of the arithmetic mean (M), standard deviation errors (m), and the degree of reliability (p) according to Students t-criterion.

Results and discussion

It is known that microorganisms now represent the most diverse and numerous group of living things on the planet. They are part of the biocenosis of all ecological processes that are observed under natural conditions [10]. It is microorganisms, like no other form of life, intensely involved in the cycle of substances in nature. Under the influence of various environmental factors, microorganisms can change their cultural, biochemical, pathogenic properties, antibiotic resistance, which causes complexity in their isolation, identification and evaluation of their epidemiological hazard [3]. The ongoing phenotypic and genotypic changes lead to an expansion of the spectrum of pathogens of human diseases, replenishing it with all the new microorganisms related to saprophytes [3]. To establish their aetiological role and evaluate the effectiveness of ongoing treatment procedures, a quantitative record of the results is necessary.

Analysis of the results of pus microflora in acute periostitis showed (Figure 1) that bacteria were sown from pus both in the form of a monoinfection (*Str.pyogens*, *St.epidermidis*) and in the association of several microorganisms. The association was most often attended by *St.aureus*, *St.epidermidis*, *E.coli* LN.

As can be seen from the data presented in Fig. 1, if *St.aureus* was sown in 20 cases (14.8%), then *St.epidermidis* in 19.3% (26 patients). Representatives of the streptococcus family were also sown in high enough numbers (*Str.gemoliticus* - 12.6%, *Str.pyogens* - 9.62%). The study of quantitative indicators of microorganisms showed that anaerobic flora prevails over facultative (Table 1).

The results of microbiological studies in patients with acute odontogenic periostitis showed that in the microbiological picture of the oral fluid, when entering the clinic, there are discobiotic changes.

A characteristic feature of the latter is a decrease in the number of anaerobic microorganisms, among which the most significant decrease in the number of peptostreptococci is 25.5% in relation to the healthy data and averaged $2.81 + 0.66$ I.g CFU / ml. Along with this, the number of facultative flora increases dramatically, the number of golden staphylococci significantly increases to $7.78 + 0.16$ Lg CFU / ml, hemolytic streptococci up to $3.31 + 0.83$ Lg CFU / ml.

In clinical terms, it is important not only to establish the type of causative agent of acute odontogenic purulent periostitis, but also the dynamics of the change in the microbiological picture of the oral fluid, after the intraoral cut of the subperiosteal focus and the removal of the tooth, the contents of the wound and the tooth socket are mixed with the oral fluid, which, in turn, washes both the wound and the socket of the remote "causative" tooth.

When studying the microbial landscape of the saliva of patients with periostitis, we discovered interesting facts that microorganisms that are not characteristic for a given biotope are strains of *E. coli* in the oral cavity prior to surgery. Thus, the

amount of lactose-positive *E. coli* was $3.17 + 0.42$ Lg CFU / ml and *E. coli* LN = $2.15 + 0.21$ Lg CFU / ml. These data indicate that not only dysbiotic changes occur in the oral cavity, but its resistance also decreases, i.e., barrier-protective functions are disrupted.

After traditional therapy, the frequency of occurrence of individual microorganisms varied. It should be noted that these changes were of a positive nature, so among the anaerobic microbes the septability of peptostreptococci significantly decreased almost 1.5 times, amounting to $3.22 + 0.18$ Lg CFU / ml. Significant changes occurred in quantitative indicators, especially in relation to *S. aureus* ($3.94 + 0.21$ Lg CFU / ml) of staphylococcus hemolytic ($2.66 + 0.16$ Lg CFU / ml), which was 50.4% and 20.8% lower than before treatment. It should be noted that a positive shift touched and facultative flora, where all the microbes decreased significantly, but the number of mushrooms not only did not decrease, but, on the contrary, increased. Apparently, this is due to the fact that in traditional therapy there were no preparations of antifungal action, which must be taken into account when drawing up a therapeutic treatment plan for this group of patients.

The fact that on day 5-6 after opening of the subperiosteal abscess in the wound and oral fluid, *Staphylococcus aureus* and hemolytic streptococcus decreased, respectively, by 50.4% and 20.8% than before treatment, indicating that the antibiotic therapy is insufficient for complete elimination of microflora, which was the cause of the purulent process. Although the patients had a tendency towards clinical recovery by this time, nevertheless, this condition could not be assessed as complete recovery.

When included in the complex treatment of patients with acute periostitis ozonized solution of furacillin varies the frequency of seeding the entire studied flora. Thus, the total number of anaerobes and lactobacilli increased by 13% and 27.6% and was on the average by day 3 $4.95 + 0.33$ and $4.48 + 0.65$ Lg CFU/ ml, and on the 6th day 5.11 ± 0.39 and $4.44 \pm$

[2] 26 Lg CFU / ml, respectively. Complex treatment led to the complete elimination of *St.aureus* and *Str.hemoliticus*.

After the course of complex treatment, a positive trend was observed for all representatives of the flora, especially completely eliminated LP and LN intestinal sticks, hemolytic streptococcus. The total number of anaerobes significantly increased by 1.34 times in relation to the initial data, making $5.02 + 0.19$ on day 3, and $5.11 + 0.39$ Ig CFU / ml on day

[3] and almost reached the control values.

Thus, according to the data of microbiological studies, in patients with acute purulent periostitis, oral fluid is represented by the spectrum of gram “+” and gram microorganisms and fungi of the genus *Candida*. Along with the traditionally identified gram “+” cocci (*St. epidermidis*, *St. Aureus*, *St. pyogens*), the percentage of isolating gram bacteria of the microorganisms of the Enterobac- ter family is

high. Under the influence of the treatment, there are significant changes in the microflora of saliva. However, when using the ozonized solution of furacillin, they are higher than in traditional treatment, as the level of general dissemination and the salivation of the streptococcus are approaching the normal parameters, as compared to the data before the treatment. Seeding of *Staphylococcus aureus* was not observed with a decrease in the salivary distribution of epidermal staphylococci, compared with pre-treatment data (up to $2.55 + 0.17$ Ig CFU / ml).

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