

Etiopatogenesis And Treatment Of Maxillofacial Inflammatory Processes Using Penicillin Group Antibiotics

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Abstract: *Currently, inflammatory processes activate various systems in the body. This article reveals the etiology and pathogenesis of odontogenic inflammatory diseases of the maxillofacial region. Special attention is paid to the aggressive course of the inflammatory process with the defeat of deep cellular spaces, accompanied by pronounced endogenous intoxication. The author analyzes the importance of the use of antibiotics from the group of penicillins in the treatment of inflammatory processes of the maxillofacial region.*

Keywords: *Purulent-inflammatory diseases, diagnostics, micro-organism, antibiotics, clinical observations.*

1. INTRODUCTION

The presence of inflammatory processes creates conditions for the growth of bacteria in the environment. Odontogenic inflammatory diseases of the maxillofacial region occupy a significant place in surgical dentistry, accounting for 85 to 95% of all inflammatory processes. The most common are acute and chronic periodontitis, exacerbation of chronic periodontitis, acute purulent periostitis of the jaw, acute osteomyelitis of the jaw, abscess, phlegmon, lymphadenitis.[1] Odontogenic inflammatory diseases of the maxillofacial region, among which abscesses and phlegmons occupy a significant share, are characterized by a wide spread and cause significant socio-economic damage. [2]

According to the literature, the number of patients with acute purulent-inflammatory processes of the face and neck is 3-4% of General surgical patients with purulent infection and 50-70% of the total number of patients being treated in the departments of maxillofacial surgery.[3] Phlegmon of the maxillofacial region is a serious and extremely dangerous disease. The severity of the condition with a spilled inflammatory process is determined by high intoxication of the body. Well- expressed innervation of the maxillofacial area determines sharp painfulness in the development of inflammatory infiltrate. The danger of phlegmon in the maxillofacial region is due to the proximity of vital formations, as well as anatomical and topographical features of this area, which contribute to the spread of the inflammatory process to neighboring parts of the body.[4,5]

Odontogenic inflammatory diseases of the maxillofacial region and neck develop as a result of the introduction of an infectious agent through the root canal of the tooth affected by caries and its complications (intra-canalicular pathway of infection), or through the periodontal

pocket into the periapical tissues (retrograde pathway).[6] For a long time it was assumed that the microbiological landscape in odontogenic infection is represented mainly by monoculture (Streptococcus, Staphylococcus), or in the form of associations of staphylococci and streptococci, gram-negative rods, diplococci.[7] Due to the development of methods for identifying various microorganisms, the use of modern diagnostic methods, other microbial associations were identified and verified, and the role of gram-negative opportunistic flora and anaerobes was established [14,17]

The study of the etiology of infectious diseases, including infectious and inflammatory processes of the maxillofacial region and neck, up to now has been conducted on the basis of the determination of pure cultures of microorganisms isolated from the pathological focus.[12,14] This traditional way of cultivating bacteria has clarified many aspects of the physiology of microorganisms, but the growth of pure culture in a suspended state is extremely rare in nature.[8] Currently, the main part of microbiologists has recognized that the majority of microorganisms in natural and artificially created environments exist in the form of structured communities attached to the surface-biofilms.[9]

A biofilm is a microbial community characterized by cells that are attached to the surface or to each other, enclosed in a matrix of extracellular polymer substances synthesized by them, and demonstrate a change in the phenotype, expressed in various variations of growth parameters and expression of specific genes.[10] Microbial biofilms have been found to be an etiological factor in many acute and chronic bacterial infections in humans.[11,16]

The aim of the study was to improve the complex treatment of patients with acute odontogenic purulent-inflammatory diseases of the maxillofacial region.

2. MATERIALS AND METHODS

During 2017 - 2019, in the Department of maxillofacial surgery of the Bukhara regional multidisciplinary medical center, we examined 55 patients aged from 17 to 55 years who were under inpatient treatment for acute purulent inflammatory diseases, including 30 men and 25 women. When all patients were admitted to the hospital, a detailed clinical examination was supplemented with immunological and x-ray examination, if the odontogenic etiology of the disease was assumed. Orthopantomogram, survey radiograph in lateral and direct projections, panoramic or sighting intraoral radiograph, CT studies were performed.

3. RESULTS AND DISCUSSION.

The problem of improving the diagnosis and treatment of inflammatory diseases of the maxillofacial region is one of the most urgent in surgical dentistry and maxillofacial surgery. Purulent-inflammatory diseases by etiology are infectious-inflammatory processes, i.e. the cause of development is microorganisms. Therefore, a common task in the treatment of patients with purulent-inflammatory processes is a set of measures aimed at affecting both the patient's body and pathogens.[3,4,5]

The reasons for the increase in the number of patients and complications, according to E. U. Makhkamov and M. I. Azimov (1987), are: late access to medical care, medical errors made in the pre-hospital period of treatment, the established stereotype in prescribing medication, late diagnosis of diseases and developed complications, and consequently, incorrect treatment

tactics. Despite the use of various methods of therapy for purulent-inflammatory diseases of the maxillofacial region, the surgical method of treatment remains the main one.

Treatment of purulent-inflammatory processes is based on a complex of surgical interventions and conservative measures. The main method of multicomponent therapy of patients with purulent - inflammatory diseases of the maxillofacial region is surgical. The old principle of purulent surgery-mandatory opening of the purulent focus - has not lost its significance at the present time. When choosing operative access to the purulent focus, the anatomical and topographic localization of the abscess is taken into account. The main reasons for treating phlegmon are, first of all, the use of wide incisions of sufficient depth, providing a free outflow of pus, reducing pressure in infiltrated tissues and early removal of necrotic tissues, as well as the suppression of microflora and acceleration of regeneration processes.[6,7,8]

Our clinical observations have shown that recently there has been an increase in the number of complications of acute odontogenic purulent-inflammatory diseases such as sepsis, meningitis, meningoenzephalitis, mediastinitis, brain abscess, facial vein thrombophlebitis and cavernous sinus thrombosis, bacterial shock, etc. The occurrence of the above-mentioned complications is facilitated by such factors as changes in the virulence of microflora, the appearance of antibiotic-resistant and antibiotic-dependent strains of microorganisms, a decrease in the resistance of the body, which increases against the background of gastrointestinal dysbiosis when using antibacterial therapy for acute odontogenic purulent-inflammatory diseases of CHLO, which complicates the course of the disease and makes it difficult to treat patients.

As for the currently used diagnostic methods, in some cases, errors may occur in making the correct diagnosis of a particular pathology. This in turn leads to the choice of inadequate methods of treatment of patients, which refers to microbiological and laboratory methods of diagnosis.

The above-described regularities in the clinical picture of acute odontogenic purulent-inflammatory processes of the maxillofacial region and their clinical laboratory aspects indicate the need to search for modern methods of their diagnosis and adequate therapy. Topographic and anatomical features of the maxillofacial region cause rapid retrograde spread of purulent infection, which contributes to the development of complications with a risk to the patient's life. Therefore, this problem of the maxillofacial area and neck challenges specialists of this profile to find innovative methods of diagnosis and treatment that have an effect on various links in the pathogenesis of inflammatory processes and provide prognosis of the course of the disease.

In patients with purulent-inflammatory diseases and purulent-septic complications of the maxillofacial region, it is necessary to prescribe antibacterial drugs that can inhibit rapid reproduction and pathogenic properties of microorganisms and their associations. In order to reduce the development of purulent-inflammatory and purulent- septic diseases, you can act in the following ways: by affecting the microflora through the use of bactericidal and bacteriostatic drugs or by strengthening the immune- protective properties of the patient's body.

In turn, the widespread use of antibiotics today has a number of disadvantages. The reason for this may be an increase in the resistance of some virulent microorganisms to

antibacterial drugs. In addition, the emergence of new resistant strains of microorganisms is noted. Often, antibacterial agents are ineffective due to the fact that microorganisms have an increase in antibacterial resistance. This may provoke an increase in the etiological role of opportunistic microorganisms. Many years of experience has shown that antibiotics can be an etiological factor in the development of the following complications : intoxication, allergic reactions, dysbacteriosis, etc. Today, treatment with antibacterial drugs should be considered as an integral part of the complex treatment of acute odontogenic inflammatory diseases of CHLO.

When prescribing a particular antibacterial drug to a patient, the spectrum of its antimicrobial action should be taken into account. The dose of the antibiotic is selected individually and depends on the age, severity of the process, sensitivity of the microflora, the state of excretory function of the kidneys and liver, and the tolerance of the drug to patients.

Antibiotic therapy in many cases should begin with the appointment of "shock" doses of the drug. Practical experience allows to draw the following conclusions: the use of high doses of antibiotics early in treatment can lead to response acute inflammatory diseases because of the allocation of a significant amount of microbial endotoxins in the rapid destruction of a large number of cells. The second negative side is the development of allergic reactions, layering of toxic complications, dysbacteriosis, candidiasis

On the contrary, the administration of small doses of antibacterial drugs leads to insufficient therapeutic effect and relapses of the disease, and also contributes to the development of drug resistance in pathogenic bacteria due to the survival of less sensitive individuals to the drug, followed by their selection and proliferation.

Special attention should be paid to those antibiotics that have a more effective effect on the bone tissue. Lincomycin hydrochloride is prescribed for 0.6 g/day, and for severe course of the process-every 8 hours. After receiving the data of the antibioticogram and determining the pathogen, the appointment of drugs is carried out taking into account the sensitivity of the microflora and the compatibility of paired combinations of antibacterial drugs.

The use of antibiotic therapy should be carried out at least 7-8 days. With long-term use of antibiotics, they should be changed every 10 days (according to the antibiotic chart) in order to prevent the development of resistance of microorganisms to the drug and avoid its side effects. The development of various kinds of complications is a reason to replace the drug. All patients should have a detailed blood test every week, and it is necessary to pay attention to changes in the number of white blood cells and certain types of white blood cells. With prolonged use of broad-spectrum antibiotics, antifungal drugs should also be prescribed (levorin 500,000 UNITS 2-4 times a day; nystatin 500,000 UNITS 3-4 times a day; griseofulvin 0.5 g. 4 Rza per day).

The use of antibacterial agents should be combined with the use of sulfonamides and nitrofurantoin preparations. The reason for the use of sulfonamides is their inactivation of beta-lactamase and thereby overcoming the resistance of microbial pathogens to penicillin. Some types of bacteroids produce beta-lactamase, which can reduce the concentration of appropriate antibiotics in regional tissues, which also helps protect those microorganisms that are associated with the bacteroids in the area of inflammation, although in the form of pure cultures, these bacteria are sensitive to prescribed drugs.

In the complex treatment of acute odontogenic purulent - inflammatory diseases of the

maxillofacial region, long - acting sulfonamides, such as sulfadimetoxin, sulfalen, and sulfapyridazine, are widely used.

It should be borne in mind that the level of concentration of antibiotics in the blood of elderly and senile people, especially with more or less prolonged use, is higher than in young people, which can be explained by the delayed release of these substances by the kidneys. Such antibacterial drugs as aminoglycosides, macrolides, tetracyclines and cephalosporins can be prescribed to patients only in the absence of renal failure. In geriatric practice, attention is drawn to the possibility of ototoxic effects of certain antibiotics-streptomycin, gentamicin, neomycin, etc. the function of the auditory nerves, as well as their ability to cause the development of candidiasis, atrophic glossitis and vitamin b deficiency. Therefore, when treating elderly and senile people with antibacterial drugs, it is recommended to simultaneously prescribe antifungal drugs and multivitamins.

As for the issues related to the treatment of acute purulent inflammatory diseases of the maxillofacial region, in modern conditions of "pharmacological oversaturation" of the body, reducing the sensitivity of microflora to antibiotics, suppression of immune protection by environmental factors, allergization of the body, insufficiently sparing in some cases, surgical intervention techniques, there is a low efficiency of generally accepted methods. All the above clearly indicates that the problem of treatment of acute purulent inflammatory diseases of the maxillofacial region in patients is urgent and requires the development and implementation of new technologies.

Thus, the complexity of the pathogenesis of this pathology - the presence of a microbial factor, inhibition of immunological status, intoxication, microcirculatory disorders, General and local hypoxia, etc. cause a variety of treatment methods.

Summing up all the above, we can state that the main direction in the complex treatment of purulent- inflammatory processes is devoted to the use of antibacterial and antitoxic drugs with adequate surgical intervention(9)

Despite the introduction of modern diagnostic methods, the problem of providing timely specialized care to patients with purulent and inflammatory diseases of the maxillofacial region remains relevant to this day. The medicinal products used should have a high therapeutic effect and have as few contraindications to their use as possible. We found it appropriate to approach the treatment of the above diseases using in their comprehensive treatment of antibacterial drug Climax.

This drug is available in tablets of 375 Climax, Climax 625, Climax 1000 coated. Drug Climax consists of a broad-spectrum antibiotic amoxicillin and clavulanic acid. Amoxicillin from the group of semisynthetic penicillins, which inhibits transpeptidase, disrupts the synthesis of peptidoglycan during division and growth, and causes lysis of microorganisms.

Clavulanic acid is a product of fermentation of *Streptomyces clavuligerus* and has a higher affinity for p - lactamases than amoxicillin administered simultaneously. Forming a stable inactivated complex with them, it prevents the enzymatic destruction of amoxicillin and provides a guaranteed possibility of its antibacterial action. Also, clavulanic acid, similar in structure to a p-lactam antibiotic, has a weak intrinsic antibacterial activity. Klamox is active against the following microorganisms:

1. gram-Positive aerobes: *S. Pneumonia*, *S. Piogenes*, *S. Viridans*, *S. Bovis*, *S. Aureus*, *S.*

Epidermidis, *Listeria* spp, *Enterococcus* spp.

2. gram-Negative aerobes: *H. Influenzae*, *Maroxella catarrhalis*, *E. coli*, *Proteus* spp, *Klebsiella* spp, *N. Gonorrhoeae*, *N. Meningitidis*, *Pasteurela multocida*.

3. Anaerobes: *Peptococcus* spp., *Peptostreptococcus* spp., *Clostridium* spp., *Bacteroides* spp. Climax well absorbed through the gastrointestinal tract. The diet does not affect the degree of absorption of the drug. The peak concentration of the drug in the blood plasma occurs after about 1 hour.

4. CONCLUSIONS.

The goal of complex treatment is to reduce intoxication, restore the disturbed balance between the body and the environment.

Since the main etiological factor of purulent- inflammatory processes are microorganisms, the main importance is the impact on the pathogenic microflora - the use of antibacterial drugs, both a wide spectrum of action, and taking into account the sensitivity of the flora.

Analysis of the results of the study showed that the use of complex therapy with the use of the antibacterial drug "Klamox" in the complex of therapeutic measures in patients with acute odontogenic inflammatory diseases of the maxillofacial region leads to recovery, significantly reducing the time of hospitalization.

When using the method of complex combination antibacterial therapy in treatment of acute odontogenic inflammatory diseases of maxillofacial region it is necessary to consider the nature and etiological factor of occurrence of the above pathological conditions.

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