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Purulent-Necrotic Diseases Of The Face: Aspects Of Diagnostics And Treatment

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ABSTRACT

The problem of treatment of pyoinflammatory diseases (PID) of the face and neck is relevant for both dentists of polyclinics and maxillofacial surgeons in hospitals. About 50% of those in maxillofacial hospitals, and about 20% of those who seek help from a dentist and a surgeon of polyclinics, are patients with inflammatory diseases of the maxillofacial region (MFO), among them - 60-80% of patients with abscesses and phlegmons, the frequency of which has increased by 1.5–2.0 times over the past decade. There has been a steady growth of atypical and severely flowing progressive phlegmon, spreading simultaneously in several cellular spaces, with the development of such formidable complications as sepsis, contact mediastinitis, and thrombosis of the cavernous sinus of the dura mater. Low-symptom “erased” forms of phlegmon are found among 13.4–22% of patients, are characterized by a long course and are difficult to diagnose, which contributes to late hospitalization and untimely treatment started. Microbial etiology of HVZ CLO is due to the localization of the primary process (connection with the oral cavity, teeth).

KEYWORDS

Maxillofacial region, pyoinflammatory diseases, abscesses, teeth, oral cavity.

INTRODUCTION

The problem of treatment of pyoinflammatory diseases (PID) of the face and neck is relevant for both dentists of polyclinics and maxillofacial surgeons in hospitals. About 50%

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of those in maxillofacial hospitals, and about 20% of those who seek help from a dentist and a surgeon of polyclinics, are patients with inflammatory diseases of the maxillofacial region (MFR), among them - 60-80% of patients with abscesses and phlegmons, the frequency of which has increased by 1.5–2.0 times over the past decade [1]. There has been a steady growth of atypical and severely flowing progressive phlegmon, spreading simultaneously in several cellular spaces, with the development of such formidable complications as sepsis, contact mediastinitis , and thrombosis of the cavernous sinus of the dura mater [2].Low-symptom "erased" forms of phlegmon are found among 13.4–22% of patients, are characterized by a long course and are difficult to diagnose, which contributes to late hospitalization and untimely treatment started [3]. The microbial etiology of HVZ MFR is due to the localization of the primary process (connection with the oral cavity, teeth) [4,5].

As a rule, there are associations of 2–6 types of microorganisms: aerobes (streptococci and staphylococci) and obligate anaerobes (bacteroids, fusobacteria , pept o - , peptostreptococci) [5,6]. The frequency of excretion of anaerobes is up to 52–68%, less often with non-odontogenic processes of the PMO - 20%, with odontogenic processes - 67.7–96% [7].

Being in symbiosis, bacteria gradually enter into antagonistic and synergistic relationships during the development of infection. This explains the negative dynamics of the clinical picture of the disease in mixed anaerobic-aerobic infections. For example, it was noted that representatives of the genus Veillonella exhibit weak pathogenicity in monoculture, and the synergistic action of accompanying aerobic microbes increases the pathogenicity of these bacteria. Purulent-inflammatory processes involving associations consisting of pept o - , peptostreptococci and gram-positive cocci are more severe and more extensive than lesions caused by monoculture of aerobic gram-positive cocci [8].

THE MAIN FINDINGS AND RESULTS

HVD MLO and neck requiring surgical intervention, often have odontogenic origin, are complications of the infectious process of the oral cavity. The spread of inflammation is possible by contact - along the fascial spaces (infections of the floor of the mouth) and hematogenous.

Oral cavity infections are classified into the following types depending on the anatomical location [9]:

- Odontogenic , associated with damage to tooth tissues (caries, pulpitis);
- Periodontal , including periodontium (periodontitis) and gums (gingivitis, pericoronitis), surrounding soft and bone tissues.

The main causative agents of odontogenic infections are microorganisms that are constantly present in the oral cavity: mainly green streptococci (Streptococcus mutans , Streptococcus milleri), non-spore-forming anaerobes (Peptostreptococcus spp ., Fusobacterium spp ., Actinomyces spp .). In case of periodontal infection, five main pathogens are most often distinguished: Porphyromonasgingivalis, Prevotellaintermedia, Eikenellacorrodens, Fusobacteriumnucleatum, Aggregatibacteractinomycetemcomitans, less often Capnocytophaga spp . [10]. Depending

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on the location and severity of the infection, the patient's age and concomitant pathology, changes in the microbial spectrum of pathogens are possible.

Thus, severe purulent lesions are associated with facultative gram-negative flora (Enterobacteriaceae spp.) And Staphylococcusaureus . In patients with diabetes mellitus, the elderly and patients admitted to the hospital, Enterobacteriaceae spp . Also predominate. [11].

Research by Yu.V. Alekseeva (2005) demonstrated that in odontogenic inflammatory diseases, Staphylococcus spp . (15%), Streptococcus spp. (6%) and obligate anaerobic bacteria (79%). Anaerobes are represented by gram-positive microorganisms - Bacteroides spp ., Fusobacterium spp ., Gram-positive cocci. Resident flora is sown in 86%, pathogenic strains in 7%.

In studies by L. Chavez de Paz , G. Svensater , G. Dalen , G. Bergenholtz (2004), it was revealed that Streptococcus gordonii, Streptococcus anginosus , Streptococcusoralis , and Enterococcus spp were most often isolated from the root canals of teeth with chronic destructive periodontitis . , Lactobacillus paracasei .

The development of odontogenic periostitis and osteomyelitis in 50% of cases is due to S. aureus and Streptococcus spp ., But, as a rule, anaerobic flora prevails: Peptococcus niger , Peptostreptococcus spp ., Bacteroides spp . [12].

In nonontogenic osteomyelitis, the key pathogens are methicillin- sensitive staphylococci (MSSA) - 52%, coagulase-negative staphylococci (COS) - 14%, methicillin-resistant staphylococci (MRSA) - 2% and Pseudomonas aeruginosa %. Traumatic osteomyelitis is often caused by the presence of S. aureus, as well as Enterobacteriaceae spp., P. aeruginosa [13].

Causative agents of odontogenic maxillary sinusitis are asporogenous anaerobes - Peptostreptococcusspp ., Bacteroidesspp ., As well as Haemophilusinfluenzae, Streptococcusintermedius, Streptococcuspneumoni ae, Moraxellacatarrhalis, of Streptococcus pyogenes . Isolation of S. aureus from the sinus is characteristic of nosocomial sinusitis [14].

Purulent odontogenic infection of the soft tissues of the face and neck is associated with the release of polymicrobial flora: Streptococcus spp., Staphylococcus spp., Peptostreptococcus spp., Bacteroides spp., F. nucleatum, Enterobacteriaceae spp., Veillonella spp., Eikenella spp. The causative agents of abscesses and phlegmons of non-odontogenic origin, often caused by skin lesions, are S. aureus , S. pyogenes . In 50.9% of patients with phlegmons of the face and neck, anaerobic bacteria Peptostreptococcus spp., Bacteroides spp., Veillonella spp.; Staphylococcus spp. - in 23.7% of cases, Streptococcus spp . - in 18.6% [15].

With putrefactive necrotic phlegmon of the face and neck, polymicrobial flora is isolated, including F. nucleatum, Bacteroides spp., Peptostreptococcus spp., Streptococcus spp., Actinomyces spp. In addition to the above microorganisms, gram-negative bacteria and S. aureus are often isolated from patients with severe course [15]. Klebsiella spp., Enterococcus spp., S. aureus, P.aeruginosa play an important role in patients with diabetes mellitus , and the presence of P. aeruginosa is

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accompanied by the most unfavorable prognosis.

With the development of lymphadenitis of the face and neck, β-hemolytic streptococcus group A and S. aureus are isolated in 70-80% . Anaerobic pathogens, such as Bacteroides spp., Peptostreptococcus spp., Peptococcus spp., F. nucleatum, Propionibacteriumacnes, can cause the development of odontogenic lymphadenitis.

Treatment of patients with HVD CLO is complex and includes surgical intervention, local treatment of purulent wounds, systemic ABT, physiotherapy , and, if indicated, detoxification and immunocorrective therapy. The tactics of surgical treatment are currently well defined. It includes the opening of a purulent-inflammatory focus by layer-by-layer dissection of tissues above it, as well as drainage of the surgical wound in order to create conditions for the evacuation of purulent exudate containing pathogens, products of their vital activity and tissue decay.

According to the Medical Advertising News (USA), dentists daily prescribe 2 to 10 antibiotics, especially often antibiotics are used by patients with complaints of pain and swelling of the soft tissues of the face [32]. There are practically no data confirming the advisability of systemic ABT for many manipulations in dentistry. Moreover, the results of randomized clinical trials indicate the undesirability of systemic use of antibiotics in outpatient practice [33]. The oral cavity, figuratively speaking, is the "cradle of resistance", since it is replete with flora, the etiological significance of which in the development of the focus of infection is often not revealed, and inadequate use of antimicrobial drugs changes the qualitative response of not only clinically significant pathogens, but also representatives of obligate, as well as optional flora. Conducting ABT in a hospital is often carried out without bacteriological control, which contributes to the development of microflora resistance, allergization of the body, and disruption of intestinal microbiocenosis.

In the clinic of surgical dentistry, antibiotics are used for HVD of the MCHO and for the purpose of prophylaxis (for injuries of soft tissues and bones of the face, after implantation, reconstructive operations, systemic prophylaxis with artificial heart valves).

When planning empirical ABT, it is necessary to focus on individual fluctuations in the qualitative and quantitative composition of the oral microflora, which depend on age, diet, hygiene skills, and the presence of pathological processes in the teeth and gums. The rational choice of antibiotics is facilitated by the use of express methods for determining the sensitivity of identified pathogens to them, focusing on the most clinically significant of these drugs and assessing the organoleptic properties of wound exudate [16]. When receiving thick creamy pus from the focus , it can be assumed that the causative agent is staphylococcal flora; upon receipt of liquid, fetid pus - a microbial association with a predominance of gram-negative bacillary flora. If pus is not obtained from the wound, but a turbid-reddish liquid is released, one can assume the presence of anaerobic microflora.

When planning treatment in a dental clinic, it is advisable to focus on oral antibiotics with high bioavailability , long half-life, minimal impact on the intestinal microflora. When treating a patient in a hospital, it is advisable to choose a drug that has forms for parenteral and oral

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administration in order to conduct stepwise therapy [17].

At the outpatient stage, ABT is carried out in acute and exacerbation of chronic periodontitis, acute periostitis, purulent-inflammatory diseases of the soft tissues of the PMO, i.e., processes that tend to spread. For prophylactic purposes, antibiotics are used in surgical interventions (removal of impacted and dystopic teeth, cystectomy , tooth-saving operations, implantation).

The main reasons for the ineffectiveness of ABT can be:

- An undrained focus of purulent inflammation or the presence of a foreign body in the wound;
- Non-bacterial causative agent of the infectious process (viruses, fungi);
- Inadequate choice of antibiotic (there is a natural resistance of the pathogen);
- Change in the sensitivity of the pathogen during treatment;
- The use of subtherapeutic doses of the drug, violation of the method of taking it or the technique of administration (violation of the instructions for dilution and storage);
- Purulent-inflammatory processes of the PMO are a complication of the underlying disease (congenital cysts, neoplasms);
- Superinfection with hospital microflora.

Antibacterial drugs recommended for the treatment of patients with HVD of the face and neck are presented in the relevant regulatory documents of the Ministry of Health and Social Development of the Russian Federation. In the treatment of abscesses, boils, carbuncles of the soft tissues of the MFR, cephalosporins (cefuroxime) or macrolides (erythromycin) are recommended - order No. 126 of 02/11/2005, for phlegmon - cefuroxime , amoxicillin / clavulanate , spiramycin , levofloxacin - order No. 477 of 07/29/2005 for osteomyelitis - pefloxacin , levofloxacin , ceftazidime , cefuroxime , imipenem , rifampicin , ceftriaxone - order No. 520 dated 11.08.2005.

Currently, we do not have fundamental recommendations for ABT in case of MHZ MLO. At the same time, the state of resistance of the oral microflora (S. aureus , S. pyogenes , green streptococci, gram-negative microorganisms and even fungi of the genus Candida) has changed significantly. Among the initially present resistant strains in the course of selection, associated multidrug resistance to the most commonly used antibiotics (macrolides , penicillins) appeared. Of particular concern are cases of nosocomial infection of the PMO, accompanied by a systemic inflammatory response, the spread of the process to vital areas (mediastinum, cranial cavity), and an unfavorable outcome. Vancomycin and linezolid should be used in initial therapy if there is a risk of isolating MRSA strains, and risk factors for isolating extended-spectrum β- lactamase producers (Enterobacteriaceae spp .) Are the basis for carbapenems . The prospects for the optimal choice of antimicrobial drug for Pseudomonas aeruginosa infection, unfortunately, are not clear today.

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In clinical practice, dental surgeons widely use antibiotics for prophylaxis in the treatment of facial fractures. There is evidence of the advisability of prophylaxis during primary surgical treatment, however, continuing the course of ABT after reposition of fragments does not reduce the overall incidence of infectious complications [18].

CONCLUSION

Dental manipulations in the oral cavity can lead to hematogenous spread of microorganisms (or their metabolic products, or immune complexes) with the development of distant sites of infection. The questions of when and under what circumstances antibiotic prophylaxis is required for PMO diseases remain controversial.

Thus, rational ABT and antibiotic prophylaxis in dental practice are one of the mechanisms regulating the state of resistance in general. Limiting the systemic use of antibiotics in outpatient dentistry, reducing ABT courses and deescalation therapy with adequately selected antimicrobial drugs for severe and nosocomial infections of the PMO is the main way to improve the quality of care for patients with HVD of the PMO and neck.

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