

MODERN ASPECTS OF THE TREATMENT OF PURULENT WOUNDS OF THE MAXILLOFACIAL AREA

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ABSTRACT

Recent studies indicate that the leading direction in the study of odontogenic phlegmon in purulent maxillofacial surgery is work aimed at studying the state of the body's immune reactivity with clarification of the state of nonspecific and cellular immunity as the dominant factor in the development and course of odontogenic inflammatory diseases of the maxillofacial region and neck.

Key words: phlegmon, infectious, maxillofacial region, surgery, odontogenic inflammatory, treatment, intoxication, patients, purulent-inflammatory processes.

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СОВРЕМЕННЫЕ АСПЕКТЫ ЛЕЧЕНИЯ ГНОЙНЫХ РАН ЧЕЛЮСТНО-ЛИЦЕВОЙ ОБЛАСТИ

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АННОТАЦИЯ

Исследования последних лет свидетельствуют о том, что ведущее направление в изучении одонтогенных флегмон в гнойной челюстно-лицевой хирургии составляют работы, направленные на изучение состояния иммунной реактивности организма с уточнением состояния неспецифического и клеточного иммунитета как доминирующего фактора развития и течения одонтогенных воспалительных заболеваний челюстно-лицевой области и шеи.

Ключевые слова: флегмона, инфекционная, челюстно-лицевая область, хирургия, одонтогенное воспаление, лечение, интоксикация, больные, гнойно-воспалительные процессы.

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Among the etiological factors for the development of phlegmon of the face and neck are: tonsillogenic, odontogenic, osteogenic, salivary sources of infection, trauma to the face and neck with perforation of the pharynx, larynx, trachea and esophagus; adenophlegmons,

primary infectious sources of infection, such as boils and carbuncles [7-10].

The aggressive and lightning-fast development of the phlegmonous process, with pronounced intoxication and a tendency to spread and increase the number of local

and general complications, as a rule, is also associated with the emergence of antibiotic-resistant forms of bacteria, changes in the body's resistance and a significant change in the properties of pathogens of inflammatory processes, high virulence of microflora and the ability to produce aggressive enzymes that destroy tissue [11, 12, 13]. Waiting and sometimes inadequate conservative therapy does not lead to an improvement in the condition of patients with phlegmon of the face and neck. That's why the modern direction is to resolve the issue of local treatment of phlegmons of the face and neck using various wound coverings on based on new biopolymers. To assess the dynamics of the purulent wound process and the general condition of the patients, a number of clinical signs were studied: the timing of wound cleansing, the appearance of granulations, epithelization, the timing of secondary sutures, and the length of hospital stay.

To objectively assess the general condition of patients, "systemic inflammatory response syndrome" (SIRS) was determined, which includes the following symptoms: respiratory rate, pulse rate, blood pressure, body temperature, the presence of leukocytosis or leukopenia with the appearance of juvenile forms. The condition for successful treatment of neck phlegmon is not only urgent surgical intervention and wide opening, but also adequate drainage of the deep cellular spaces of the neck.

Among diseases of the maxillofacial region and neck, purulent-inflammatory processes occupy first place, posing a serious danger to the health and life of patients [1, 2, 3]. The wound process is a complex set of biological reactions of the body, developing in response to tissue damage and aimed at their healing [14, 15].

It is an example of the relationship between cellular elements and is characterized by cyclicity, that is, in its development it naturally passes through certain stages or phases that successively change each other. The pathogenesis of the wound process includes inflammation, regeneration, antibody formation, synthesis of biologically active substances and much more. Wound process a combination of consistent local changes and numerous associated general reactions (changes in the nervous and endocrine systems, blood loss,

fever, etc.) [15]. The number of patients with severe phlegmon of the face and neck has been increasing in recent years, which leads to a significant increase in temporary incapacity for work, and in some cases even death [4, 5, 6]. Treatment of patients with purulent-inflammatory diseases of the neck should be comprehensive, taking into account all the rules of purulent surgery, which allows to reduce the duration of the phases of the wound process and eliminate the risk of spread of the purulent process to adjacent cellular spaces. When choosing a treatment method, the localization, prevalence of the inflammatory process, the depth of tissue damage, as well as the patient's age and his immune status are always taken into account [13, 15].

Treatment of any purulent-inflammatory process, regardless of its location, begins with adequate opening and drainage of the purulent focus in order to ensure the outflow of pathological wound discharge, remove non-viable tissue and thereby reduce the number of microbial bodies in the wound. Wound management under a bandage is widespread in clinical practice [12]. Based on their properties, wound dressings are divided into sorption, protective, containing medications, and atraumatic. The properties of a sorption dressing depend on the rate of absorption of exudate and the sorption capacity of the material used. Currently, dressing materials based on nanostructured graphite are actively used [6]. In order to increase the therapeutic effect of the dressings, they ex tempore include drugs with antiseptic and antioxidant effects. Systemic antibiotic therapy is a mandatory component in the complex treatment of purulent-inflammatory diseases of the neck. Taking into account the literature data of recent years, antibiotics have become much less effective in the treatment of acute purulent processes, which is associated with the formation of new forms of microorganisms that are resistant to the drugs used. Taking antibiotics causes changes in the body's immunoreactivity and can provoke an allergic reaction [3]. Immunomodulators are also actively used in the complex treatment of purulent-inflammatory processes in the neck.

To combat tissue hypoxia, drugs containing sodium polydihydroxyfinylene thiosulfonate are

added to the complex treatment of patients. Its side effects include allergic reactions [17]. Hyperbaric oxygenation (HBO) has bioenergetic, reparative, anti-acidotic, antibacterial effects. The experiment found that HBO reduces the acute inflammatory reaction, promotes collagen formation, which reduces the percentage of rough scar formation. Thus, an analysis of the literature data indicates that the problem of treating purulent-inflammatory diseases of the neck does not lose its relevance at the present stage. There are a number of methods of influencing a purulent wound, each of them has its own disadvantages and contraindications.

The modern arsenal of immunostimulants is quite large, however, the preparation of a plan and choice of a drug should take into account the specific immunological status of the patient and the immunotropic activity of the appointed stimulant (a narrow or wide range of action). The effectiveness of immunostimulating therapy should be evaluated on the basis of dynamic observation of the patient's condition, the course of the inflammatory process and indicators of cellular, humoral and non-specific immunity. Immunoprophylaxis of anaerobic infection is used in the treatment of phlegmons of the maxillofacial region and neck caused by gas anaerobic infection agents. For this purpose, the antigangrenous polyvalent horse serum purified concentrated liquid, which is a specific Ig protein fraction of horse blood serum hyperimmunized by anatoxins of the three main gas anaerobic infection agents (*Cl. perfringens*, *Cl. Oedematis*, *V. Septicum*), contains 0.1 % solution chloroform as a preservative. Before its introduction, an intracutaneous sample with diluted serum (1 : 100), in the amount of 0.1 ml, is placed on the forearm. A prophylactic dose of 30000 IU is injected intramuscularly, in the early period after injury. Therapeutic dose — 150000 IU, administered intravenously very slowly, drops in 0.9 % sodium chloride solution (100–400 ml per 100 ml of serum). Fixed assets of TPT are physical exercises and natural factors (sun exposure, air, water), the nature of which is determined by the patient's motor regime and the peculiarities of the disease course. Multiple impact of physical exercises on the body, the possibility of individual dosage of the load, the ease and accessibility of their use allow

widespread use of TPT at various stages of treatment of patients, including abscesses and phlegmons of the jaw-facial region and neck. An essential feature of TPT methods is the ability of physical exercise to have a simultaneous effect on the somatic and mental state of the patient, increasing the overall tone and non-specific resistance of the body, instilling confidence in the patient's ability to recover. General anatomical exercises are divided into exercises for certain muscle groups (including the muscles of the head, neck, body, upper and lower limbs, etc.), which have both general and local effects. Special exercises are prescribed for direct influence on the disturbed or weakened functional system for patients with purulent and inflammatory processes of the maxillofacial area. Special exercises will also be assigned for mimic and chewing muscles. The selection of physical exercises and the form of their implementation should correspond to the manifestations of the disease, functional state and specific conditions of their performance. TPT classes with patients of maxillofacial surgical profile are conducted according to general didactic rules and principles, but also have a number of features, primarily related to a set of special exercises. It is necessary to perform them in front of the mirror for visual control and proper mastery. Special exercises are divided into exercises for mimic (myogymnastics) and chewing muscles according to their anatomic characteristics. When performing a set of exercises for chewing muscles (mechanotherapy), the pauses between special exercises should be filled with general and breathing exercises. The most rational method of conducting TPT with patients of maxillofacial surgical profile is individual lessons. One of the peculiarities of TPT classes for such patients is the necessity of repeated special exercises during the day, so in addition to the daily TPT classes under the guidance of an instructor, the patient must perform special, individually selected exercises at least 10–12 times a day by himself (active variant). For this purpose, the office of the TPT, along with general purpose simulators, should include: a wall mirror, devices for mechanotherapy (Limberg, Balona, Yadrova, etc.), devices and devices for additional impact on organs and tissues of the maxillofacial area. Duration of the exercises on

mechanotherapy apparatusis — 5–10 minutes, repeatability 6–10 times a day. In this case, the control of the effectiveness of mechanotherapy is the measurement of the degree of mouth opening, which can be determined by using a special 23 measuring triangle or occlusal meter or ruler (in the norm the maximum mouth opening is 4–4.5 cm). The reduction force of the chewing muscles can be determined by gnatodynamometry or electromyography. Duration of TPT appointment depends, first of all, on the nature of inflammatory process of maxillofacial area, localization, peculiarities of its course, the presence of complications, the general condition of the patient's body. Contraindications for the appointment of TPT at purulent-inflammatory processes of the maxillofacial region and neck (including abscesses and phlegmons) are: – the general severe condition of the patient; – high (over 37.5 °C) body temperature; – presence of an acute inflammatory process in the area of affected facial or neck tissues without tendency to decrease its clinical manifestations; – septic state; – a painful syndrome that gets worse when you try to exercise; – the danger of secondary bleeding from the wound; – maladaptive immobilization of bone fragments in the jaw fractures; – cardiovascular diseases in the decompensation phase. When choosing TPT methods, which normalize the functioning of organs and systems of the maxillofacial area and involved in the purulent and inflammatory process you need to remember that the effective restorative treatment should include timely conducted surgical treatment and a comprehensively balanced medication anti-inflammatory therapy. Special TPT exercises in the treatment for purulent and inflammatory processes of the face and neck can be prescribed after surgical treatment for the purulent focus and the elimination of acute inflammation in it, reducing body temperature, reducing pain and improving the general condition of the patient. In the first period after surgical treatment of the purulent focus in the maxillofacial area (4–7 days) TPT provides: general tonic effect on the body, strengthening of local blood circulation in tissues, prevention of the development of destructive and atrophic processes in the musculoskeletal and paraarticular tissues. To

achieve this goals are used: – general strengthening exercises for large muscle groups at a slow pace with small and medium amplitudes of movement in the initial position sitting or lying in bed with raised head end; – breathing exercises of static and dynamic character with elongated exhalation phase; – special exercises for mimic and chewing muscles with minimum amplitude of movement (painlessly), series of 5–10 repetitions of each exercise. Exercises for mimic and chewing muscles should be combined with head movements (turns, tilts, circular movements). To improve the natural exudate outflow from the pus center, it is recommended to lie periodically on the side of the incisions. 24 The second period of TPT begins after cessation of wound suppuration, emergence of granulation, completion of wound drainage. To ensure optimal conditions for wound healing, in the second period efforts should be directed to improve the general condition of the body, increase its defensive forces. For this purpose, increase physical activity, recommend walking in the fresh air, individual self-study TPT perform with the maximum amplitude. You can use active mechanotherapy and passive movements (with the help of fingers, blades, rubber pads, devices, gum). In the presence of residual phenomena of dysfunction of organs and systems of the face and neck after the inflammatory process begins the third period of TPT. The main task of classes during this period is the full restoration of impaired functions, adaptation of the patient to domestic and industrial loads. Usually TPT classes during this period are conducted in outpatient or home conditions. Special exercises from the 1st and 2nd periods of application of TPT are used, which are performed without restrictions and repeated many times during the day. Widely are used additional load and resistance, increasing the intensity of the impact on tissues of the maxillofacial area, apply mechanotherapy, massage. When applying secondary sutures to the wound after the purulent inflammatory process of the maxillofacial area, special exercises are prescribed after removal of the sutures. To prevent scarring contracts of chewing muscles active passive is carried out mechanotherapy.

The success of treatment depends on timely diagnosis, especially at the pre-hospital stage,

detailed examination in a specialized department, early and adequate surgical intervention and complex conservative treatment.

ETHICAL STATEMENT AND CONSENT TO PARTICIPATION

The study was conducted in accordance with the local ethical committee.

CONFLICT OF INTERESTS

The authors declare the absence of obvious and potential conflicts of interest related to the publication of this article.

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AVAILABILITY OF DATA AND MATERIALS

All data generated or analysed during this study are included in this published article.

AUTHORS' CONTRIBUTIONS

All authors contributed to the design and interpretation of the study and to further drafts. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All applicable international, national and/or institutional ethical guidelines have been followed.

CONSENT FOR PUBLICATION

Not applicable.

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КОНФЛИКТ ИНТЕРЕСОВ

Авторы заявляют, что данная работа, её тема, предмет и содержание не затрагивают конкурирующих интересов.

ИСТОЧНИКИ ФИНАНСИРОВАНИЯ

Авторы заявляют об отсутствии финансирования при проведении исследования.

ДОСТУПНОСТЬ ДАННЫХ И МАТЕРИАЛОВ

Все данные, полученные или проанализированные в ходе этого исследования, включены в настоящую опубликованную статью.

ВКЛАД ОТДЕЛЬНЫХ АВТОРОВ

Все авторы внесли свой вклад в подготовку исследования и толкование его результатов, а также в подготовку последующих редакций. Все авторы прочитали и одобрили итоговый вариант рукописи.

ЭТИЧЕСКОЕ ОДОБРЕНИЕ И СОГЛАСИЕ НА УЧАСТИЕ

Были соблюдены все применимые международные, национальные и/или институциональные руководящие этические принципы.

СОГЛАСИЕ НА ПУБЛИКАЦИЮ

Не применимо.

ПРИМЕЧАНИЕ ИЗДАТЕЛЯ

Журнал *"Интегративная стоматология и челюстно-лицевая хирургия"* сохраняет нейтралитет в отношении юрисдикционных претензий по опубликованным картам и указаниям институциональной принадлежности.

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