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**TREATMENT
OF INFLAMMATORY PROCESSES
IN THE MAXILLOFACIAL AREA**

Minsk BSMU 2022

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ
БЕЛОРУССКИЙ ГОСУДАРСТВЕННЫЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ
КАФЕДРА ЧЕЛЮСТНО ЛИЦЕВОЙ ХИРУРГИИ

Н. Н. Черченко, И. И. Ленёкова

**ЛЕЧЕНИЕ ВОСПАЛИТЕЛЬНЫХ ПРОЦЕССОВ
ЧЕЛЮСТНО-ЛИЦЕВОЙ ОБЛАСТИ**

**TREATMENT OF INFLAMMATORY PROCESSES
IN THE MAXILLOFACIAL AREA**

Учебно-методическое пособие



Минск БГМУ 2022

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Кратко освещаются вопросы лечения воспалительных процессов челюстно-лицевой области.

Предназначено для студентов 4-го курса, обучающихся на английском языке по специальностям «Стоматология» и «Лечебное дело», врачей-интернов, клинических ординаторов.

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MOTIVATIONAL CHARACTERISTICS OF THE TOPIC

The total hours: 5.7 h.

The plan of complex treatment of patients with abscesses and phlegmons of the face and neck depends on the age of the patient, the type and severity of the course of purulent and inflammatory process, type of infection and pathogenicity of pathogens of purulent or rotten-necrotic process, their sensitivity to antibacterial drugs, the presence of concomitant general diseases in the patient. It is based on the integrated implementation of surgical interventions and therapeutic measures. Surgical treatment of abscesses and phlegmons of the maxillofacial area and neck is still leading. The therapeutic complex can be conventionally divided into general and local activities.

Knowledge of the basic principles of complex treatment of patients with abscesses and phlegmons of the face and neck will allow the student and the doctor to choose the optimal tactics in providing specialized care and rehabilitation of patients with this pathology. When studying the topic of the lesson, special attention should be paid to the stages of surgical treatment of abscesses and phlegmons of the face and neck, components of general and local medical treatment, considering the current phases of the wound process, the dynamics of laboratory indicators of homeostasis of the patient's body.

Purpose of the lesson: to learn the principles of complex treatment of patients with abscesses and phlegmons of the maxillofacial area and neck.

Objectives of the lesson:

1. To learn how to plan a comprehensive general medical treatment of patients with abscesses and phlegmons of the maxillofacial area and neck.
2. To study the basic principles and stages of surgical treatment of a purulent focus for abscesses and phlegmons of the maxillofacial area and neck.
3. To learn the techniques and principles of local medical treatment of purulent wounds subject to the phases of the wound process in abscesses and phlegmons of the maxillofacial area and neck.

Requirements for the initial level of knowledge. In order to master the topic fully, it is necessary to repeat the material from the following sections:

- Human anatomy: topographic-anatomical boundaries of the cellulose spaces of the maxillofacial region and the neck; possible ways of spreading purulent infection;
- Oral and maxillofacial surgery and surgical dentistry: examination of the patient with maxillofacial pathology; clinical manifestations of abscesses and phlegmon of head and neck; methods of local and general anesthesia in maxillofacial surgery;
- Normal physiology: features of reparative and regenerative mechanisms of healing of purulent wounds;

– Pharmacology: antibacterial and antiseptic drugs; detoxifying and desensitizing agents; analgesics, anticoagulants, proteolytic enzymatic and immunomodulatory drugs;

– Surgical diseases: tools for treatment of purulent wounds, means for their drainage;

– Physiotherapy and physical therapy: physiotherapeutic means and methods of physical therapy for treatment of purulent wounds.

Test questions from related disciplines:

1. Topographic-anatomical boundaries of the pterygomandibular space.
2. What are the cellulose spaces that pterygomandibular space borders on?
3. Ways of spreading the purulent-inflammatory process to the anterior and posterior mediastinum from the cellulose spaces of the maxillofacial region.
4. What objective examination methods are used to diagnose abscesses and phlegmons of the maxillofacial region and neck?
5. Main additional methods of examination of patients with abscesses and phlegmons of the maxillofacial region and neck.
6. Biological features of healing of purulent wounds.
7. The main groups of antibacterial agents with tropism to tissues of the maxillofacial area and neck.
8. The main groups of antiseptics used in the treatment of purulent wounds.
9. The main groups of drugs (artificial blood substitutes) used to detoxify the patient.
10. Enzymatic preparations with proteolytic action.

Test questions on the topic of the lesson:

1. Which sections include complex treatment of patients with abscesses and phlegmons of the face and neck and which one is the leader?
2. What is the general therapy aimed at treating patients with abscesses and phlegmons of the maxillofacial area and neck?
3. What is the local treatment for patients with abscesses and phlegmons of the maxillofacial region and neck?
4. List the main tasks in the treatment of abscesses and phlegmon of the maxillofacial area and neck.
5. Specify the main components of the treatment regimen for patients with abscesses and phlegmons of the maxillofacial area and neck.
6. List the sequence of the main stages of the surgical treatment of a purulent focus in the treatment of abscesses and phlegmons of the maxillofacial region and neck.
7. Specify the features of local anesthesia in the surgical treatment of purulent lesions in the treatment of abscesses and phlegmon of the maxillofacial region and neck.

8. Specify the features of general anesthesia in the surgical treatment of a purulent focus in the treatment of abscesses and phlegmon of the maxillofacial region and neck.

9. Name the main surgical accesses to open surface abscesses and phlegmons of mandibular tissues in the lower jaw.

10. Name the main surgical accesses for dissecting deep-seated abscesses and phlegmons of mandibular tissues in the lower jaw.

11. Name the main surgical accesses to open surface abscesses and phlegmons of maxillary tissues in the upper jaw.

12. Name the main surgical accesses for dissecting deep-seated abscesses and phlegmons of maxillary tissues in the upper jaw.

13. List the main types of drainage of purulent wounds in the treatment of abscesses and phlegmons of the maxillofacial region and neck.

14. List the basic principles of antibacterial therapy in the treatment of abscesses and phlegmons of the maxillofacial area and neck.

15. Name the main antihistamines used in the treatment of abscesses and phlegmon of the maxillofacial area and neck.

16. Name the main medical products that provide detoxification therapy for the treatment of abscesses and phlegmon of the maxillofacial region and neck.

17. How is immunoprophylaxis carried out in the treatment of phlegmons of the maxillofacial region and the neck caused by gas anaerobic infections?

18. List medications for local treatment of abscesses and phlegmon of the jaw-facial region and neck in the 1st phase of the wound process.

19. List medications for local treatment of abscesses and phlegmons of the maxillofacial region and neck in phase 2 of the maxillofacial wound process.

TREATMENT OF PATIENTS WITH ABSCESSSES AND PHLEGMONS OF THE MAXILLOFACIAL AREA

Planning of complex treatment of patients with abscesses and phlegmons of the face and neck depends on the age of the patient, the nature and severity of the purulent and inflammatory process, the type of infection and pathogenicity of microorganisms of purulent or rotten-necrotic process, their sensitivity to antibacterial drugs, the presence of concomitant general diseases in the patient. Treatment of patients with abscesses and phlegmons of the maxillofacial area and neck should be based on a comprehensive surgical intervention and therapeutic measures. Surgical treatment of abscesses and phlegmons of the maxillofacial region and neck is the leading one and includes the following main components: primary or secondary surgical treatment of purulent center (with removal of the causal tooth at odontogenic origin of inflammatory process) with adequate drainage of purulent wound. The operative access should provide an optimal short way to the purulent center and at the same time create

adequate conditions for evacuation of the purulent exudate from the inflammation center without pockets and stains.

The therapeutic complex may be conventionally divided into general and local activities. General therapy is aimed at medication treatment against infection (suppression of life activity of pathogens) and intoxication, restoration of homeostasis disturbed by the disease, activates nonspecific and specific protective forces of the body, normalizes the disturbed functions of organs and systems, enhances regenerative processes of tissues in the inflammation center, provides general strengthening and stimulating treatment, including the impact of physical factors. Local treatment provides a complex of measures aimed at ensuring adequate outflow of purulent exudate from the inflammation center, creation of unfavorable conditions for life activity of pathological microorganisms, acceleration of necrolysis of damaged tissues, restriction of the zone of inflammation and necrosis spread, reduction of intrafascial pressure and resorption of decay products, as well as at normalization of microcirculation of tissues and improvement of their regeneration.

And after all you must consider the severity of the disease and the condition of the patient. Severity of the disease course is determined by a set of clinical signs (acute debuting of the disease, hyperthermia, pain in the area of the lesion center, degree of dysfunction on the part of vital organs), laboratory indicators (leukocytosis, leukocyte index of intoxication, SIE, level of total protein, ratio of protein fractions, C-reactive protein, etc.).

The main tasks of complex treatment of abscesses and phlegmon of maxillofacial area and neck:

- a) elimination of a possible odontogenic cause of the purulent-inflammatory process;
- b) prevention of septic and pyemia complications;
- c) prevention the spread of purulent and inflammatory processes to adjacent fascial cellular spaces.

The tactical scheme for the treatment of abscesses and phlegmons of the maxillofacial area and neck consists of a set of measures, the main components of which are:

1. Surgical treatment (primary or secondary surgical treatment of purulent focus with removal of the causal tooth) with adequate drainage.
2. Antibacterial treatment.
3. Disintoxication treatment.
4. Desensitization.
5. Measures aimed at restoring homeostasis of the body's basic functional systems.
6. Immunocorrective therapy (as indicated).
7. General tonic and stimulating treatment, including the impact of physical factors and therapeutic exercise methods.

The modern bases of complex therapy of purulent and inflammatory processes, including abscesses and phlegmons of the maxillofacial area and neck, are based on the phase of the course of the wound process (classification of M. I. Kuzin, 1977).

The first phase — the phase of inflammation is divided into two periods — the period of vascular changes and the period of cleaning the wound from necrotic tissues.

The second phase is the phase of regeneration, formation and maturation of granulation tissue.

The third phase is the phase of scar organization and epithelization.

Surgical treatment of abscesses and phlegmon of the maxillofacial area and neck involves surgical treatment of a purulent focus, including a number of consecutive stages:

1. Preparation of the operating field.
2. Anesthesia.
3. Removal of the causal tooth (in odontogenic abscesses and phlegmons).
4. Creation of operational access (making cuts) with the audit of the hot spot of purulent inflammation and ensuring adequate exudate outflow.
5. Antiseptic treatment of the source of purulent inflammation.
6. Draining a purulent wound.
7. Aseptic bandage application (for external cuts).

Primary surgical treatment of a purulent center is the first intervention performed on the patient's primary indications, i.e. on the presence of a purulent focus itself.

Secondary surgical treatment means intervention performed according to secondary indications, i.e. for secondary changes in the wound (recurrence of purulence, seizure) or before closing the wound surface with sutures or autodermal transplantation.

The preparation of the operating field is carried out in compliance with all the rules of asepsis and antiseptics accepted in maxillofacial surgery. Alcohol-containing solutions of antiseptics are used for antiseptic treatment of face and neck skin. For the antiseptic treatment of the oral mucous membrane aqueous solutions of antiseptics are used (0.05–0.1 % solution chlorhexidine or septomirin; 0.25–0.5 % solution potassium permanganate).

ANESTHESIA

The choice of anesthesia in patients with inflammatory diseases of the face, jaws and neck depends on the nature of the inflammatory process, the functional state of the body, the neuropsychiatric status and conditions of operations.

Local anaesthesia. *Local non-injection, unprotected pain relief.* It includes applications and lubrication of the oral mucous membrane with various chemicals, its aeration with chloroethyl. For application anesthesia it is possible

to use: anesthesia Tabs, xylestezine-spray (Germany), Topichael (USA), xylogel, xylokain 10 % spray (Sweden), dioxin solution 0.5–2 %, pyromecaine 1–2 %, lidocaine solution 10 % (aerosol).

Local injectable unpotented pain relief. Injection pain relief is aimed at elimination of pain sensitivity of the corresponding part of the body by injection of anesthetic solution: a) near the peripheral nerve fibers or their endings (infiltration anesthesia); b) near the nerve shaft (conductive anesthesia).

Surgical treatment of abscesses and phlegmon of the maxillofacial area and neck can be performed using both infiltration and conductive anesthesia techniques or their combinations. In the case of inflammatory contractures of the chewing or wing muscles proper, if necessary, can be used conductive anesthesia in the area of the lower jaw nerve along the Bersche Dubov or Laguardia.

Taking into account the pH of the environment in the focus of purulent inflammation, it is more appropriate to use anesthetics from the group of complex amides: pyromecaine, lidocaine, mepivacaine, propilocaine, articaine, bupivacaine, ethidocaine, ultracaine for surgical treatment of abscesses and phlegmon of the maxillofacial area and neck for infiltration anesthesia.

To increase the depth and duration of local anesthesia, to reduce pain sensitivity to local anesthetics can be added vasoconstrictor drugs: adrenaline, noradrenaline, vasopressin, felypressin, mezaton, levonorphedrine. Local anesthesia may be combined with some general anesthesia methods, such as neuroleptanalgesia, ataralgesia.

General anesthesia. The condition of reversible inhibition of the central nervous system is achieved by pharmacological means, by physical or mental factors. Such anesthesia suppresses the perception of painful irritations, reaches neurovegetative block and muscle relaxation, turns off consciousness, maintains adequate gas exchange blood circulation, regulates metabolic processes. General anesthesia includes neuroleptanalgesia, ataralgesia, central analgesia, audioanaesthesia, hypnosis, acupuncture pain relief, anesthesia.

General anesthesia during surgical treatment of abscesses and phlegmon of the jaw-facial region and neck is indicated in cases where local anesthesia is not sufficient to provide normal anesthesia of tissues and organs in the area of purulent and inflammatory process. It is most advisable to use anesthesia when opening phlegmons of deep sections of the maxillofacial region and the neck: the bottom of the mouth cavity, obloculoid and winged-mandibular spaces, the wing fossa, the region of orbit, the cellular spaces of the neck and mediastinum.

The following conditions should be provided by M. V. Mukhin (1974):

- safety for the patient and ease of manipulation for the surgeon;
- preservation of airway conduction;
- rapid awakening of the patient with the restoration of the throat, laryngeal and tracheal reflexes immediately after the operation.

Nitrous oxide, a mixture of nitrous oxide and fluorothane, a mixture of Shein–Ashman (O. P. Chudakov, I. O. Pokhodenko-Chudakova, L. I. Tesevich, A. M. Dzyadzko, 2008) meets these requirements to the fullest extent.

When there is a threat of asphyxia associated with inflammatory swelling of the upper respiratory tract or compression by inflammatory infiltration, the application of preventive tracheostoma and its use for anesthesia are shown to ensure adequate anesthesia.

REMOVAL OF THE CAUSAL TOOTH

In case of abscesses and phlegmons of the maxillofacial region and neck of odontogenic etiology, the causal tooth should be removed in an emergency order (optimal — during the surgical treatment of the purulent center).

Creation of operative access (making incisions) with revision of the hot spot of purulent inflammation and provision of adequate exudate outflow.

Requirements for incisions in the maxillofacial area. Operative access for opening of abscesses and phlegmons in the jaw-facial region and on the neck is carried out by means of production of external or intraoral incisions (main and additional contraperturns), the choice of which first of all should take into account the nature, localization, depth of location and prevalence of purulent-inflammatory process. At the same time, the size of the incisions should be as large as it is necessary (to create an adequate outflow of purulent exudate and to prevent the inflammatory growth), and as small as it is acceptable in this situation, taking into account the aesthetics of the subsequent postoperative scar (therefore, it is also reasonable to bring the incisions closer to the natural folds of the face and neck).

Operative access should provide an optimal short path to the purulent focus, take into account the course of large vessels, nerves of the jaw-facial region and neck, the withdrawal ducts of large salivary glands, reducing the risk of damage during the surgical treatment to a minimum, and at the same time create good conditions for the evacuation of purulent exudate from the inflammation center without the formation of stains and pockets.

Draining. In clinical practice in the treatment of patients with abscesses and phlegmons of the maxillofacial area and neck the following methods of drainage of purulent wounds can be used:

- with glove rubber band drains (mainly used for intraoral incisions);
- with perforated polychlorvinyl or Teflon tubular drains;
- with gauze impregnated with hypertensive solutions (10 % sodium chloride solution; 25 % magnesium sulphuric acid solution or 32 % urea solution) providing osmotic wound drainage;
- with the help of carbon adsorbents introduced into the wound in the form of pellets, cotton wool, woven products from carbon fiber; rare-cross-linked

polymers (glevin, regencourt); fiber alumina porous material with a density of 0.05–0.08 g/cm³ and porosity of 85–90 % (“Alumag-2”);

– by means of installation of the drainage of the operating wound (wound dialysis) through a system of elastic plastic tubular drains with the outflow of the installed liquid into the receiver by gravity or by vacuum aspiration;

– by intermittent or permanent aspiration of the exudate from the wound by means of an electrical suction unit or other devices that provide a constant vacuum in the wound-drainage system.

Surgical treatment of the purulent focus at abscesses and phlegmons in the jaw-facial region and on the neck in the presence of external incisions is completed by the imposition of an aseptic bandage with bandage or adhesive plaster fixation with the appropriate requirements and rules of desmurgy in the head and neck area.

ANTIBIOTIC THERAPY

The principles of antibacterial therapy (including the treatment of abscesses and phlegmons of the maxillofacial region and neck) (A. A. Zaitsev, O. I. Karpov, Y. D. Ignatov, 1998):

1. The choice of antibiotic should be determined by the coincidence of its activity spectrum with the sensitivity of the pathogen in a particular patient. However, firstly, *in vitro* antibiotic activity does not guarantee its efficiency in a particular patient; secondly, microbiological assessment of microbial sensitivity takes time and sometimes may lead to inaccurate results (e.g. in case of polyinfection).

2. In hospital-acquired infections where multiple pathogens are evident, broad-spectrum antibiotic treatment should be initiated as soon as possible.

3. Drugs should be injected in optimal single doses and in most patients it is unacceptable to reduce the number of injections by increasing the single dose (unbalance of concentration in tissues).

4. Parenteral administration of antibiotics is preferable for severe infections. Exceptions are cephalosporins and macrolides, which are highly effective both in enteric administration and in patients with intestinal infection.

5. When choosing a preparation, one should always take into account the peculiarities of its pharmacokinetics (penetration into various organs, tissues, environments, through the placenta, into breast milk, elimination rate, tropism, ability to cumulate, etc.), side effects and contraindications.

6. Kidney and liver function must be assessed and dosages of drugs must be adjusted accordingly.

7. When prescribing an antibiotic, it is necessary to know the interaction of this drug with other drugs (synergy, antagonism, increased toxicity, impact on metabolism, etc.).

8. It is important to have a reasonable sequence in prescribing antibiotics to a specific patient. It's not advisable to start therapy with "strategic reserve" drugs (except for neglected and particularly severe patients), but it is also unacceptable to delay the correction of therapy if it is ineffective.

9. It is necessary to know the single and daily doses of drugs, frequency and routes of administration, as well as the terms of antibacterial treatment at various locations of infectious inflammatory process.

Antibacterial agents (AA) refer to etiotropic agents, the effect of which, unlike drugs of other classes, is directed not to the patient's body (macroorganism), but to a pathogenic agent (microorganism).

ACs should have a selective toxicity, i.e. they should suppress the vital functions of microorganisms selectively and be harmless to the patient's cells.

Modern classification stands out:

A. According to the group affiliation:

1. Antibiotics:

- 1.1. Penicillins.
- 1.2. Cephalosporins.
- 1.3. Combination products.
- 1.4. Carbopenemes.
- 1.5. Monobaktams.
- 1.6. Aminoglycosides.
- 1.7. Tetracyclines.
- 1.8. Macrolides.
- 1.9. Lincosamines.
- 1.10. Glycopeptides.
- 1.11. Rifampicins.
- 1.12. Polymixins.

2. Sulfonamides + trimethoprim.

3. Hinolones.

4. Fluoroquinolones.

5. Nitrofurans.

6. 8-Oxychinolines.

7. Niroimidazole.

8. Huinoxaline derivatives.

9. Anti-tuberculosis drugs.

10. Protivolgriminal drugs.

11. Other antimicrobial agents.

B. According to the mechanism of action:

1. Bactericidal preparations

1.1. Cell wall synthesis inhibitors (beta-lactam antibiotics: penicillins, cephalosporins, etc.).

1.2. Drugs that impair the permeability of the cytoplasmic membrane and inhibitors for the synthesis of nucleic acids and proteins (aminoglycosides, etc.).

2. Bacteriostatic preparations — inhibitors of nucleic acids and protein synthesis (macrolides, tetracyclines, lincosamides, etc.).

By origin:

I. Penicillins.

1. Natural (benzylpenicillin, phenoxymethylpenicillin, ticarcillin).

2. Semi-synthetic drugs.

2.1. Penicillinase-resistant (methicillin, dicloxacillin, oxacillin, cloxacillin).

2.2. Aminopenicillins (ampicillin, amoxicillin).

2.3. Carboxypenicillins (carbenicillin, ticarcillin).

2.4. Ureidopenicillins (azlocillin, mezlocillin, piperacillin).

II. Cephalosporins.

1st generation:

– Parenteral (cephalothin, cephaloridine, cephazolin);

– Oral (cephalexin, cefadroxil, cefadroxime).

2nd generation:

– Parenteral (cefuroxime, cefamandol, cefoxitin, cephmetazole).

– Oral (cefaclor, cefuroxime-axetil).

3rd generation:

– Parenteral (cefotaxime, ceftazidime, ceftiofur, ceftizoxime, cefoperazone, cefepime, ceftazidime, moxalactam).

– Oral (cefixime, cefpodoxime, ceftibuten).

4th generation: Parenteral (cefepime, cefepim).

III. Combination products:

1. Inhibitor-proof penicillins:

1.1. Ampicillin/Sulbactam.

1.2. Amoxicillin/Clavulanic acid.

1.3. Ticarcillin/Clavulanic acid.

1.4. Piperacillin/Tazobactam.

2. Cefoperazone/Sulbactam.

IV. Carbapenems:

1. Imipenem.

2. Meropenem.

V. Monobactams.

SULFONAMIDE PREPARATIONS

Classification:

- Sulfonamide preparations (SA) with short action (streptocide, norsulfazole, sulfadimezine, etazole, albucide, urosphane).
- SA with moderate duration of action (sulfazine, methylsulfazine, biseptol).
- SA with extended duration (sulfapyridazine, sulfamonomeotoin, sulfadimethoxin, sulfalen).
- SA with local action, poorly absorbed into gastrointestinal tract (sulfate, salazopyridazine, salazodimethoxine, salazosulfapyridine, phthalazole, phthazine).

As most microorganisms are unable to utilize folic acid from the environment SA have a wide spectrum of action.

Bacteria (streptococci, staphylococcus, pneumococci, meningococci, gonococci, Escherichia coli, salmonella, vibrio cholerae, Bacillus anthracis, hemophilus bacillus), chlamydia, protozoa, pathogenic fungi are highly sensitive to SA.

The following bacteria are moderately sensitive to SA. They are enterococci, green streptococcus, klebsiella, proteus, clostridium, pasteurilla, brucella, mycobacteria leper and protozoa (leishmanias).

Pertussis, tuberculosis, synergic, diphtheria, leptospire, spirochaetes, anaerobes are naturally resistant to SA.

Due to the long-term use of SA, many microorganisms have become secondary resistant to them, so in recent years SA have been used for limited indications, including phlegmons of the face and neck.

It is recommended to take 1 g of SA on an empty stomach every 4–6 hours, drinking a full glass of water. At the first reception it is often recommended to take 2 g. Stazole (10 ml 10 % solution) or norsulfazole (5–10 ml 10 % solution) is injected orally or intravenously.

1–2 g sulfadimethoxinum (Sulfadimethoxinum) is assigned on the first day of a single appointment, the next 0.5–1.0 g. Then the dose is 0.5–1.0 g.

1.0 g sulfalen (Sulfalen) is taken on the first day is taken once, then — 0.2 g, or 2.0 g once a week is assigned.

Preparations containing trimethoprim SA:

– Co-trimoxazol (biseptol, bactrim, septrim, etc.). The drug is effective for the treatment of a large group of bacterial infections of various localizations in mild and medium severe forms of disease.

– Biseptol-120 (Biseptol) — contains 100 mg of sulfamethoxazole and 20 mg of trimethoprim.

– Biseptol-480 — contains 400 and 80 mg, respectively. It is accepted on 2 tabs. 2 times a day after meals.

– Biseptol for intravenous injection of 10 ml. It is diluted in a ratio of 1 : 25 in 0.9 % solution of sodium chloride or 5 % solution of glucose. It is administered for 1.5–2 hours.

– Proseptil — contains sulfadimezine and trimethoprim in the same doses as biseptol.

– Sulfaton — a combination of 0.25 g sulfamonomethoxin and 0.10 g trimethoprim.

Preparations containing SA with pyrimethamine. Sulfametopyrazine (Sulfametopirasinum) and sulfadoxine (Sulfadoxinum) each contain 0.5 g SA and 0.025 pyrimethamine. These drugs are effective against all agents of human malaria and toxoplasmosis. Intramuscular sulfadoxin is the most effective drug against for severe forms of drug-resistant tropical malaria.

Contraindications. Allergic reactions to SA are: taking furosemide, thiazide diuretics, carboanhydrase inhibitors, sulfonylurea preparations, pregnancy, severe liver and kidney pathology, megaloblast anemia associated with folic acid deficiency.

Nitrofurantoin drugs. Synthetic antibacterial drugs:

– Furazolidone (Furazolidone);

– Furazidinum (furazidinum, furagin);

– Water soluble furagin (Solafur);

– Nitrofurantoin (Nitrofurantoin, furadonin);

– Nitrofurantoin (Nitrofurantoin, furadonin) — has antimicrobial activity against Gram-positive and Gram-negative bacteria. It is used only locally for throat rinsing, installation of purulent wounds and wound surfaces (Aqueous solution — 1 : 5000, alcohol solution — 1 : 500, ointment — 0.2 %).

Frequency of occurrence of gram-negative microorganisms isolated in patients with odontogenic purulent-inflammatory diseases of the maxillofacial region and neck from the inflammation center.

Pathogen	Frequency of occurrence of the microorganism
Enterobacter aerogenes	25 %
Enterobactercloacae	25 %
Klebsiella pneumoniae	50 %

ANTI-HISTAMINES THERAPY

Substances that weaken or neutralize the effects of free histamine:

1. First generation drugs:

– Dimedrol — is taken inwards 0.025–0.050 × 1–3 times daily, intramuscular or intravenous 1–5 mg 1 % solution.

– Promethazine (pipolphen) — is taken inwards 0.025 g 2–3 times daily, intramuscular 1–2 ml 2.5 % solution, intravenously up to 2 ml.

– Clementine (tavegil) — is taken inwards 0.001 × 2 times a day.

– 25 mg chloropyramine (suprastin) — is taken 3–4 times a day with meals.

2. Second generation drugs:

– Terfenadin (triludan, terfen) — is taken inwards 60 mg 2 times a day, less often 120 mg 1 time a day.

– Loratidine — is used in the form of tablets, syrups or suspensions of 10 mg once a day.

– Acryvastin (semprex) — is taken by 1 capsule periodically as needed.

3. Third generation drugs:

– 5 mg of cetyrizine (zirtec, cetrine) — 2 times or 10 mg 1 time per day;

– 60 mg of fexfenandin (telfast) — 2 times a day;

– 10 mg kestine (ebastin) — once a day (table).

DISINTOXICATION THERAPY

Products of tissue decay and accumulated products of impaired metabolism in the area of purulent inflammation in the abscesses and phlegmons of the jaw-facial region and neck, bacterial enzymes, exo and endotoxins of bacterial cells cause intoxication phenomena, act on the central nervous system and reduce the effectiveness of therapy because of the weakening of the body's defenses.

MEDICAL PRODUCTS THAT PROVIDE DETOXIFICATION THERAPY

1. 0–1.5 l per day with adequate condition of the patient, or as an enema.

2. 200 ml intravenously drops of 4 % solution of bicarbonate sodium, 400 ml 5 % solution of glucose with 4 units of insulin, 100 mg of cocarboxylase, 5 % solution of ascorbic acid 5 ml, 200 ml of isotonic solution of sodium chloride, 10 ml of calcium gluconate and 20 mg of lasix. Medications in these doses are administered daily during 4 days.

3. Cytochrome P-450 benzonade is administered inductor 0.1 3 times a day during 7–8 days — provides an opportunity to eliminate effectively the disorders of the internal environment of the organism and creates optimal conditions for acceleration of biosynthetic and oxidation processes at the cell level.

4. Hemocorrectors for detoxification are used as blood substitutes:

a) preparations based on low-molecular polyvinylpyrrolidone: hemodesis, peristone, neocompensant;

b) preparations based on low-molecular polyvinyl alcohol — polydesis;

c) dextran-based preparations: medium-molecular (polyglucinum, plasmodex, dextran, macrodex) and low-molecular (rheopolygyukine, rheomacrodex).

All these drugs are administered 1–2 times a day in the amount of 1.0–1.5 liters at a rate of no more than 60 drops per minute intravenously for 3–4 days, until the disappearance of intoxication.

5. Hemosorption with the use of SKN-M coal.

6. Plasmapheresis combined with forced diuresis lasix; hemodilution, controlled by blood sialic acid levels.

7. Quantum hemotherapy (in the development of septic shock): blood is taken from the elbow vein (at a rate of 1.5 ml/kg), is placed in a sterile vial with 38 % solution of sodium citrate and is irradiated in a special chamber of quartz glass xenon lamp XL-1500 from a distance of 50 cm for 10 minutes, with irradiation through the blood flow of oxygen, then blood is injected into the patient. Infusions of the irradiated blood are carried out 2–5 times at intervals of 1 day.

IMMUNOCORRECTIVE THERAPY IN THE COMPLEX TREATMENT

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).

ANALGESICS THERAPY

Drugs in this group can prevent pain, or reduce and eliminate it. They act selectively on cortical and subcortical centers involved in the formation of pain (analgin, sodium salicylate, phenacetin, ibuprofen).

Drug Analgesics administered:

– Morphine — in pulveris, ampoules of 1 ml 1 % solution inside or under the skin: single — 0.02 g, daily — 0.05 g;

– Omnopon — in pulveris, ampoules of 1 ml 1 % and 2 % solution inside or under the skin: single — 0.03 g, daily — 0.1 g;

– Promedol — in pulveris, tablets inside: single — ampoules of 1 ml 1 % and 2 % solution, daily — 0.2 g under the skin: single — 0.04 g, daily — 0.16 g.

Non-narcotic analgesics:

– Amidopirin in pulveris, tablets of 0.25 grams — 0.5 g, daily — 1.5 g;

– Analgin in pulveris, tablets of 0.5 g; ampoules of 1 and 2 ml of 50 % solution, single — 1 g, daily — 3 g (inside); under the skin, intramuscular, intravenous single — 0.5 g, daily — 1.5 g;

– Baralgin in Ampoules in 5 ml, tablets, candles. Inside, 1–2 tablets 2–3 times a day, intramuscular or intravenous 5 ml in 6–8 hours.

– Butadion in Tabs of 0.05 and 0.15 g, single — 0.2 g, daily — 0.6 g;

– Paracetamol in pulveris, tablets of 0.2 g, single — 0.5 g, daily — 1.5 g;

– Antipyrine in pulveris, tablets of 0.25 g, single — 1 g, daily — 5 g.

The choice and prescription of painkillers in the treatment of abscesses and phlegmons of the jaw-facial area and neck is carried out in accordance with the severity of the pain syndrome and the presence of associated generalized pathology.

VITAMINS

Vitamins of the group B6, C, A, E — physiological active substances that help to increase resistance and normalize the reactivity of the body can be prescribed for general tonic therapy in the treatment of abscesses and phlegmon of the jaw-facial area and neck. Their compatibility with other drugs must always be considered.

Auxiliary methods of correction of homeostasis in the early stages of phlegmonosis process include:

– hemocarbo-perfusion and intraarterial drug infusion;

– therapeutic plasmapheresis;

– ultraviolet irradiation of the blood;

– Intravascular laser irradiation of the blood;

– enterosorption;

– biolysis (biological local isolation) or local gnatobiological isolation method;

– treatment in a controlled, isolated abacterial environment.

They are carried out only after specialist consultation and in a specialized hospital.

Local medication therapy is for the treatment of abscesses and phlegmon of the jaw-facial region and neck. Local treatment of patients with abscesses and phlegmons of the face and neck is performed during bandages. In case of spillage of purulent inflammatory processes with abundant suppuration from the wound dressing, it is advisable to conduct the patient several times during the day as the wound dressing is soaked in the external bandages.

Medicines for local treatment of abscesses and phlegmon of the jaw-facial region and neck, taking into account the phases of the wound process.

Phase I — inflammation. Acceleration of rejection of necrotized tissues. Proteolytic enzymes (1 % solution of trypsin, chymotrypsin, terylitin), REPAREEF-1.

Suppression of pathogenic microflora and reduction of inflammation in wound. Aqueous solutions of antiseptics (0.25–0.5 % potassium permanganate, 0.05–0.1 % chlorhexidine, etc.), antibiotics (50,000 units of action per ml of solution), multi-component aerosols containing antibacterial, anti-inflammatory and analgesic drugs.

Phase II — regeneration. Suppression of pathogenic microflora and reduction of inflammation in wound. Aqueous solutions of antiseptics (0.25–0.5 % potassium permanganate, 0.05–0.1 % chlorhexidine, etc.), multi-component aerosols and ointments containing antibacterial, anti-inflammatory drugs.

Stimulation of granulation growth in the wound. Kombutec, algipor, indifferent ointments containing bioactive substances and vitamin complexes, REPAREEF-2.

Phase III — epithelization (epithelization and scar organization). Solkoseryl, Diavitol, REPAREEF-2, indifferent ointments containing vitamin complexes, keratoplasty, bioactive substances.

Nutrition features of patients with abscesses and phlegmons of the maxillofacial area and neck.

Therapeutic nutrition in purulent and inflammatory processes of the face and neck is determined by the localization and nature of the inflammatory process, the presence of associated pathological conditions. In all patients, the therapeutic and dietary nutrition is designed to promote a fuller recovery of diseased functions of the body and the recovery of the patient. The general tasks of diet therapy are:

- supplying the body with all necessary plastic and energy resources;
- limitation and elimination of substances that cause overloading of the sick body;
- increase in the amount of substances in the diet, the destruction of which is increased in the body, due to pathogenic factors or under the influence of the treatment used;
- inclusion in the diet of an increased number of substances that contribute to the activation of body defenses.

Diet therapy must comply with the principles of mechanical, chemical and thermal gentle treatment, as well as the exclusion from the diet of course, badly digestible products, hard components of meat. Mechanical gentleness is also achieved by means of special culinary treatment.

In case of severe swelling of the tongue, throat, larynx and esophagus, the first (probe food) diet is prescribed for patients with abscesses and

phlegmons of the jaw-facial region and neck to avoid aspiration of food and infection of wounds. The total weight of the daily diet is 2.5–3 kg with an energy value of 2800–3000 Kcal with 4–5 meals per day.

Food: various, but all dishes in a frayed form, mushy-like substance can be entered through Pirogov's drinker. The patient can use it by himself through a drain tube, inserted in the place of missing teeth, or sucked through the interdental crotch. Bread is given in the form of well milled breadcrumbs, diluted with milk, tea.

If swallowing is not possible, the patient's diet is parenteral, by intravenous administration of nutrients: 5–10 % solution glucose, solution aminopeptide, lipofundin, etc.

After the feeding procedure, the patient should carry out hygienic irrigation of the oral cavity with plenty of boiled water or a solution of fuccillin (1 : 5000), potassium permanganate (1 : 5000), 0.05 % aqueous solution of chlorhexidine or septomirin at temperatures 37–38 degrees.

Irrigation helps remove food debris, blood clots, fragments of necrotized tissue from the mouth, and the bactericidal properties of antiseptic solutions have a negative impact on microflora. Oral irrigation can be seen as a kind of hydrotherapy.

PHYSIOTHERAPY

The purpose of applying physical factors in the treatment of abscesses and phlegmons of the jaw-facial region and neck is to affect the pathogenetic links of purulent and inflammatory process, to contribute to the normalization of physiological reactions throughout the body.

The main contraindications for the application of electrophysical factors are local:

- acute purulent and inflammatory processes, in which there is no adequate surgical treatment of the purulent focus to create an exudate outflow;
- inflammation in the area of the focus of the purulent lesion;
- a tendency to bleed out of the wound;
- facial vein thrombophlebitis or the threat of it;
- the presence of tumors or tumor-like diseases in the area where they are expected to be affected by physical factors;

and general:

- malignant tumors;
- cardiovascular diseases in the decompensation phase;
- epilepsy and central nervous system diseases with cerebral circulation disorders;
- tuberculosis, syphilis;
- HIV infection;

- privileged;
- blood diseases;
- high temperature;
- the general severe condition of the patient.

In the absence of contraindications, the prescription of physiotherapy in the treatment of abscesses and phlegmon of the jaw-facial region and neck should be carried out taking into account the phases of the wound process, after adequate surgical intervention, and against the background of complex medication anti-inflammatory treatment.

In the first phase of the inflammatory process after surgical treatment of the purulent focus the applied physiotherapeutic methods should help to reduce swelling and pain, improve microcirculation of tissues, reduce the bacterial semination of the wound, accelerate the process of purulent wound purification from products of tissue necrobiosis. For this purpose it is possible to use the following physiotherapeutic methods: ultraviolet irradiation, laser therapy, aerosol therapy, fluktoORIZATION, electric field of ultrasonic frequency, microwave therapy, ultrasound therapy, diadynamic therapy, hyperbolic oxygenation and others.

In the second phase of inflammatory process the applied physiotherapeutic methods should help to reduce inflammatory infiltration and improve microcirculation and tissue trophicity, accelerate the process of regeneration of damaged tissues and wound granulation, prevent possible complications. For this purpose it is possible to use: electric field of ultrasonic frequency, ultrafonophoresis, laser therapy, drug electrophoresis, magnetotherapy, darsonvalization, infrared therapy, fluktoORIZATION and others.

In the third phase of inflammatory process physiotherapeutic methods should promote contribute to further regeneration of damaged tissues with restoration of their function, acceleration of wound epithelization process, reorganization of postoperative scar of high aesthetic effect, the presence of which would have minimal impact on the functioning of organs and systems of the maxillofacial region. For this purpose it is necessary to use: medicinal electrophoresis, ultrafonophoresis, paraffin and ozokerite applications, laser therapy and others.

THERAPEUTIC PHYSICAL TRAINING

Therapeutic physical training (TPT) is a method of treatment that uses physical exercises and other means of physical training with therapeutic and preventive purpose to restore health and ability to work of the patient, preventing the development of complications of the pathological process. TPT uses the natural need of the body for motor activity to restore the lost functions of the organ or system and general working capacity.

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 apparatus — 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

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 gnathodynamometry 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.

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.

APPLYING STITCHES TO A PUS WOUND

Primary delayed suture can be applied for 3–5 days at abscesses and for 5–6 days at phlegmons after surgical treatment, before granulation appears in the wound.

An early secondary suture is applied to a granulated wound with movable edges until the scar tissue develops in it. Early secondary suture is applied within the 2nd week after surgical treatment.

Late secondary suture is applied to an epithelializing wound in which scar tissue has already developed. Closing of the wound is possible in these cases only after preliminary dissection of the scar tissue and is done in 3–4 weeks of the course of the wound process or later.

Basic conditions for suturing a pus wound:

– the complete purification from necrotic and non-viable tissue in the purulent wound is achieved by surgical treatment of the purulent focus or chemotherapy;

– absence of marked inflammatory changes in the skin and soft tissue surrounding the wound;

– the possibility of adequate comparison of the wound margins without excessive strain.

A precondition for suturing a festering wound should be: ensuring sufficient outflow of detachable, which is achieved by active drainage, rational antibacterial therapy aimed for destroying remaining microflora in the wound.

Early closure of a purulent wound with sutures is one of the best methods to reduce the overall treatment time of patients with abscesses and phlegmons of the jaw-facial region and neck, to achieve good functional and aesthetic results.

SELF-CONTROL TESTS

1. State the main tasks of complex treatment of abscesses and phlegmons of the maxillofacial area and neck:
 - a) improving of oral hygiene;
 - b) elimination of a possible odontogenic cause of the purulent-inflammatory process;
 - c) prevention of septic and pyemia complications;
 - d) conservative treatment of causal teeth.
2. Specify the main components of the complex of measures to treat abscesses and phlegmons of the maxillofacial area and neck:
 - a) surgical treatment of the purulent focus with removal of the causal tooth with adequate drainage;
 - b) radiation therapy
 - c) antibacterial treatment;
 - d) electroodontodiagnosis.
3. Main components of the complex of measures for the treatment of abscesses and phlegmon of the maxillofacial area and neck:
 - a) desensitization;
 - b) radiotherapy;
 - c) electroodontodiagnosis;
 - d) physiotherapy.
4. Specify the correct sequence of stages of surgical treatment of purulent focus in the treatment of abscesses and phlegmons of the maxillofacial area and neck:
 - a) anesthesia;
 - b) removal of the causal tooth;
 - c) preparing the operating field;
 - d) the drainage of a purulent wound.
5. The first intervention in this patient, carried out according to indications of a purulent focus, is called the ... surgical treatment of the purulent focus.

6. An intervention carried out for a relapse of the purulent process, the formation of purulent congestion is called ... surgical treatment of a purulent focus.
7. Specify the agents used for the antiseptic treatment of oral mucosa in the surgical treatment of purulent lesions in the treatment of abscesses and phlegmons of the maxillofacial region and neck.
 - a) water sol. 0.05–0.9 % solution chlorhexedine;
 - b) alcohol sol. septocid;
 - c) alcohol sol.-inol;
 - d) water sol. 0.05–0.1 % solution septomirin.
8. Specify the agents used for antiseptic skin treatment in the surgical treatment of purulent lesions in the treatment of abscesses and phlegmons of the maxillofacial region and neck.
 - a) water sol. 0.05–0,1 % solution chlorhexedine;
 - b) alcohol sol. septocid;
 - c) water sol. 0.05–0.1 % solution septomirin;
 - d) 0.25–0.5 % solution potassium permanganate.
9. Which group of anesthetics is more appropriate to use for infiltration anaesthesia during surgical treatment of abscesses and phlegmon of the maxillofacial area and neck?
 - a) enter group;
 - b) complex amides;
 - c) other anesthetics;
 - d) drugs.
10. In cases of asphyxia associated with inflammatory swelling of the upper respiratory tract or compression by inflammatory infiltration, to ensure adequate anesthesia for surgical treatment of spilled phlegmons of the maxillofacial area and neck is indicated:
 - a) infiltration anaesthesia;
 - b) application of preventive tracheostoma;
 - c) normal endotracheal anesthesia;
 - d) mask anesthesia.
11. During abscesses and phlegmons of the maxillofacial region odontogenic etiology, the causal tooth must be:
 - a) endodontically treated;
 - b) removed (extracted) emergency;
 - c) removed routinely emmediately;
 - d) saved.

12. Carry out the correspondence between the localization of the purulent and inflammatory process of the maxillofacial area and its main operative access during the surgical treatment of the purulent focus.

<ul style="list-style-type: none"> 1) phlegmon of submandibular space; 2) submental abscess; 3) submasseterical abscess; 4) phlegmon of the parotidomasseterical area; 	<ul style="list-style-type: none"> a) skin incision from the edge of the frontal region of the lower jaw corpus to the frontal region of the lower jaw of the hyoid bone; b) incision on the skin side in the lower jaw triangle, 1.5–2 cm below the edge of the lower jaw and parallel to it, 5–7 cm long; c) skin incision in the posterior jaw region area (a 5–6 cm skin fringing cut slightly below the angle of the lower jaw); d) incision of the oral mucous membrane along the lower vault of the oral cavity in the area of the molar group of teeth of the lower one.
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13. An early secondary suture can be applied to the wound after surgical treatment of the purulent focus.

- a) 1st–2nd day;
- b) 3rd–4th day;
- c) 5–6th day;
- d) during the 2nd week the wound is covered with granules.

14. Why can be used for antiseptic treatment of an abscess cavity?

- a) alcohol sol. of inola;
- b) water 0.1 % sol. chlorhexidine;
- c) alcohol sol. of chlorhexidine;
- d) 8.25 % sol. potassium permanganate.

15. What solutions can be used to soak up gauze turbines in the drainage of purulent focuses in the treatment of abscesses and phlegmons of the maxillofacial region and neck?

- a) 0.9 % sol. NaCl;
- b) 10 % sol. NaCl;
- c) 10 % sol. CaCl₂;
- d) 85 % sol. MgSO₄.

16. Specify the components of antibacterial and detoxification therapy in the treatment of submandibular abscess.

- a) one antibiotic parenterally
- b) 2 antibiotics parenterally;
- c) intravenous injection of up to 1 liter of saline and 400–800 ml of hemodesis;
- d) 1 ml of 9 % sol. dimedrol × 3 time/day in muscle.

17. Specify the components of antibacterial and detoxification therapy in the treatment for oral bottom phlegmon.
 - a) one antibiotic parenterally;
 - b) drinking liquids up to 1.5 liters per day;
 - c) 2 antibiotics parenterally;
 - d) intravenous injection of up to 9 l of saline and 400–800 ml of hemodesis.
18. At microbiological confirmation of gas anaerobic infection from the purulent focus in phlegmon of the bottom of the oral cavity should be administered:
 - a) anti-tetanus anatoxin;
 - b) antigangrenous serum in a dose of 30 000 IU;
 - c) anti-rabies serum;
 - d) anti-gangrenous serum in a dose of 150 000 ME.
19. Identify proteolytic active agents used in the 1st phase of the wound process to cleanse necrotic masses in local treatment of abscesses or face and neck phlegmons.

a) trypsin;	c) diavitol;
b) chlorhexedine;	d) REPAREF-2.
20. Specify the means used in Phase 2 of the wound process to stimulate granulation growth in local treatment of abscesses or face and neck phlegmons.

a) trypsin;	c) Kombutec;
b) chlorhexedine;	d) terylitin.

Correct answers: 1 – a; 2 – b; 3 – a; 4 – c; 5 – primary; 6 – secondary; 7 – d; 8 – b; 9 – b; 10 – b; 11 – b; 12 – 1b, 2a, 3c, 4d; 13 – d; 14 – b; 15 – b; 16 – a; 17 – c; 18 – d; 19 – a; 20 – c.

SITUATIONAL TASKS

Problem 1. 32-year-old patient complaining about unwell feeling, body temperature of 38 °C, chills, headaches, painful swelling in the right side of the face, severe pulsating pain in the infraorbital area, insomnia.

Anamnesis of the disease: sick for 6 days after pain appeared in the area of 24 teeth, doctor didn't visited yet, the pain in the tooth gradually decreased, but on the 4th–5th day a swelling appeared on the face.

Local status: the face is asymmetric due to swelling of the soft tissues of the buccal and infraorbital areas on the left, edema extends to the lower eyelid, the left vowel gap narrowed. Skin is hyperemic, glossy, is not going into the fold, palpation determined by the presence dense painful infiltrate. The mouth is limited, the first premolar in the upper jaw is destroyed by a carious process. The mucous membrane over the causative tooth is hyperemic,

edematous. On the R-rgam of 24 teeth in the area of the root apexes there is a lesion of bone tissue with a size of 0.5×0.3 cm with fuzzy borders.

What diagnosis do you make? Have a treatment plan?

Problem 2. Patient N., 38 years old, came to the doctor with complaints of edema and pain in soft tissue area of the cheek, temperature 38°C , general weakness. 7 days ago the patient got a pain in the destroyed 37 tooth, which was not treated. After 5 days, a swelling of the face appeared on the left, the tooth pain disappeared, but there was pain in the area of the soft tissues of the cheek and lower jaw, radiating to the ear, and therefore the patient consulted a doctor.

Objectively: the face is asymmetric due to edema of the soft tissues of the buccal region on the left, the skin is hyperemic, glossy, not going to fold, palpation is determined dense painful infiltration in the buccal region, peripheral regional lymph nodes are enlarged, painful on palpation, opening of the mouth is limited inflammatory contracture of the II degree, when examining the oral cavity is determined infiltrate in the area of 36, 37 teeth, transitional fold is swollen, hyperemic, with painful palpation. In the 36th tooth, the crown part is destroyed, percussion symptome is positive.

Determine the diagnosis and make a treatment plan.

Problem 3. Patient L., 26 years old, complains of swelling of soft tissues in the buccal region on the right side, an increase in body temperature to 37.4°C for 2–3 days.

Objectively: a diffuse infiltrate and hyperemia of the skin of the soft tissues of the buccal region on the right are noted. Upon examination of the oral cavity, the tooth crown 13 is destroyed by half. The transitional fold in the tooth area is smoothed, the mucous membrane of the cheek is infiltrated and hyperemic.

Make a diagnosis, describe the treatment regimen for this pathology.

Problem 4. Patient D., 29 years old, complains of swelling of soft tissues in the submandibular region on the left. Marks an increase in body temperature to 37.7°C for 3 days.

Objectively: a diffuse infiltrate is detected in the submandibular region on the left with hyperemia of the skin. When examining the oral cavity, tooth 3.7 is destroyed below gum level. The transitional fold is smoothed, the mucous membrane is infiltrated and hyperemic. After examining the patient, the doctor after the verbal survey began examining the oral cavity, and then began to examine the skin of the maxillofacial region and neck.

1. What mistake did the doctor make when examining the patient?

2. What is the correct sequence for examining a patient with surgical pathology of the maxillofacial region and neck?

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**ЛЕЧЕНИЕ ВОСПАЛИТЕЛЬНЫХ ПРОЦЕССОВ
ЧЕЛЮСТНО-ЛИЦЕВОЙ ОБЛАСТИ**

**TREATMENT OF INFLAMMATORY PROCESSES
IN THE MAXILLOFACIAL AREA**

Учебно-методическое пособие
На английском языке

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