

**MINISTRY OF HEALTH OF UKRAINE
POLTAVA STATE MEDICAL UNIVERSITY**

Department general surgery with care of the patient

“APPROVED”

on the meeting of the chair
of the general surgery with care of the patient
head of the chair

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“ ” _____ 2021

METHODICAL INSTRUCTIONS

**FOR INDEPENDENT WORK OF THE STUDENT
IN TIME FOR PREPARATION TO THE PRACTICAL STUDY
(auditorium work)**

<i>Academic discipline</i>	general surgery
<i>module number 2</i>	Surgical infection. Mortification. Fundamentals of transplantology and clinical oncology. Methods of examination of surgical patients
<i>Content Module 1</i>	Surgical infection. About death .
<i>Theme of lesson №21</i>	General questions of surgical infection: classification; pathogens of surgical infection; translocation. Pathogenesis of the development of local and general reaction of the body during surgical infection. Principles of diagnosis and treatment . Abscess, phlegmon.
<i>Course</i>	III
<i>Faculty</i>	Medical No. 1.2, training of international students

Poltava 2021

A topic of relevance

The high frequency of development of purulent-inflammatory diseases and postoperative purulent complications makes the problem of their prevention and treatment one of the most relevant in modern clinical surgery. Today, patients with purulent-inflammatory diseases make up 35-40% of patients with a surgical profile. The proportion of purulent complications in different groups of surgical diseases, according to the World Health Organization, reaches 8.7-21% (Degtyar I.I., 2009). Difficulties in treating patients with purulent surgical infection are caused by both the increase in the multiresistance of modern microflora to antibacterial drugs, an increase in the frequency of seeding of microbial associations, including anaerobic pathogens from wounds, and the weakening of the general and local protective reactions of the macroorganism to infection. All this indicates the need to study the etiology, pathogenesis of surgical infection, methods for its diagnosis, taking into account modern scientific achievements, integrated (systemic) and local treatment.

2. Specific goals:

1. Familiarize with the definition, pathogens, classification of surgical infection.
2. To illuminate diagnostic methods and characterize the features of the differential diagnosis of acute purulent diseases of the soft tissues.
3. To acquaint with methods of treatment of various purulent diseases of soft tissues.
4. Familiarize with the main forms and clinical manifestations of abscesses and phlegmon.
5. Name the difference between an abscess and phlegmon.
6. Describe the treatment tactics for various forms of abscess and phlegmon.

3. Basic knowledge, abilities, skills necessary to study the topic (interdisciplinary integration).

Disciplines	acquired skills
Normal anatomy	Skin structure, osteology, myology, syndesmology. Anatomy of the circulatory and nervous system.
Ghistology	Cytology, morphology and function of the skin, blood, internal organs
Physiology	Physiology of the skin, circulatory organs. The structure and functions of the microcirculatory vascular bed. About enteral representation of the central and peripheral blood flow . Physicochemical mechanisms of fluid exchange between blood and tissues (according to C terling y).
X-ray and radiology	Radiological semiotics of damage.
Operative Surgery and Topographic Anatomy	Topography neurovascular formations, cellular spaces.
Propedeutics	Methods of examination of the patient. Nursing Care.
Mikrobiolo – gia	The main causative agents of surgical infection.

Pathological physiology	Disruption of microcirculation, ischemia, stasis, thrombosis, impaired water-electrolyte metabolism, hypoxia, metabolic disorders
Of pathological anatomy	Have the ability to interpret the symptoms of inflammation and identify the phase of the wound process
<i>Intradiscipline Integration</i>	
Desmurgy	Have the ability to apply dressings on the upper and lower limbs, scarves, medical dressings.
Aseptic and Antiseptic	Types of antiseptics. Use antiseptic drugs in various phases of the wound healing process. Types of asepsis.
Bleeding	Methods of temporary and final stop of bleeding.
Contaminated wounds	Stages of the wound healing process . Treatment depending on the stage of the wound process .

4. Tasks for independent work in preparation for the lesson and in the lesson .

4.1. The list of basic terms, parameters, characteristics that a student must learn in preparation for the lesson:

<i>Term</i>	<i>Definition</i>
Surgical infection	Understand inflammatory diseases, the treatment of which is carried out mainly by surgical methods.
Wound infection	Diseases , which cause me to get into the humans various pathogenic microbes in the wound, which leads to the development of purulent and inflammatory processes.
Translocation	(from <i>trans.</i> And Lat. (Latin) locatio - placement), the process of transferring various substances into the cell and from it through biological membranes with the participation of special biochemical transport systems .
Abscess (abscessus)	Limited accumulation of pus in tissues and organs.
Phlegmone	Acute diffuse purulent inflammation of the cellular spaces (subcutaneous, intramuscular, retroperitoneal).
Pus	Exudate containing protein, enzymes, tissue degradation products , a large number of leukocytes , most of which died under. Action of toxic substances.
Detritus	Mushy-like product of disintegration
Exudate	Protein-rich inflammatory fluid ,which accumulates in the tissues and cavities.
Nekrozis	Death of separate cells, tissue sites, parts, or an entire organ in a living organism.
Acidosis	Violation of the acid-base balance in the body, characterized by the appearance in the blood of an absolute or

	relative excess of acids and an increase in the concentration of hydrogen ions.
Hemodializ	The method of correction of water-electrolyte, acid-base metabolism and the removal of various harmful substances from the body.
Hemosorbtsiya	The method of removing toxins from the body by extracorporeal perfusion of blood through sorbents.

4.2. Theoretical questions before class .

1. Classification surgical infection
2. What is the frequency of purulent-septic diseases, their structure and the main causes?
3. What anatomical and physiological features of the structure of the skin and subcutaneous tissue contribute to the spread of the inflammatory process?
4. Bacteriological examination for purulent-septic diseases. How to carry it out?
5. What are the components of the therapeutic effect on the human body with purulent-septic diseases. What does it depend on?
6. What is a systemic inflammatory response syndrome?
7. Directions for the treatment of purulent-septic diseases.
8. What is the basis of the empirical approach to prescribing antibiotics?
9. Detoxification therapy.
10. Forms and clinical manifestations of abscesses.
11. Features of the treatment of abscesses.
12. Name the clinical manifestations of phlegmon.
13. The difference between an abscess and phlegmon.
14. Therapeutic tactics for phlegmon.

4.3. Practical work (tasks) that are performed in class:

1. Methodology for a complex of measures for surgical infection;
2. Technique for performing secondary surgical treatment, necrectomy;
3. Bacteriological studies in purulent-septic diseases;
4. Diagnose a superficial abscess and phlegmon.
5. Empirical prescription of antibiotics.
6. Dezintoksikatsion on therapy.

5. The content of the topic:

Infection (infectio) in surgery is one of the leading places in mortality and determines the essence of many inflammatory diseases and postoperative complications. In recent years, there has been an increase in the frequency of purulent-inflammatory diseases and postoperative purulent complications, which is associated both with the spread of antibiotic-resistant strains of microflora and with an increase in the range of complexity of surgical interventions (heart, esophagus, lung, brain, organ transplants). Of particular importance in the spread of purulent infection is a violation of the immune status of patients, due to many factors: allergization of the population, the influence of harmful environmental factors (increased background of radiation due to

accidents at nuclear power plants, water pollution, the survival of substandard products with a high content of pesticides, pesticides etc.).

Classification of surgical infection

Depending on the *etiology* distinguish

- staphylococcus,
- Streptococcus,
- pneumococcus,
- kolibatsilyary,
- Pseudomonas,
- Neisseria gonorrhoeae,
- anaerobic non-spore forming,
- clostridium anaerobic mixed , and other types of infection.

According to the *localization* of the process, the infection is distributed as follows:

- surgical infection of the skin and subcutaneous tissue,
- infection of the integument of the skull and its contents (brain, membranes),
- purulent infection of the chest and organs (lungs, mediastinum),
- infections of the peritoneum and abdominal organs, pelvic organs,
- infection bones and joints.

On *degree* severity of the clinical picture distinguish between acute and chronic forms.

Acute surgical infection, depending on the causative agent and the clinical nature distributed to

- purulent,
- putrid,
- non-specific anaerobic (gas gangrene),
- particular anaerobic (tetanus, diphtheria wounds, anthrax).

Chronic surgical infection is divided into

- non-specific and
- specific (tuberculosis, syphilis, actinomycosis).

Each of these forms can occur with a predominance of local signs (local surgical infection) or general phenomena with septic course (general surgical infection).

Etiology and pathogenesis of surgical infection

The main pathogens of purulent infection at present is staphylococcus, E. coli, Proteus. Staphylococcus occupies a central place among the pathogens of purulent infection; it is observed (up to 80% of cases) both in monoculture and in associations with Escherichia coli, streptococcus, protea, fungi and the like.

A characteristic feature of staphylococcal infection is the rapid emergence of antibiotic resistant strains, significant toxic effects on the patient's body due to toxins and enzymes (staphylogemolysin, staphylolecolysin, plasmocoagulase), high virulence, ability to migrate and the formation of metastatic ulcers. Common in the pre-antibiotic era aerobic (streptococcus, gonococcus, pneumococcus) today rarely are the causative agents of purulent infection, stand out, mainly in association with other micro flora. E. coli takes the second place (47%) in the etiology of purulent processes, can exist under aerobic and

anaerobic conditions, and often forms associations with staphylococcus and streptococcus, especially in the pathology of the abdominal organs.

Saprophytes (*Proteus*, *Pseudomonas aeruginosa*), widely distributed in the external environment, on the skin and mucous membranes of a person, can be sources of purulent infection. They take on special significance when immunity is reduced, injury injuries (burns) may cause sepsis.

In recent years, after the introduction of special microbiological methods and culture media into clinical practice, it has been proved that non-clostridial (non-spore-forming) anaerobes, which were not previously detected by conventional methods, play a significant role in the etiology of purulent-inflammatory diseases. These include gram-positive (peptococci, peptostreptococci, lactobacilli) and gram-negative species (bacteroids, fusobacteria, campylobacteria).

A feature of anaerobic non-clostridial infection is its rapid progression and spread of cellular spaces with a predominance necrolysis processes as well and endogenous intoxication. Non-clostridial anaerobes often highlighted when an abdominal wound infection abdomen cavity, peritonitis, pelvic abscesses, paraproctitis, lung abscess.

In the pathogenesis of the development of purulent infection, many factors are important. The main ones are violation of the trophism of the skin or mucous membranes along the pathway x of the entrance gate of the infection, the state of the body's defenses, the virulence of microflora. Microbes do not penetrate the body through intact skin or mucous membranes. Even minor trauma to the integument contributes to microbial invasion of the body. Of particular importance are the conditions of blood and lymph flow in this area. On the head and face with a dense network of blood vessels, purulent processes develop less frequently than in other parts of the body. An important role is played by "local" tissue immunity. For example, in the perineal region, as a result of constant exposure to microbes and their toxins, significant skin resistance to microbial invasion is observed.

Damage to the skin and mucous membranes contribute to the penetration of microflora, but their reproduction and growth appears only after 6 hours. The principles of primary surgical treatment of infected wounds are based on this. For the development of infection, the presence of a nutrient medium for microbes in the area of injury (hemorrhage, dead tissue) is important. An important factor in the pathogenesis is the virulence of microflora and its resistance to antibiotics. Toxic microbial substrates (hemolysin, leukocidin, necrotoxin, etc.) together with enzymes (plasmocoagulase, hyaluronidase) act on the center of penetration and the entire body. The spread and development of the inflammatory process during microbial invasion is determined by the ratio of the amount and virulence of microflora entering the body with the body's immune forces. With a large dose of virulent microflora and weak protective forces of the body, the inflammation develops rapidly and even the process generalizes (sepsis). With an inverse ratio, the inflammatory process is localized and stops.

The reaction of the body to infection can be manifested by *local and general manifestations* - pain, swelling, impaired function, hyperemia, venous stasis, fever.

There are hyperergic, normergic, hyperergic and anergic forms of inflammation.

A **hyperergic** reaction is characterized by a rapid course with the development of significant edema, necrolysis, and a sharp deterioration in the general condition (intoxication, hyperthermia, hypotension).

Normergic inflammation accompanied by moderate edema tissue with favorable course unexpressed general response of the body.

The **hypergic** reaction is expressed by dim general and local symptoms: local process, sub febrile temperature. Inflammation is quickly stopped, observed with unexpressed immune status, often does not require therapy, and passes spontaneously.

Anergic reaction occurs with a sharp decrease of the immune status, in case of prolonged use of antibiotics or hormone preparations. When this is observed on low-flow running purulent process with significantly destruction without hyperemia and edema of the skin, the so-called "bag with pus ." Along with this, the overall protective reaction of the body is sharply reduced (expressed leukocytosis, leukopenia, the phenomenon of secondary immunodeficiency).

The general reaction of the body to microbial invasion is manifested by symptoms of intoxication (headache, weakness, fever, tachycardia, hypotension, encephalopathy) and changes in the blood (leukocytosis, accelerated ESR, shift of the leukocyte formula to the left, hypoproteinemia, increased immunoglobulin activity, growth of phagocytosis. In the case of generalization of the infection, intoxication phenomena progress, there is a violation of the function of detoxification organs (the occurrence of acute liver or kidney failure), a decrease in the immune status (drop in leukocyte activity, phagocytosis, the occurrence of immunodeficiency phenomena).

Modern methods of treatment of purulent-inflammatory diseases

It is wise to combine general and local treatments.

Local therapy is aimed at combating the microflora and correction of wound healing process. The effect on microflora is achieved by antibiotic therapy and the use of antiseptics. Antibiotic therapy should be carried out taking into account the sensitivity of microorganisms. Before prescribing antibiotics, the microflora of the wound should be identified and antibiotic sensitivity determined (seeding excreta, pure culture, antibioticogram). The sensitivity of microlors is most often determined by a disk antibiogram (zones of growth inhibition are less than a diameter of 15 mm - resistance, from 15 to 25 mm - sensitivity, more than 25 mm - high sensitivity). You can use the express method for determining sensitivity without isolating a pure culture using indicators (2,6-dichlorophenolindophenol, red blood salt) using phase contrast microscopy.

To prevent complications (rash, anaphylactic shock), it is necessary for all patients to conduct an intradermal test for sensitivity before prescribing antibiotics. In patients with drug allergy, sometimes skin, scarification, and intradermal tests should be performed sequentially. Antibiotics are prescribed in sufficient doses (many prefer doses higher than therapeutic), usually several drugs, taking into account synergies and for a short time (4-5 days), followed by antibiotic sensitivity testing (antibiogram) and drug changes to prevent the emergence of antibiotic-resistant or antibiotic-dependent strains of bacteria.

Antibiotic therapy is mainly used parenterally. Topically, few drugs are injected into the wound, since most of them are inactivated in the acidic environment of the inflammation. The advantage is given to intravenous, intraarterial and endolymphatic administration, since in this case a rather stable effective concentration of antibiotics in the pathological focus is quickly formed. In recent years, preference has been given to second-generation antibiotics: semisynthetic penicillins (ampicillin, carbenicillin, ampiox), cephalosporins, aminoglycosides, semisynthetic tetracyclines. Antibiotics of the first

generation (benzylpenicillin, streptomycin, chloramphenicol, tetracycline) are almost not used, due to the wide spread of antibiotic dependence as a result of a mutagenic effect on the microflora.

To prevent these complications, the *following rules* should be observed :

1) use large doses of antibiotics;

2) combine antibacterial drugs and antibiotics, have different mechanisms and spectrum of action, and also combine the ways of their introduction. Of chemical antibacterial drugs, sulfonamides are used, mainly long-acting (sulfapyridosine, sulfadimethoxine, sulfalene), sulfanilamide preparations with camp diaminopyrimidine (bactrim, biseptol). In addition, quinoxaline derivatives (dioxidine, chlorhexidine gluconate) are used, which act on antibiotic-resistant strains and microflora. Of nitrofurantoin derivatives, furatsilin, potassium furagin are used to treat purulent-inflammatory diseases.

The impact on the course of wound and purulent processes, first of all, begins with surgical methods :

Early removal of infection, opening and rational drainage of abscesses, while it is better to use active drainage methods. In the hydration phase to necrolysis and successfully used proteolytic enzymes (trypsin, himotripsin, plasmin, ribonuclease, deoxyribonuclease) having proteolytic, anticoagulant and dehydration effects. Cleansing wounds from pus, necrotic masses, the appearance of granulations during treatment with proteolytic enzymes occur 1.5 times faster than with traditional methods of treatment. It is well suited for use Ranney th secondary seam autodermaplasty . In recent years, methods of treating purulent surgical infection with a laser, ultrasound, UHF, ultraviolet irradiation of wounds, and diodynamic currents have become quite common . Applied as a focused laser beam (lasers carbon dioxide or argon) and focused nye rays (helium-neon). The former are used as a surgical scalpel when cutting abscesses and removing necrotic masses. In this case, a bactericidal effect is expressed (reduction of microbial contamination of the wound, decrease in the pathogenicity of microflora). Focused therapeutic laser (helium-neon) also has a bactericidal effect, contributes to early necro cleansing wounds of the call and the appearance of granulation. Successfully applied and ultrasound. The bactericidal property of ultrasonic waves due to the physico-chemical and biological processes (cleaning the wound of pus and necrotic tissue, the impact on flora and stimulation of physical processes in the patient's body). Ultrasound has the greatest effect with gram-negative flora (*Pseudomonas aeruginosa*, *Escherichia coli*).

General methods for treatment of purulent infection consist of transfusion and detoxification therapy, as well as immunological methods.

Detoxification therapy is aimed at the absorption of toxins from the lesion, dilution, binding and introduction of toxins from the bloodstream. Reducing the absorption of toxins from the site of infection is achieved by surgical methods (wide dissection, necrectomy, drainage, active aspiration), as well as continuous irrigation with antiseptic solutions and using antibiotic therapy. For detoxification and elimination of toxins, detoxifying blood substitutes are used (hemodesis, neohemodesis, reopoliglyukin), protein preparations (albumin, protein hydrolysates), colloidal and polyionic solutions with a total amount of 4-5 liters per day. The elimination of toxins is facilitated by the use of forced diuresis, peritoneal dialysis, hemodialysis. The adsorption of toxins is successfully carried out by methods of extracorporeal detoxification (hemisorption,

plasmosorption, plasmapheresis, lymphosorption, hemofiltration, use of xenosepleen, xenogen liver).

The following methods contribute to the destruction of toxins: oxygen therapy, hyperbaric oxygenation, ultraviolet irradiation of blood.

Immunotherapy with purulent infection is pathogenetically justified because it more or less developed secondary immunodeficiency, which can worsen the pain of due to the use of antibiotic therapy. Immunotherapy involves the use of replacement therapy and immunocorrection.

As a substitution therapy, blood transfusions, hyperimmune sera (antistaphylococcal, antiprotein, anticolibacillary, anti-pseudomonas), gamma globulin, staphylococcal toxoid, bacteriophage, which are used for sepsis, peritonitis, that is, in cases of severe purulent infection during its generalization, are performed. In chronic staphylococcal infection designate an atoksin, Pseudomonas and Proteaceae vaccine allow guides to create a local active immunity. As an active immunotherapy, in addition to vaccines and toxoid, synthetic (prodigiosan, methyluracil, decaris, levamisole) and natural immunostimulants (thymus preparations – t-aktivin, thymalin, thymosin are used).

Clinical form acute surgical infection

An abscess (abscessus) is a limited accumulation of pus in tissues and organs.

Causes: infected abrasions, injections, wounds, infections during treatment (subcutaneous, intramuscular injections), suppuration of hematoma. Abscesses can develop around foreign bodies. Their causative agents may be the most diverse microflora, but most often - staphylococci, streptococci, Escherichia coli, Proteus. An abscess occurs in the cavity of purulent inflammation (boil, carbuncle, hydradenitis, lymphadenitis, etc.).

With superficial abscesses, skin hyperemia, swelling, and fluctuation are observed above them. Clinically, the disease is accompanied by pain (often of a pulsating nature), signs of intoxication, fever, tachycardia, headache, weakness, leukocytosis with a shift to the left. A feature of the abscess is the presence of a pyogenic shell (membrane) - the inner wall covered with granulation tissue, which clearly limits the inflammation from healthy tissues.

Abscesses should be distinguished from the hematoma, congestive abscess tuberculosis of the spine, aneurysm, vascular tumors. Diagnosis of deep-seated abscesses, especially internal organs, is difficult. For diagnosis, ultrasound, computed tomography, and radiography are used.

Treatment of abscesses is prompt. Cutting, removal of necrotic tissue, drainage (preferably active) are carried out, further treatment is carried out as a purulent wound.

Phlegmon (phlegmone) - acute diffuse purulent inflammation of the cellular spaces (subcutaneous, intramuscular, retroperitoneal). Unlike an abscess, with phlegmon, the process is not limited, but spreads along loose cellular spaces. Phlegmon is an independent disease, but it can also be a complication of purulent processes (carbuncle, abscess, sepsis).

By the nature of the exudate, purulent, purulent-hemorrhagic and putrefactive forms of phlegmon are distinguished. By the nature of the exudate, purulent, purulent-hemorrhagic and putrefactive forms of phlegmon are distinguished. Depending on the localization, the phlegmon has an epifascial or subfascial form (intermuscular). There are special localizations: paranephritis, paracolitis, paraproctitis.

The clinic is characterized by inflammatory infiltrate without clear boundaries, followed by softening, high fever, intoxication, and chills .

Complications: lymphadenitis, erysipelas, thrombophlebitis, sepsis, purulent arthritis, purulent meningitis.

At the initial stage, conservative treatment is carried out (antibiotics, heavy drinking, heart remedies, dry heat, Sollux, UHF).

In the formation of ulcers - dissection and drainage. In specialized hospitals, active surgical tactics are used - wide dissection of delicate tissues, flushing drainage with active aspiration. With phlegmon, which was complicated by sepsis, hyperbaric oxygenation and other types of extracorporeal detoxification (hemisorption, plasmosorption, plasmapheresis) are used. After opening the phlegmon, atherapeutic units can be used.

LIMPHANGITIS - secondary inflammation of lymphatic vessels due to a variety of inflammatory diseases.

Etiology and pathogenesis . The causative agents of lymphangitis are most often staphylococci, less often streptococci, Escherichia coli, Proteus, microbial associations. The primary focus is an infected wound, boil, carbuncle, abscess, phlegmon, panaritium. Conditions that contribute to the development of lymphangitis are: localization and size of the primary source of infection, virulence of microbes, anatomical and physiological features of lymphatic circulation. Most often, lymphangitis occurs as a complication of purulent-inflammatory diseases of the extremities. This is due to the highest frequency of microtraumas, a significant amount of microflora, the peculiarities of lymph flow.

Microorganisms, their toxins from the site of inflammation penetrate into the interstitial fissures, and then into the lymphatic capillaries, lymph vessels and lymph nodes. This process is accompanied by endolymphangitis, hyperemia, edema, lymphostasis, thrombosis, in severe cases perilymphangitis. The inflammatory process can spread even to the thoracic duct.

Classification . By the nature and degree of development there are simple (serous) and purulent lymphangitis;

in the course - acute and chronic;

for types of vascular lesions - capillary (reticular), truncular (stem).

Clinic. Typical local changes: pain, local fever, infiltration, redness, dysfunction; general signs of body temperature, fever, headache. The degree of expression depends on the state of the macroorganism, the virulence of the microorganism, the localization of the pathological process. The appearance of acute lymphangitis indicates the spread of the inflammatory process. The body temperature rises to 39-40 ° C, fever, weakness, headache, and high leukocytosis are observed. In patients with reticular lymphangitis, hyperemia of the skin is noted in the form of a red grid without clear boundaries, with stem - in the form of separate red lines from the site of inflammation to the area of regional lymph nodes. There is swelling of the skin and the course of the lymphatic vessels ("cords"). Lymph nodes react rather quickly - they enlarge, become painful on palpation (lymphadenitis). The diagnosis is made according to the typical clinical picture.

Treatment. First of all, it should be aimed at eliminating the primary focus - the opening of phlegmon, panaritium, abscess, purulent wounds, their adequate

drainage. Prescribe antibiotic therapy taking into account the sensitivity of microorganisms, active detoxification therapy, blood UFO, hemosorption, create limb immobilization. The prognosis is favorable. But if the inflammatory process is long, there may be a disorder of lymph flow due to obliteration of blood vessels, which leads to lymphostasis (elephantiasis). Prevention consists in careful timely surgical treatment of wounds, opening of purulent centers with adequate drainage, immobilization, rational antibacterial therapy.

LYMPHADENITIS (LYMPAD ENITIS) - inflammation of the lymph nodes. Occurs as a complication of purulent-inflammatory processes (boils, carbuncles, panaritium, erysipelas) and specific infections (tuberculosis, plague, actinomycosis).

Classification. There are acute and chronic, specific and nonspecific and.

Etiology and pathogenesis. Lymphadenitis is most often caused by staphylococcus, less often by streptococcus, other purulent microbes that enter the nodes through the lymph vessels. Very rarely by penetration is hematogenous. At the beginning of inflammation there is a serous infiltration due to migration of leukocytes and proliferation of lymphoid cells (acute catarrhal lymphadenitis). If the inflammatory process extends beyond the capsule and spreads to adjacent tissues (paralymphadenitis), then we can talk about destructive lymphadenitis with the formation of adenophlegmon.

Clinic. The onset is characterized by pain and swollen lymph nodes, headache, weakness, fever. In patients with serous lymphadenitis, the general condition changes little. Patients report moderate dull pain in the area of the enlarged lymph node, which is painful on palpation, not fused with the surrounding tissues, the skin over it is not changed. In the case of purulent lymphadenitis, the pain is significant. The skin over it is hyperemic, during palpation sharply painful, soldered together, become immobile. At an adenophlegmon the diffuse hyperemia of skin, dense, without accurate borders infiltrate with signs of fluctuation is defined. There is redness, fever, tachycardia, headache, weakness.

Complications of lymphadenitis - putrefactive anaerobic phlegmon, the spread of infection to the cell spaces (retroperitoneal, mediastinal) with the emergence of the corresponding phlegmon, sepsis. Chronic nonspecific lymphadenitis may be primary due to weakly virulent microflora in weak inflammatory processes (chronic tonsillitis, inflammation of the teeth, microtrauma) or due to acute lymphadenitis. Chronic inflammation of the lymph nodes is productive and rarely turns into destructive forms. Enlarged nodes are almost painless, mobile, not fused with tissues; they remain in this state for a long time.

The prognosis is favorable. The disease usually ends in scarring.

Tuberculous lymphadenitis is a manifestation of tuberculosis as a general disease of the body. In childhood peri from primary tuberculosis combined with lesions of intrathoracic lymph nodes. Relatively isolated lesions of certain groups of lymph nodes are possible, more often in adults, on the body of old inactive tuberculosis foci, when tuberculous lymphadenitis manifests itself as secondary tuberculosis. There are 3 forms of tuberculous lymphadenitis : infiltrative, caseous (with and without fistulas), indurative. A characteristic feature of tuberculous lymphadenitis is the presence of periadenitis. The affected lymph nodes are a conglomeration of fused formations of different sizes. The onset of the disease in adults is gradual, with the rare formation of fistulas due to the

productive nature of inflammation. The cervical, submandibular and axillary lymph nodes are more often affected.

Treatment. Initial forms of lymphadenitis are treated conservatively: rest, UHF therapy, active treatment of the primary focus (revealed abscesses), antibacterial therapy. Purulent lymphadenitis is treated surgically: open the abscess (small incision - up to 3 cm, only in adenophlegmon use incisions of the required size), adequate drainage. Adequately used proteolytic enzymes. Treatment of chronic nonspecific lymphadenitis is aimed at eliminating the underlying disease (source of infection). Treatment of tuberculous lymphadenitis is purely specific: tubazid, streptomycin in combination with PAS, ethionamide, prothionamide, ethambutol. Long-term treatment 8 - 15 months. About the prevention of sex in the prevention of injuries, timely treatment of infected wounds, the rational treatment of purulent-inflammatory processes.

6. Materials for self-control:

Tests for self-control (initial level of knowledge) .

1. What is a microbial number?

the number of microbial colonies grown on a nutrient medium when inoculating 1 ml of exudate from the wound;
 the number of microbial strains seeded from one wound;
 the number of microbial strains removed from one wound;
 the number of microbial bodies in 1 mm of tissue;
 the number of microbial bodies in the field of view during microscopy of wound exudate with an increase of 200.

2. What is the role of antibiotics in the treatment of wounds?

delay the development of wound infection;
 contribute to the formation of granulation;
 sterilize the wound;
 delay the development of granulation;
 reduce wound exudation.

2. Give the definition of "abscess":

delimited n but e accumulation of pus in tissues and organs;
 unlimited accumulation of pus in tissues and organs;
 accumulation of pus in the subcutaneous tissue;
 accumulation of pus under the fascia;
 accumulation of pus in the hollow organs.

4. The cavity of the abscess from the healthy tissue separates:

pyogenic capsule;
 fascia;
 peritoneum;
 pleura;
 subcutaneous tissue.

5. The inner layer of the pyogenic abscess capsule is represented by:

granulation tissue;
 connective tissue;
 scar tissue;
 leukocyte shaft;
 fascia .

6. The main treatment for abscesses are:

surgical treatment;
 antibacterial therapy;
 immunotherapy;
 physiotherapy;
 conservative therapy.

7. What is the most complete volume of surgical intervention for an extensive post-injection buttock abscess:

opening, debridement and adequate drainage of the abscess cavity;
 puncture of the abscess;
 puncture of the abscess and the introduction of antibiotics into its cavity;
 opening an abscess;
 disclosure and rehabilitation of an abscess.

8. In the presence of an abscess, the symptom of fluctuation will be negative with:

a deep location of the abscess;
 superficial location of the abscess;
 the location of the abscess on the limbs;
 the location of the abscess on the neck;
 a symptom of fluctuation is not characteristic of abscesses.

9. Deep phlegmon of the mediastinum is called: mediastinitis ;

purulent pleurisy;
 paranephritis;
 pleurisy;
 there is no special name.

10 . The inner layer of the abscess piogenic capsule was sent by:

granulation tissue;
 lymphoid tissue;
 scar tissue;
 leukocyte shaft;
 connective tissue.

11. About the optimal method of treatment of abscesses are:

surgical treatment in combination with antibiotic therapy;
 antibacterial therapy;
 immunotherapy;
 physiotherapy;

detoxification therapy.

12. How many microorganisms per 1 gram of tissue are necessary for the development of the infectious process?

- a) 10⁵;
- b) 10;
- c) 10³;
- d) 10⁴;
- d) 10².

13. During the opening of the abscess, a yellow-green, odorless, creamy pus was obtained . What pathogen causes the inflammatory process?

- staphylococci;
- Klebsiella;
- Escherichia coli;
- Pseudomonas aeruginosa;
- proteem.

14. According to the bacteriological study of pus obtained after opening the buttock abscess, Staphylococcus aureus was seeded. What characteristics does pus have?

- yellow-green, creamy, odorless,
- brown, liquid, offensive;
- yellow-green, creamy, smelly;
- brown, liquid, odorless,
- bluish-green, creamy, with a sweet aftertaste.

15. Ways of infection with purulent infection (the most complete answer): exo and endogenous;

- contact;
- lymphogenous.
- hematogenous;
- airborne.

16. What is called phlegmon?

- diffuse purulent inflammation of fiber;
- purulent-inflammatory diseases of the sweat glands ;
- purulent-inflammatory diseases of the sebaceous glands ;
- limited inflammation of fiber;
- purulent inflammation of the joints.

17. How to treat phlegmon with a softening symptom ?

- incision and drainage;
- ointment dressing ;
- cold compress;
- warming compress;
- novocaine injection with antibiotics.

18. Phlegmon is called mediastinitis with localization in:

mediastinum;
 the brain;
 stuffing box;
anterior abdominal wall ;
 the muscles.

19. If you suspect an abscess, you must:

perform a puncture;
 apply an ointment compress;
 make a cut;
 apply a warming compress;
 apply ultraviolet radiation.

20. What is an abscess?

delimit n but e accumulation of pus in the tissues and organs;
 accumulation of pus in the subcutaneous tissue;
 not demarcated district but is, accumulation of pus in tissues and organs;
 accumulation of pus in the hollow organs;
 accumulations of pus around hollow organs.

21. Give the definition of "cellulitis":

keen not to delimit n but is, purulent inflammation of the adipose tissue and cellular spaces;
 accumulation of pus in the subcutaneous tissue;
 acute delimited purulent inflammation of adipose tissue and fiber spaces;
 accumulation of pus in the hollow organs;
 accumulation of pus around hollow organs.

22. Which of the diseases is complicated by purulent infection?

diabetes;
 liver failure ;
 renal failure ;
 malignant diseases;
 pneumonia.

23. The symptom of fluctuation is not determined when:

hemothorax;
 phlegmon;
 mastitis e;
 an abscess
 paraproctitis.

24. What is the surgical treatment of phlegmon?

autopsy, finger revision and drainage;
 autopsy and tamponade with an antiseptic;

opening and drainage;
 autopsy, finger revision;
 opening , removal of pus , and stitching.

25. What are the main pathogenetic factors in the development of phlegmon:

violation of trophism of the skin or mucous membranes on the pathways of the entrance gates of the infection, the state of the body's defenses, virulence of microflora;
 pain irritation, plasma and blood loss;
 violation of trophism of the skin or mucous membranes on the ways of the entrance gate of infection, fat embolism of internal organs;
 plasma and blood loss; virulence of microflora;
 bleeding disorders, virulence of microflora.

26. For therapeutic purposes, puncture of the abscess cavity is most often performed with:

liver abscesses;
 buttock abscesses;
 abscesses of the limbs;
 face abscesses;
 abscesses of the neck.

B. Tasks for self-control:

1. Patient M., 54 years old, was diagnosed with phlegmon of the hand against the background of newly diagnosed diabetes mellitus. What therapy should be applied to the patient?

surgical treatment, antibiotic therapy, insulin therapy;
 antibiotic therapy, insulin therapy, warming compresses;
 surgical treatment, antibiotic therapy;
 surgical treatment, antibiotic therapy, pain medication;
 surgical treatment, insulin therapy.

2. A drug addict after injecting the drug into the femoral vein notes an increase in body temperature up to 40 ° C, the appearance of painful infiltrate, an increase in the volume of the thigh, and flushing of the skin. What is the diagnosis?

phlegmon;
 carbuncle;
 erysipelas;
 osteomyelitis;
 paraproctitis.

3. Patient P., 25 years old, was hospitalized in the surgical department with Complaints of Mr. and pain in the right buttock , the temperature to 39°S. From the anamnesis it is known that 9 days ago, with the goal of anesthesia, an analgin injection was performed intramuscularly in the area of the right buttock. Objectively: in the upper-outer quadrant of the right buttock, a painful

infiltrate of 5 × 4 cm is determined. The skin above it is hyperemic, hot to the touch. Make the correct diagnosis.

post-injection abscess of the right buttock;
 erysipelas of the right buttock;
 carbuncle of the right buttock;
 abscessed boil of the right buttock;
 hematoma of the right buttock.

4. Patient V., 48 years old, complains of pain and presence of tightness in the right buttock . Four days ago, at home, the patient was injected with a 50% analgin solution to reduce lower back pain . A day later, a thickening of the tissues appeared on the buttock , and then pain. Applied compresses. On examination, the skin on the right buttock is red , painful infiltration is determined during palpation , a positive symptom of fluctuations , put a preliminary diagnosis.

post-injection abscess of the right buttock;
 erysipelas of the right buttock;
 carbuncle of the right buttock;
 abscessed boil of the right buttock;
 hematoma of the right buttock.

5. The patient, 35 years old, complains of a fever , pain in the upper external quadrant of the right buttock, which appeared after the injection. Sick for 3 days. At the injection site, skin hyperemia, painful infiltration with softening in the center. Diagnosed with post-injection abscess of the right buttock. Further surgeon tactics?

opening an abscess, debridement and drainage of the cavity;
 anti-inflammatory therapy , massage and dry heat on the right buttock;
 hospitalization of the patient, the appointment of antibiotics , UHF, puncture of the abscess; removal of pus followed by the introduction of antiseptics;
 low-intensity laser light for 10-15 min . on the right buttock.

situational tasks

1. Patient M, 54 years old, was diagnosed with phlegmon wrist against the background of new-onset diabetes. What therapy should be applied to the patient?

2. A medical sister should feed patient S., who was operated on 2 days ago for an abdominal abscess. Feeding should occur through a nasogastric tube prescribed to the patient. To do this, the nurse connected the Jenet syringe with the nutrient mixture to the probe and began to slowly inject the latter through the probe. At the same time, the patient began to complain of a feeling of fullness behind the sternum, pain in this area. Why did the patient have these complaints? What mistake did the nurse make?

3. Patient M., 69 years old, was operated on for diffuse peritonitis that developed due to empyema of the gallbladder . After the operation, 4 days have passed. The patient is allowed to eat through the mouth (table 1a). The patient's condition is serious, the patient is weakened, is in a supine position. How to feed this patient?

4. Patient V., 77 years old, 1 day ago an operation was performed - amputation of the left lower limb due to phlegmon of the foot and n / 3 of the lower leg. The patient's condition is serious. She cannot move independently. On examination, hyperemia of the skin was found in the areas of the corners of both scapula, sacrococcygeal region. Ka some complication may occur in this patient ? What needs to be done in such a situation?

5. The patient, 35 years old, complains of fever, bol in the upper outer kvadrant ie the right buttock, which emerged after the injection. Sick for 3 days. At the injection site, skin hyperemia, painful infiltration with softening in the center. To Which diagnosis is established? Further surgeon tactics?

6. In the patient M., 77 years old, which is in the supine position, in sacrococcygeal region holds flushing of the skin, blisters with bloody contents. What complication developed in this patient, what needs to be done in this case?

7. Patient K., 35 years old, was operated on 1 day ago for facial phlegmon and oral cavity. How to feed this patient in the postoperative period?

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