MINISTRY OF HEALTH OF UKRAINE

ODESA NATIONAL MEDICAL UNIVERSITY

Faculty *Medicine*

Department *of Surgery with Postgraduate Education*

APPROVED BY

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METHODOLOGICAL RECOMMENDATIONS FOR PRACTICAL CLASSES OF THE ACADEMIC DISCIPLINE

Faculty, course Medical 6th year

Academic discipline Surgery

(name of the discipline)

PRACTICAL CLASSES

Practical class № 5

Topic: "Purulent diseases of the skin and soft tissues. Diagnostics, differential diagnostics. Methods of conservative and surgical treatment. Purulent diseases of the wrist and fingers. Methods of conservative and surgical treatment"

Approved:

At the meeting of the Department *of Surgery with Postgraduate Education* of Odesa National Medical University

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PRACTICAL CLASSES

Practical class № 5

1.Topic of the practical class: "Purulent diseases of the skin and soft tissues. Diagnostics, differential diagnostics. Methods of conservative and surgical treatment. Purulent diseases of the wrist and fingers. Methods of conservative and surgical treatment"

2. Relevance of the topic

Acute purulent diseases of the skin and soft tissues occupy one of the main places in surgical practice. The history of surgery is inextricably linked with the fight against infection. The widespread use of antibiotics due to their mutagenic effect has led to a change in the species composition and properties of the purulent microbial flora, which has reduced the effectiveness of antibiotic therapy. Of particular importance are the issues of treating purulent infections of soft tissues in outpatient settings, where conservative methods should be rationally combined with timely surgical intervention, determining the indications for hospitalization of such patients. The frequent ineffectiveness of antibacterial drugs, the peculiarities of the course of the purulent-inflammatory process force resort to surgical intervention.

Existing methods of treating purulent diseases lead to the suppression of infection in the wound, the reduction of edema, tissue hyperemia and the outflow of inflammatory exudate. The most important point is the cleansing of the purulent-necrotic focus from non-viable tissues and the transition of the purulent wound to a "clean" one, because dead tissue substrates are a nutrient medium for microorganisms, which significantly inhibits the healing processes.

Purulent diseases of the hand and fingers most often arise as a result of minor injuries, cuts, punctures, which are the entrance gates for microflora. In conditions of intensive industrial and agricultural production, this occurs in the most active part of the population. It is known that about 20% of the total number of outpatient surgical patients are treated for panaritium. This disease causes loss of working capacity for a significant period. Phlegmons and abscesses of the hand also often lead to disability of patients, which necessitates the need for early diagnosis and proper treatment of patients in this category.

3. Objectives of the lesson:

3.1. General objectives: A higher education student must learn:

	Identify anamnestic and clinical objective signs of purulent soft tissues	Level II
	Basic principles of diagnosis, differential diagnosis	Level II
	To prescribe an examination plan using laboratory and X-ray examinations. to teach higher education students the methods of examining patients with purulent diseases of the wrist to diagnose various diseases of the wrist	Level III
	Provide emergency conservative care to patients with purulent diseases of soft tissues.	Level III
	Determine indications for surgical intervention and theoretically know the methodology for their	Level II

	implementation.	

3.2. Educational objectives:

Formation of a professionally significant personality of a doctor.

To emphasize the achievements of the national surgical school of surgeons in the development of modern methods of treatment of purulent diseases of soft tissues.

3.3. Specific objectives:

to know:

- Anatomy, skin structure
- Clinical picture of purulent diseases;
- Differential diagnosis of purulent diseases of soft tissues;
- Methods of instrumental and laboratory examination of patients with purulent diseases of soft tissues;
- Conservative and surgical treatment of patients with purulent diseases of soft tissues

3.4. Based on theoretical knowledge of the topic.

Be able to (master the methods):

- Collect a history of the disease.
- Conduct differential diagnostics between purulent diseases of various genesis and other infectious diseases;
- Determine the diagnosis of the disease.
- Assign conservative or surgical tactics for treating the disease.

3. **Interdisciplinary integration.**

№	Disciplines	To know	To be able to
	2	**3**	**4**
I. Previous disciplines			
	Anatomy, topographic anatomy	The structure of the skin. Paths of possible movement of purulent exudate through anatomical channels	Establish the source of ignition, the location of the cut according to the tension lines
	Pharmacology .	Mechanism of action of antibacterial drugs	

4. Topic content:

Etiology and pathogenesis of purulent diseases of the hand. Classification. Diagnosis. Differential diagnosis

SKIN STRUCTURE

1. Outer layer – epidermis.
2. Skin itself – dermis.
3. Subcutaneous fat. Epidermis

1. Corneal layer.
2. Shiny layer.

3. Granular layer.
4. Spinous layer.
5. Basal or germinal layer.

Dermis

1. Papillary layer.
2. Reticular layer – it contains sebaceous and sweat glands.

Arterial plexuses

1. The first – between the basal layer of the epidermis and the papillary layer of the dermis.
2. The second – between the reticular layer of the dermis and subcutaneous fat.

Etiology and pathogenesis

Surgical infection is caused by *staphylococci, streptococci, pneumococci, gonococci, Escherichia coli*, etc. often in symbiosis with anaerobic microorganisms. Bacteria that have entered the wound begin to manifest their vital activity and multiply in it on average after 6-12 hours. The factors that contribute to their development are:

a) the presence of a nutrient medium for them in the injury zone (hemorrhage, necrotic tissues);

b) simultaneous coexistence of several types of microbes (polyinfection);

c) penetration of microbes of increased virulence, for example, contamination of the injury site with purulent secretions of another patient;

d) weakness of immunological reactions;

e) impaired local and general blood circulation in the patient.

Also, the entrance gates of infection are minor skin injuries (bites, abrasions, abrasions). The introduction of infection and the development of inflammation are facilitated by foreign bodies. In the place of introduction of infection around foreign bodies, edema occurs, inflammatory infiltration of tissues with subsequent purulent infiltration.

The body responds to the appearance of bacteria with a local and general reaction. The local reaction of tissues is expressed primarily by changes in blood circulation of a neuro-reflex nature. Arterial hyperemia develops, then venous stasis with the formation of edema, pain appears, local fever, etc. A large number of neutrophilic leukocytes accumulate in the inflammatory focus.

The general reaction of the body to the introduction of purulent microbes occurs simultaneously with the local one. Its degree depends on the amount of bacterial toxins and tissue decay products, as well as the body's resistance. Especially virulent microbes, releasing toxins, usually cause a strong general reaction of the body. Its manifestations are: fever, blackout, and sometimes fainting, headache, general malaise, tachycardia, pronounced changes in blood parameters, liver function disorders, blood pressure, stagnation in the small circle of blood circulation. Patients need a thorough examination to identify the primary purulent focus and the entrance gate.

There are hyperergic, normergic and hypoergic reactions.

Hyperergic - a process with a violent course and, despite timely, rational treatment, often ends in death.

Normergic - the process develops less violently, fewer tissues are involved in the inflammatory process, changes in the blood are not pronounced. And this process is easier to treat.

Hypoergic - the inflammatory process is limited to only a small area, there is less swelling. These processes are easily treated, and in some cases even without

Classification. Diagnostics. Treatment

Taking into account the features of the clinical course and the nature of changes in the focus of inflammation, acute and chronic forms are distinguished from all types of surgical infection.

1. Acute surgical infection:

a) purulent; b) putrefactive;

c) anaerobic;

d) specific (tetanus, anthrax, etc.).

2. Chronic surgical infection:

a) non-specific (purulent);

b) specific (tuberculosis, syphilis, actinomycosis, etc.).

For each of the listed forms, there may be forms with a predominance of local manifestations (local surgical infection) or with a predominance of general phenomena with a septic course (general surgical infection).

Purulent surgical infection is distinguished by the etiological sign of localization, clinical manifestation of inflammation:

1. Furuncle
2. Furunculosis
3. Carbuncle
4. Abscess
5. Panaritium
6. Phlegmon
7. Mastitis
8. Erysipelas

A furuncle is an acute purulent-necrotic inflammation of the hair follicle and surrounding tissue. It can be localized in different parts of the body. The cause is staphylococcus, violation of personal hygiene rules, decreased immunity, the presence of underlying diseases (diabetes, pulmonary and cardiac pathology, etc.).

Stages of the inflammatory process:

1. Infiltrative – local pain, hyperemia of the skin, dense infiltrate, in the center of which is a necrotic spot. Can pass independently.

With the increase in inflammation, the body temperature rises, local pain intensifies, the infiltrate increases, the lymph node reaction appears, there may be signs of intoxication – headache, nausea, weakness.

Changes occur in the blood – a shift in the leukocyte formula to the left, the ESR is accelerated.

2. Abscessation – changes occur in the type of necrotic tissue melting. The symptoms of inflammation are the same as in the infiltration stage, but locally in the center of the infiltrate the skin thins and is determined by the fluctuation symptom.

Peculiarities of the course of furuncles on the face

There is a particularly dangerous zone - the Lyushka line, which connects the lobe with the corner of the mouth. Inflammatory processes localized above this line are more often more severe and with complications due to anatomical and physiological features.

The superficial vessels of the face have anastomoses with deep vessels and penetrate into the cranial cavity. Therefore, complications are possible - brain abscesses, meningitis and phlebitis.

Furunculosis

Local - boils are located in one anatomical part (not one of them, but the localization is on the upper or lower limb, chest, etc.) General - purulent foci on the entire surface of the body (head, neck, limbs, torso).

Treatment

In the infiltration stage - conservative. Blockades with local anesthetics (adrenaline-free) are used, it is possible with antibiotics. For better rejection of the necrotic core, local therapy with salicylic acid or hypertonic dressings are used. Depending on the severity of the inflammatory process, broad-spectrum antibiotics are prescribed (taking into account the history), symptomatic treatment, physiotherapy. In the abscess stage - the treatment method is surgical. An incision is made, purulent exudate is drained. Bandages are applied daily. Sulfonamides, antibiotics, symptomatic treatment, physiotherapy, autohemotherapy are prescribed according to indications. In case of a complicated course of the inflammatory process, treatment is performed only in a hospital. In severe cases of boils and furunculosis (local and general), gamma globulin is prescribed at a dose of 5 ml intramuscularly, three injections with an interval of 2-3 days (passive immunization). Staphylococcal toxoid according to the scheme (active immunization).

Carbuncle - acute purulent-necrotic inflammation of several hair follicles and adjacent sebaceous glands, spreading to the entire thickness of the skin and underlying tissue. Extensive tissue necrosis is possible. This is associated with multiple thrombosis of small vessels of the skin and subcutaneous fat. The inflammatory process can be primary and secondary, after a boil and furunculosis. The onset is associated with the appearance of limited swelling of the tissues, dense painful infiltrate. For 2-3 days, the epidermis exfoliates on the surface of the infiltrate and purulent points appear - "rods". They merge into one necrotic conglomerate. More pronounced signs of intoxication - body temperature rises to 38-39 ° C, headache, chills, nausea. Blood changes - a shift in the leukocyte formula to the left. Accelerated ESR up to 20-25 mm/hour. In the presence of underlying diseases, the inflammatory process is more severe.

Treatment

Local – surgical – provide drainage of purulent contents, daily

dressings, enzymes and physiotherapy. General – antibacterial therapy (taking into account the sensitivity of microflora), sulfonamides, detoxification therapy, analgesics, general strengthening, symptomatic agents.

Abscess

A limited form of purulent inflammation, which is characterized by the appearance of a cavity filled with pus. The cause is pathogenic microbes – staphylococci,streptococci, Escherichia coli; as a complication of a boil, carbuncle,post-injection abscesses, complications of hematomas. Abscesses in body cavities are possible. Abscesses by etiology – specific – with tuberculosis, actinomycosis. Clinic – depends on the cause, localization, reactivity of the organism, and the patient's age. The inflammatory process is characterized by 5 signs:

inflammation – pain, redness, increased local temperature, swelling, impaired organ function.

Phlegmon is a diffuse purulent inflammation of soft tissues, characterized by diffuse impregnation of them with purulent exudate with a tendency to rapidly spread through the cellular spaces and involvement in the purulent process of muscles, tendons of the tissue. Phlegmon can develop in any part of the body, and with a violent course, it can capture a number of anatomical areas, such as the thigh, buttocks and lower back, and the perineum of the anterior abdominal wall. The development is due to the penetration of pathogenic microorganisms into the soft tissues. Purulent phlegmon is caused by purulent microbes, Pseudomonas aeruginosa, staphylococci, streptococci, etc. When Escherichia coli, Proteus vulgaris, and Streptococcus putrefactive enter the tissues, putrefactive phlegmon develops.

The penetration of microbes into soft tissues most often occurs through damaged skin or mucous membranes, but lymphogenous or hematogenous spread of infectious agents from any purulent focus (purulent inflammation of the tonsils, kidneys, uterus, etc.) is possible. The development of purulent tissue damage is possible when pus breaks out of the focus (carbuncle, lymphadenitis, etc.) into surrounding tissues.

Phlegmons that arise hematogenously are usually localized in deeply located soft tissues - mediastinal tissue (mediastenitis), tissue around the kidney (paranephritis), tissue of the lumbar region (psoitis), etc. Phlegmon develops by contact in diseases such as paraproctitis, Ludwig's angina, etc. If hematogenous phlegmon and phlegmon after the skin and soft tissues usually develop rapidly, quickly spreading to large areas, then phlegmon, complicating a limited abscess (carbuncle, festering cyst, etc.), develops over time longer and does not capture large areas.

Adenophlegmon occurs when purulent inflammation spreads to the tissue around the lymph node as a result of purulent lymphadenitis. The rapid spread of purulent inflammation through cellular spaces is mainly associated with two factors that prevent the delimitation of purulent inflammation, i.e. the formation of a protective capsule.

The first factor is a decrease in the body's protective functions during exhaustion, long-term chronic diseases (tuberculosis, blood diseases, diabetes, etc.), chronic intoxications (alcoholism), various immunodeficiency states. The inability to quickly create a protective barrier around the pathogens that have entered makes it possible for the purulent process to spread widely in soft tissues.

The second factor is the peculiarities of the vital activity of microorganisms: their ability to multiply rapidly, secrete toxins, enzymes that destroy tissues.

Phlegmons are distinguished by localization - subcutaneous, subfascial, intermuscular, organ, interorgan, retroperitoneal, pelvic, etc. In serous phlegmon, the tissue has a gelatinous appearance, saturated with turbid serous fluid, along the periphery the inflammatory process without a visible border pass into unchanged tissue. As the process progresses, the infiltration of soft tissues increases sharply, the exudate becomes purulent. The process can spread to muscles, tendons, bones. The muscles acquire a gray color, are saturated with yellow-green pus, and do not bleed. Putrefactive phlegmon is characterized by the development of multiple areas of necrosis in the tissue, melting of tissues, abundant purulent discharge with a fetid odor.

Clinical manifestations - in the area of inflammation, severe pain, swelling and tissue infiltration occur; when the process spreads to the superficial layers of the subcutaneous tissue - hyperemia of the skin; when areas of softening appear, fluctuation is determined. Usually, regional lymphadenitis is detected, and general symptoms of the disease quickly appear - weakness, thirst, increased body temperature to 39-400C., chills. With deep phlegmon, general symptoms appear early, are pronounced and grow very quickly.

They are manifested by circulatory disorders - frequent weak pulse, decreased blood pressure; respiratory function disorders - shortness of breath, acrocyanosis: hepatic and renal failure - oliguria, yellowness of the skin; CNS dysfunction - headache, excitement. The most characteristic local symptoms of deep-seated phlegmons are an increase in the volume of the affected area of the body compared to the healthy one, a disorder of the organ functions (restriction of movement, complete immobility due to pain), the presence of a painful infiltrate with a characteristic direction of spread for each zone. Deep phlegmons present significant difficulties for diagnosis. Fascial sheaths prevent the spread of pus towards the skin, muscle and fascia layers do not allow to determine the accumulation of pus and detect the most characteristic symptom - fluctuation. Phlegmon can be recognized by diagnostic puncture, which is performed under local anesthesia. The entry of pus or cloudy fluid into the syringe indicates the presence of phlegmon or abscess.

Treatment. The main method of treatment of phlegmon is surgery. Conservative methods of treatment - antibiotic therapy, novocaine blockades, physiotherapy, administration of drugs that increase the body's defenses, are possible only in the initial period of the disease. In the absence of a rapid positive effect (cessation of pain, normalization of body temperature, improvement of general well-being and blood test indicators), increased symptoms of intoxication, emergency surgical intervention is indicated, which allows preventing a significant spread of the purulent process and the development of general purulent intoxication.

In the case of subcutaneous and subfascial phlegmons, operations are performed under inhalation mask or intravenous anesthesia. In the case of intermuscular, paraosseous, interorgan phlegmons, which require careful revision and removal of necrotic tissues, preference should be given to endotracheal anesthesia. When opening phlegmon, incisions should ensure the preservation of vessels and nerves, create optimal conditions for adequate outflow of exudate from the wound; The surgical intervention should be radical, i.e. all purulent edemas of the cavity should be opened

and drained, carefully treated with a pulsating stream of antiseptics, ultrasound or laser beam. In the postoperative period, an active effect on the course of the inflammatory process is necessary, which is achieved by inserting drains into the wound for prolonged continuous washing and active aspiration of exudate, effective treatment in a controlled environment without bacteria. In the postoperative period, in addition to active local treatment, intensive intravenous infusion therapy, targeted antibiotic treatment, and immunomodulatory therapy are necessary.

Mastitis is an inflammation of the mammary gland in women, but mastitis is also observed in men, but it does not take on a purulent character. Mastitis in newborns occurs in the form of swelling of the mammary glands, in boys during puberty (juvenile mastitis). The process is expressed in a slightly painful enlargement of the mammary glands. In 80-85% of all cases, lactational mastitis occurs in lactating women. Non-lactational mastitis is also known. The infection enters the gland tissue through cracks in the nipples, which more often occur in primiparous women. Stagnation of milk in the breast and violation of personal hygiene contribute to the occurrence of mastitis. The infection spreads through the lymphatic vessels and milk ducts.

In addition to local factors contributing to the occurrence of the disease, weakening of the body is also important, especially if the birth was difficult, with heavy blood loss.

Classification:

Forms of acute mastitis (classification proposed in Russia, not used in Western countries) are actually stages of its development.

- **serous mastitis**. Characterized by deterioration of general well-being, fever, milk retention in the mammary gland.

- **infiltrative mastitis** is characterized by the appearance of an infiltrate in the mammary gland, which can later turn into an abscess. The skin over the infiltrate acquires a reddish hue.

- **purulent.** Characterized by the appearance of purulent inflammation. There are several forms of purulent mastitis

- **abscessing** (the appearance of an abscess - a limited purulent focus)

- phlegmonous - the spread of purulent inflammation throughout the breast tissue

- gangrenous - the appearance of massive necrosis in the breast. Often leads to the need to remove the breast.

Lactational mastitis

acute:

infiltrative abscess

phlegmonous gangrenous

chronic:

purulent

non-purulent

Congestive phenomena when the excretory ducts of the mammary gland are blocked lead to catarrhal changes and contribute to the development of mastitis. Pathoanatomy - distinguish between inflammation of the milk ducts and mastitis,

which captures a lobe of the gland. This form can begin with catarrhal phenomena and end with a phlegmonous process with tissue melting. A purulent focus can develop around the areola, in the thickness of the gland itself (intramammary) or behind the mammary gland (retromammary). The acute process is accompanied by lymphadenitis and lymphangitis.

Clinical course: pain in the mammary gland. The gland is enlarged in size, swelling of the tissues, palpation of the gland reveals a painful compaction with clear boundaries, a pronounced vascular pattern, skin hyperemia and local fever, changes in the blood (leukocytosis, accelerated ESR).

In purulent forms, skin hyperemia, pulling pain, intoxication phenomena - increased body temperature, chills, weakness, drowsiness, loss of appetite are more pronounced. Changes in the blood are significantly expressed. Gentle expression of milk aggravates the clinical course.

Prevention:

1. good preparation of nipples
2. expressing milk residues after each feeding
3. maintaining clothing hygiene
4. skin care (washing the mammary gland, treating cracks with an antiseptic solution, UV light)

Treatment:

In the stage of infiltrative mastitis, to prevent the transition to abscessing, the following are prescribed:

1. antibacterial therapy according to indications
2. electrophoresis
3. to relieve spasm from the milk ducts - lactin (if treatment is ineffective - parlodel for 2-3 days to stop lactation)
4. aspirin - to normalize microcirculation in the focus of inflammation
5. antihistamines - to prevent or relieve allergic reactions
6. locally - cold

In the case of a purulent process, the incisions are radial towards the nipple without damaging it.

In the stage of gangrene, the gland is amputated - mastectomy; in chronic mastitis - sectoral resection.

Erysipelas

Erysipelas is an infectious disease characterized by acute focal serous or serous-hemorrhagic inflammation of the skin or mucous membranes, fever and intoxication.

Etiopathogenesis

The causative agent of erysipelas is hemolytic streptococcus group A. Recently, there have also been reports of the possibility of the disease developing under the influence of other microorganisms. Microorganisms usually penetrate through small wounds, scratches, abrasions. In some cases, erysipelas is complicated by the course of cuts and other infected wounds.

The incidence of the disease is increasing. Erysipelas is not very contagious and is not registered by the sanitary and epidemiological service as an infectious disease. Disturbances of lymphatic and venous outflow, trophic disorders have a certain importance in the etiopathogenesis. In this regard, erysipelas most often occurs on the lower extremities. There is data on an individual genetically determined

predisposition to the disease. Inflammatory changes in the skin itself cause bright hyperemia, which is reflected in the very name of the disease (rose – pink, bright red).

Classification

There are several classifications of erysipelas, according to which the following forms are distinguished.

By the nature of local manifestations:

• erythematous
• erythematous-bullous
• erythematous-hemorrhagic
• bullous-hemorrhagic.

By the severity of the course:

• mild
• moderate
• severe

By the nature of the spread:

• localized
• wandering
• metastatic

By the frequency of occurrence:

• primary
• recurrent
• recurrent

Clinical picture

The incubation period lasts from several hours to several days, usually not clearly recorded.

In the course of erysipelas, three periods are distinguished:

• initial period
• flare-up period
• convalescence period

Initial period

In most cases, the disease begins with general symptoms of severe intoxication, which precede local changes. This is a distinctive feature of erysipelas and often causes diagnostic errors.

A sharp increase in body temperature (up to 39-410C), severe chills, nausea, vomiting, headache, weakness are noted. More often, by the end of the first day, moderate pain appears in the area of regional lymph nodes (inguinal), and only then does the characteristic local picture of erysipelas begin to develop.

The period of the peak of the disease the period is characterized by bright local manifestations. At the same time, general symptoms of intoxication are initially preserved, which are usually observed for 4-5 days.

Local manifestations depend on the form of the disease. In the erythematous form, clearly demarcated bright hyperemia, edema and infiltration of the skin, local fever are detected. The border of the zone of bright hyperemia is very clear, and the contours are uneven, so inflammatory skin changes are compared to "tongues of flame" and a "geographical map".

In the erythematous-hemorrhagic form, against the background of the erythema described above, small pinpoint hemorrhages appear, such that they tend to merge, which gives the hyperemia a bluish tint. At the same time, all local inflammatory changes are preserved, and the intoxication syndrome is observed for a long time and is more pronounced. In the erythematous-bullous form, against the background of erythema, bubbles filled with serous exudate rich in streptococci are detected. This form is more severe: complications are more common; intoxication is more pronounced.

The bullous-hemorrhagic form is the most severe of all. Against the background of erythema, bubbles filled with hemorrhagic exudate are determined. The bubbles often merge, the skin becomes bluish-black in color. Extensive skin necrosis is often observed, and the development of a secondary infection is possible.

Convalescence period

General signs of intoxication disappear, local inflammatory changes gradually subside, but swelling, thickening, peeling and pigmentation of the skin persist for another 2-4 weeks.

Treatment

Treatment of erysipelas can be local and general.

The main is general therapy

General treatment

The main and components are:

• Antibacterial therapy: semi-synthetic penicillins are used (ampicillin 2.0-4.0 g per day) in combination with

sulfonamides (streptocide, sulfadimethoxine, sulfalen). In severe hemorrhagic forms and relapses of the disease, second-generation cephalosporins are used. The method of choice is lymphotropic administration of antibiotics. Usually, 3-4 lymphotropic administrations quickly stop the main manifestations of the disease.

• Detoxification therapy is usually necessary during

the first 4-5 days. Intravenous infusions of crystalloid solutions (1.5-2.0 l per day) are used, and in severe cases, blood substitutes of detoxification action and blood products. An effective method of treatment is UV or laser irradiation of blood.

• Desensitizing therapy consists of the administration of antihistamines (diphenhydramine, tavegil, diazolin). In severe hemorrhagic

forms, corticosteroids (prednisolone) are used during the day.

• Strengthening of the vascular wall is necessary in hemorrhagic forms.

Ascorbic acid, ascorutin are used.

Local treatment

In erythematous and erythematous-hemorrhagic forms, UVO is applied locally in suberythemal doses, the limb is placed in an elevated position and left open or treated with a thin layer of streptocidal ointment (without wet dressings).

In bullous forms, large blisters are opened, after which

moist-drying dressings with antiseptics (furatsilin, boric acid) are applied.

Complications

There are complications of erysipelas in the acute and late periods

Complications in the acute period

During the transition of the inflammatory process to the subcutaneous tissue, phlegmon develops. Hemorrhagic forms of erysipelas are often complicated by extensive skin necrosis. In erysipelas, ascending thrombophlebitis and especially lymphangitis and lymphadenitis are often observed.

Complications in the late period.

In the long term, especially in the case of a recurrent form of the disease, the formation of lymphedema of the extremities is possible - a chronic disease associated with impaired lymph drainage from the limb and accompanied by sclerosing processes in the skin and subcutaneous tissue, up to the development of elephantiasis.

Differential diagnosis

Differential diagnosis of a furuncle is carried out with anthrax, which is caused by a Gr+ spore-bearing bacillus, which is characterized by significant resistance. The pathogen penetrates through the skin, mucous membrane of the oral cavity, nose from infected animals. Carriers are flies and other insects. The disease is more often observed in the summer-autumn period. There are 3 forms of anthrax: cutaneous, intestinal and pulmonary.

Clinic. Incubation period 2-14 days. Temperature 380C., at the beginning a nodule appears on the skin, in the center a hemorrhagic pustule, around it

infiltration, tissue edema. The pustule opens independently and a hard crust (brown scab) form on the surface of the infiltrate, there are several of them and this suggests a carbuncle. Peripheral lymph nodes increase.

Differential diagnosis of panaritium is based on the characteristics of the clinical manifestations of certain types of panaritium, as well as other diseases, the localization of the pathological process on the finger. Fingers can be affected by erysipelas, tuberculosis, actinomycosis, anthrax, syphilis, etc.

Purulent diseases of the hand and fingers. Methods of conservative and surgical treatment

Panaritium

Panaritium is an acute purulent inflammation of the tissues of the finger. It occurs more often on the terminal (nail) phalanx due to the ingress of purulent microorganisms into small defects of the skin (cracks, scratches, cuts, punctures, etc.). There are superficial panaritium (cutaneous, periungual, subungual) and deep (cutaneous tendon, articular, bone). In cutaneous panaritium, pus accumulates under the epidermis (outer layer of the skin): a bubble is formed, filled with a cloudy,

sometimes bloody fluid, the skin around the bubble turns red. The pain is usually moderate, a burning sensation prevails. The bubble gradually increases, purulent inflammation can spread to deeper tissues. In periungual panaritium, a purulent bubble forms in the skin of the nail shaft. If the pus penetrates under the nail plate, the felon is called subungual. This type of felon also develops when a needle or splinter gets under the nail.

Deep panaritium, as a rule, occurs on the palmar surface of the finger, initially under the skin. Since the skin on this side of the finger is dense, the pus that forms under it cannot breakthrough for a long time, the process spreads deep into the tendon, joint, bone, sometimes affecting them simultaneously.

Subcutaneous panaritium is characterized by constant shooting pains, especially at night, when touching the finger there is a sharp pain. Its intensification when trying to move the finger - straighten or bend - indicates the transition of the process to the tendon or joint. Any form of panaritium, especially deep, can lead to serious consequences: purulent microbes can get from the focus of inflammation through the lymphatic and blood vessels to distant organs and tissues and cause their damage, bone panaritium can lead to deformation of the finger, tendon and joint - to immobility of the finger; In advanced cases of deep panaritium, pus often spreads to the tissue of the palm and then to the forearm. The most widespread anatomical classification of panaritium is based on the localization of the pathological process in various organs and tissues of the finger: cutaneous panaritium, periungual, subungual, subcutaneous, bone, articular, tendon, pandactylitis (purulent inflammation of all tissues of the finger).

A constant sign of panaritium is: pain, usually most pronounced in the center of the purulent focus, especially when localized on the palmar surface of the finger, where the tissues are not very flexible and are abundantly supplied with nerve endings. The intensity of the pain depends on the stage of the inflammatory process; it increases with finger movement. There is always a local increase in temperature, swelling, as a rule, is more pronounced on the surface of the finger. The function of the finger is impaired. A reliable sign of purulent fusion is fluctuation, which is rarely determined due to the deep location of the pathological focus. The diagnosis is established on the basis of anamnesis, examination, radiological and other research methods. It is important to determine the localization of the purulent focus - palpation with a button probe. For each form of panaritium, a certain zone of maximum soreness is characteristic. Cutaneous, periungual, subungual panaritium is diagnosed based on the characteristic location of the purulent focus. The spread of the pathological process to the subcutaneous tissue in subcutaneous panaritium can be detected only during surgery. The diagnosis of articular panaritium is confirmed during surgery by the condition of the tendons, articular surfaces and surrounding tissues. X-ray diagnostics of panaritium is carried out by radiography in two mutually perpendicular projections.

Treatment of a patient with panaritium should be carried out by a qualified surgeon. The operation in severe and complicated forms should be performed in a surgical hospital. Treatment in outpatient settings is carried out only with a superficial

location of the purulent focus. If repeated operations are necessary, the patient should be hospitalized in the purulent surgery department. Conservative treatment is possible only in the initial (serous, infiltrative) stage. Local hypothermia, semi-alcoholic dressings, salt and soda baths, UHF therapy, ultrasound, electrophoresis of medicinal substances, X-ray therapy are widely used. Antibiotics and proteolytic enzymes are effective. Immunotherapy plays a major role (staphylococcal toxoid, antistaphylococcal gamma globulin, hyperimmune antistaphylococcal plasma, etc.). The transition of the serous-infiltrative form of inflammation to purulent is an absolute indication for urgent surgery. The choice of access depends on the localization of the purulent focus. Optimal are midlateral incisions on the phalanges of the finger.

The operation consists of opening the purulent focus, cutting out non-viable tissues and draining the postoperative wound. The average period of incapacity for work is 25-30 days.

Full restoration of hand functions is of great importance for the social and labor rehabilitation of patients. Prolonged immobilization, rough postoperative scars after irrational incisions, scarring along the tendon and in the joints lead to stiffness of the fingers, impaired their functions. Therefore, at all stages of treatment, the prevention of finger contractures is of utmost importance. Rational immobilization of the fingers, the use of a removable splint, early use of a special complex of exercise therapy, physiotherapy agents reduce the duration of treatment, contribute to improving functional results, restoring the patient's ability to work. It is important to remember that in people of certain specialties (musician, surgeon, etc.) finger contracture may cause loss of work capacity and profession.

Prevention. The leading role in prevention is played by the prevention of microtraumas and inflammatory complications. Important are the improvement of the sanitary culture of the population, improvement of working conditions and improvement of safety techniques in production (hand skin care, protective gloves, automation of production). The reduction of the number of patients who get panaritium is facilitated by the treatment of microdamages in production and at home with a 5% alcoholic solution of iodine, multicomponent, rapidly polymerizing antiseptics such as “Furoplast”, etc.

PHLEGMONS OF THE HAND

Diffuse purulent lesion of the cellular spaces of the hand, depending on the localization, has characteristic symptoms. Local signs of the inflammatory process include swelling and hyperemia of the tissues, impaired function of the hand, local fever, soreness on palpation. The degree of severity of these symptoms varies and depends on the volume of the inflammatory process, the virulence of the pathogen, the body's protective reaction, its immunobiological reactivity, etc. Therefore, the clinical course of phlegmon of the hand is quite diverse: from simple, clearly localized forms of inflammation to large, purulent-necrotic processes prone to spread, accompanied by severe intoxication.

Phlegmons of the 1st finger elevation are accompanied by a sharp swelling of the thenar and the radial edge of the back surface of the hand. Sharp pain on palpation,

tissue tension, a noticeable limitation of the mobility of the swollen tissues of the thumb elevation, smoothness of the palmar skin fold are characteristic symptoms of inflammation of the fatty tissue of this area. Often purulent exudate spreads along the edge of the first interosseous muscle to the dorsal surface of the hand. In some cases, purulent melting of the connective septum separating the thenar cleft and the median palmar space is observed with infection of the latter and the formation of a purulent-necrotic process in the median palmar fossa.

Phlegmons of the V finger elevation is not accompanied by the phenomena of pronounced intoxication. Moderately expressed edema, hyperemia and tissue tension, soreness on palpation is characteristic.

Commissural phlegmon is localized in the distal part of the palm. The entrance gate of infection is cracks in the rough, callused skin in the area of the metacarpophalangeal joints of the palm. Hence another name for such phlegmons - callous abscesses. The inflammatory focus is formed, as a rule, in the commissural spaces of the II-IV fingers. Phlegmons are accompanied by significant pain, swelling of the distal part of both surfaces of the hand. The fingers adjacent to the purulent focus are slightly spread and bent in the interphalangeal joints. Their extension is painful due to the tension of the inflamed frank aponeurosis. Direct spread of the abscess through the oval gaps of the aponeurosis from the palmar to the dorsal surface of the hand is possible. In addition, involvement of the tendon of the deep flexor of the finger, which is in close proximity to the purulent-necrotic focus, is possible.

The spread of infection can also occur in the proximal direction through the channels of the vermiform muscles. In these cases, inflammation of the median palmar space joins the main focus.

In phlegmons of the median palmar space, purulent exudate accumulates between the palmar aponeurosis and the thin fascial plate covering the tendons of the flexors of the fingers - subaponeurotic phlegmon of the median palmar space. The purulent process between the fascia lining the interosseous muscles on the palmar side and the posterior surface of the long flexor tendons leads to the formation of subtendon phlegmon. Clinically, it is very difficult to differentiate these diseases. The localization of purulent exudate and its spread can only be correctly judged during surgery. Therefore, it is more appropriate to call purulent-inflammatory foci in the central part of the palm phlegmons of the median palmar space. The inflammatory process of the specified localization is accompanied by an increase in body temperature, headaches, and changes in peripheral white blood. The central part of the palm explodes. The skin with smoothed folds is tense, fluctuations cannot be determined. When palpating the focus of inflammation, patients suffer from severe pain. The swelling of the back of the hand is significantly pronounced; the II-V fingers are slightly bent in the interphalangeal joints. An attempt to actively or passively extend them leads to tension of the infiltrated palmar aponeurosis and, as a result, to increased pain. Late and irrational measures for the treatment of phlegmon of the medial palmar space are complicated by the breakthrough of the abscess into the thenar cleft, as well as the spread of accumulated pus through the channels of the vermiform muscles to the back

of the hand. These complications worsen the already rather severe course of the purulent-necrotic process of the central part of the palm.

Cross, or U-shaped, phlegmon is the most severe form of purulent inflammation of the hand. It is a joint lesion of the synovial bags of the palm - ulnar and radial. The disease is a consequence of purulent tendovaginitis of the I or V finger. Under favorable infection conditions, purulent exudate spreads to the synovial bag of the radial or ulnar side of the hand. Weak nonspecific immunobiological capabilities of the body, late, irrational treatment contributes to the generalization of the infection and its transition from the proximal part of the palm to the opposite side. Purulent inflammation of both synovial bags occurs. Breakthrough and rapid spread of pus is facilitated in cases of direct connection of the bags in the metacarpal canal. Clinical observations show that the most common cause of cross phlegmon is radial tenobursitis.

U-shaped phlegmons are accompanied by severe intoxication, elevated body temperature, headache, weakness. The hand is swollen, blue-purple in color, its palpation is extremely painful. The fingers are slightly brought to the palm, active movements are absent in it. An attempt to passively extend them significantly increases the pain. Palpation reveals the most pronounced soreness in the projection zone of the flexor tendons of the I and V fingers and in the proximal part of the hand, i.e. in the location of the blind ends of the ulnar and radial synovial bags. When pus breaks through into the Pirogov space, diffuse soreness and swelling appear in the distal part of the forearm. The danger of U-shaped phlegmons is also that the purulent-inflammatory process can affect all fascial-cellular spaces of the hand: the median palmar space when pus breaks out of the ulnar or radial synovial bags, the thenar or hypothenar cleft in purulent tenobursitis of the I and V fingers.

In the following, the pus passes through the channels of the vermiform muscles to the back surface of the hand, forming a large purulent-necrotic focus here. A real threat of generalization of the inflammatory process beyond the primary focus is created.

Even with the most favorable course of U-shaped phlegmons in the distant postoperative period, the function of the hand is significantly reduced. Therefore, timely diagnosis of this formidable disease, early radical surgical intervention, and rational management of the postoperative period, including physiotherapeutic procedures and means aimed at preventing finger stiffness, are extremely important.

Subcutaneous phlegmon of the back of the hand is one of the milder forms of purulent inflammation of the fatty tissue of the hand. Swelling and hyperemia of the tissues are diffuse, the boundaries of the purulent focus are difficult to establish. By careful palpation of the tissues, one can get an idea of the focus of purulent softening of the tissue.

Subaponeurotic phlegmon of the back of the hand occurs as a result of the infection settling deep under the aponeurosis in puncture wounds. Compared with the previous type of inflammation, the manifestations of subaponeurotic phlegmon are more pronounced. A dense infiltrate is determined, accompanied by edema and hyperemia of the back of the hand. Subcutaneous and subaponeurotic phlegmons, as a

rule, develop after damage to the skin of the back of the hand and infection of the subcutaneous tissue with microorganisms found on the skin and the wounding object. Sometimes purulent lesions of the back of the hand can be secondary. Lymphatic vessels of the palmar surface of the hand carry lymph to the back of the hand. In purulent processes of the palmar surface of the hand, infection may be introduced to its back. In addition, the advancement of purulent exudate from the palm to the back of the hand can occur through the channels of the vermiform muscles. In these cases, edema of the back of the hand, which, as a rule, accompanies inflammatory phenomena of the palmar surface, is accompanied by hyperemia of the skin, and diffuse soreness appears when palpating the back of the hand.

Operations for purulent diseases of the fingers and hand. The success of the operation for purulent diseases of the fingers and hand is largely determined by good anesthesia. Only with complete anesthesia can sufficient incisions be made, necrotic tissues be excised, the purulent cavity be inspected, and rational drainage be carried out. With subcutaneous panaritium of the nail and middle phalanges, with subungual panaritium, the operation can be performed painlessly under Oberst-Lukashevich's conduction anesthesia. In the area of the main phalanx along the posteromedial edge of the finger towards the palmar surface and towards the hand, 2-3 ml of 1-2% novocaine solution are injected on each side. For the purpose of anesthesia, a rubber flagellum can be applied to the base of the finger in advance; novocaine is injected distal to the tourniquet. Under the tourniquet, the operation is performed bloodlessly, which allows for good orientation in the wound and careful removal of necrotic tissues. When the inflammatory process is localized on the main phalanx, Brown's interdigital spaces are anesthetized.

When the purulent process is located on the hand, in severe forms of panaritium (tendon, pandactylitis), the operation can be performed under intravenous local novocaine anesthesia. Under the tourniquet, 80-100 ml of 0.5% novocaine solution is administered intravenously with the addition of thiopental, epontol (sombrevin), hexenal anesthesia.

Currently, surgical treatment of acute inflammatory diseases of the hand and fingers is the main method of treating this fairly common pathology. Only in 15% of cases, it is possible to achieve a reverse development of the inflammatory process by various conservative measures. In most cases, complete recovery occurs after radical surgical intervention. dissection of the purulent focus with subsequent excision of necrotic tissues and drainage of the cavities, which leads to increased outflow of wound exudate and accelerates the elimination of the pathological process.

When performing operations on the fingers and hands, it is worth using eye instruments (scalpel, sharp scissors). This makes it possible to make adequate incisions, treat viable tissues with care, create convenience for manipulation in the wound, allow for complete removal of necrotic tissues, and ensure conditions for rapid wound healing and restoration of organ functions.

5. Lesson plan and organizational structure.

1	Preparatory stage	Assess the rising level of knowledge and skills of a higher	Questions for control, tests.	Level of mastery I-II	5%

		education applicant and the rising level			
2	Main stage	Formation of professional skills, mastery of skills and knowledge, patient care	Professional algorithm, treatment scheme, orientation map, physical methods	Educational research tasks, interpretation of laboratory and instrumental methods.	5%
3	Final stage	Monitoring the assimilation of material, level of skills and abilities.	Tasks and tests of the final level of knowledge	Rector's control tasks, tests "Step II"(“Krok”)	0%

6.1. Control materials for the preparatory stage of the lesson: questions, tasks, tests.

1. Anatomical features of the hand and fingers.
2. Etiology and pathogenesis of the development of purulent-inflammatory diseases of the hand and fingers.
3. Classification of panaritium.
4. Clinical picture and diagnosis of panaritium.
5. Clinical picture and diagnosis of phlegmon of the hand.
6. Conservative treatment of panaritium.
7. Surgical intervention for purulent-inflammatory diseases of the hand and fingers.

Situational tasks

1. The patient pricked the nail phalanx of the 2nd finger of the left-hand during work. There is swelling and throbbing pain at the site of the injury. Temperature 37.8. Local thickening, pus is visible under the epidermis. Diagnosis and actions of the surgeon?

Answer: Cutaneous panaritium. Operation - opening of the abscess with excision of the exfoliated epidermis.

2. The patient developed swelling and tenderness in the area of the nail phalanx of the 1st finger 12 days ago. Gradually, the pain increased and became pulsating. Locally: the nail phalanx is enlarged, the finger is bent, pus is released from under the nail when pressed. Diagnosis and actions of the surgeon?

Answer: Bone festering of the nail phalanx of the 1st finger, it is necessary to make an X-ray of this finger. Operation - opening the abscess, exarticulation of the nail phalanx, drainage of the wound.

3. The patient pricked the palmar surface of the hand with a fish bone. On the 4th day, the hand swelled, the skin was hyperemic, and throbbing pain appeared. The movement of the fingers was limited. The temperature was 38.4. Diagnosis and actions of the surgeon?

Answer:

Supraaponeurotic phlegmon of the left hand. Under general anesthesia, open the phlegmon with excision of necrotic tissues, drainage.

4. The main methods of general treatment of inflammatory processes:

a) Detoxification therapy.

b) Passive and active immunization.

c) Targeted use of antibiotics (knowledge of microflora. Determination of the optimal dose of the antibiotic, choice of the method of administration of the drug and duration of its use).

d) use of physiotherapeutic methods of treatment.

e) use of therapeutic exercise for the prevention of contractures.

5. 2 days after suturing the wound on the palmar surface of the hand resulting from a domestic injury, severe pain in the hand and a temperature of up to 390C appeared. What actions should the surgeon take?

a. Administer anesthesia.

b. Remove the sutures, open the wound widely.

c. Check for intermuscular phlegmon.

d. Wash the wound with hydrogen peroxide.

e. Drain the wound.

f. Immobilize the limb.

g. Perform a pus culture to determine the microflora and its sensitivity to antibiotics.

g. Intramuscular administration of antibiotics, sulfonamides.

h. Bandages as necessary.

Materials for the main stage of the lesson.

1) After a microtrauma of the 1st finger of the right hand, a woman developed swelling of the forearm, redness of the skin in the form of inguinal stripes that extend to the inguinal fossa. What is the most likely diagnosis?

A) Lymphangitis

B) Erysipelas of the forearm

C) Phlegmon of the hand

D) Erysipeloid

E) Lymphostasis

2) The patient has a swelling around the roller of the 2nd finger of the right hand. Palpation of the swollen tissues is painful. Purulent exudate is visible through the exfoliated edge of the nail. Diagnosis?

A) Paronychia

B) Subcutaneous panaritium

C) Pandactylitis

D) Erysipelas

E) Erysipelas

3) What is the main method for confirming the diagnosis of a purulent disease?

A) Ultrasound

B) Bacteriological culture of the abscess contents

C) Complete blood count

D) X-ray

4) After a finger injury, a patient developed swelling of the finger 4 days later, the skin turned black. She notes severe pain radiating to the hand. The entire hand swelled. The finger is immobile, very painful. Covered with a scab. The skin is necrotic in places, pus is released from under it. Body temperature is 37.9°C. On the X-ray of the thumb there are signs of destruction of the distal phalanx bone. What is the diagnosis?

A) Osteomyelitis
B) Panaritium
C) Phlegmon
D) Abscess
E) Pandactylitis

5) Which of the following methods is the main one in the conservative treatment of purulent diseases?

A) Administration of systemic antibiotics
B) Use of only local antiseptics
C) Physiotherapy
D) Surgery

6) A patient with diabetes mellitus developed a wound on the 1st toe of her right foot a week ago. After 4 days, swelling and redness of the foot appeared. At the time of admission, the patient's condition is serious. She is paralyzed. The right leg is swollen, 1 toe is black, there is hyperemia of the entire foot. When trying to separate necrotic tissues from the base of 1 toe, pus is released. Blood sugar is 18.1 mmol/l. What is the diagnosis?

A) Diabetic phlegmon of the right leg with gangrene of 1 toe
B) Diabetic coma
C) Hypoglycemic coma
D) Gangrene of the right leg
E) Ischemic gangrene of 1 toe of the right leg

7) What surgical intervention is the most common in the treatment of purulent abscesses?

A) Drainage of the abscess
B) Laparotomy
C) Curettage
D) Hemostasis

8) Which of the following conditions is characteristic of purulent tendovaginitis?

A) All of the above
B) Limited range of motion in the joint
C) Tenderness when pressing on the tendon
D) Swelling in the hand

9) The patient complained of erythema and itching in the area of the 2nd finger of the left hand. She fell ill a week ago, when after a puncture with a knife, which she used to process fish, redness and itching appeared. She soaked the finger at home, in hot water. The next day, the redness moved to the base of the finger, the itching intensified. Then the symptoms disappeared. The day before, they resumed again. What is the diagnosis and treatment tactics?

A) Erysipeloid, antibacterial therapy

B) Erysipelas, antibacterial therapy

C) Panaritium, opening of the panaritium

D) Erysipelas, amputation of the finger

E) Panaritium, antibacterial therapy

10) In which of the following symptoms should immediate surgical intervention be performed in purulent disease of the hand?

A) Progressive worsening and fever

B) Mild tenderness

C) Swelling and redness

D) Tingling sensation in fingers

Control materials for the final stage of the lesson.

1. Patient P., 45 years old, complained of pain and inflammation of the soft tissues of the nail phalanx of the index finger of the right hand. He fell ill 4 days ago. The pain is pulsating, the patient cannot sleep for 2 days. The diagnosis is: "Subcutaneous panaritium".

What type of anesthesia should be used in this case?

Answer: Lukashevych-Oberst anesthesia.

2. Patient S., 60 years old, complains of sharp pain in the middle phalanx of the 3rd finger of the left hand, 4 days ago she pricked her finger with a fish bone. The middle phalanx is swollen, there is severe pain on palpation, the patient is unable to bend the phalanx. Then - 39.2oC. The diagnosis is purulent panaritium. What kind of incision should be used to clean up a purulent focus?

Answer: Lateral, longitudinal, bilateral.

3. What symptom is the cardinal one in diagnosing tendon panaritium?

Answer: A sharp increase in pain when trying to extend the finger.

6.1. Tasks for self-training of the initial level of knowledge and skills

Questions

1. General classification of purulent diseases of soft tissues and skin

2. Features of the anatomical structure of the skin

3. Main clinical signs of purulent diseases

4. Definition, diagnosis, clinic, treatment of purulent diseases of soft tissues and skin and skin and subcutaneous tissue.

5. Purulent processes in the cellular spaces.

6. Purulent diseases of the fingers and hand.

7. Purulent diseases of glandular organs.

8. Tactics of the surgeon at different stages of development of purulent tissue disease.

9. Indications for surgical interventions

10. Primary surgical treatment as a means of preventing purulent complications during the war.

11. Methods of surgical interventions depending on the localization of purulent inflammation.

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