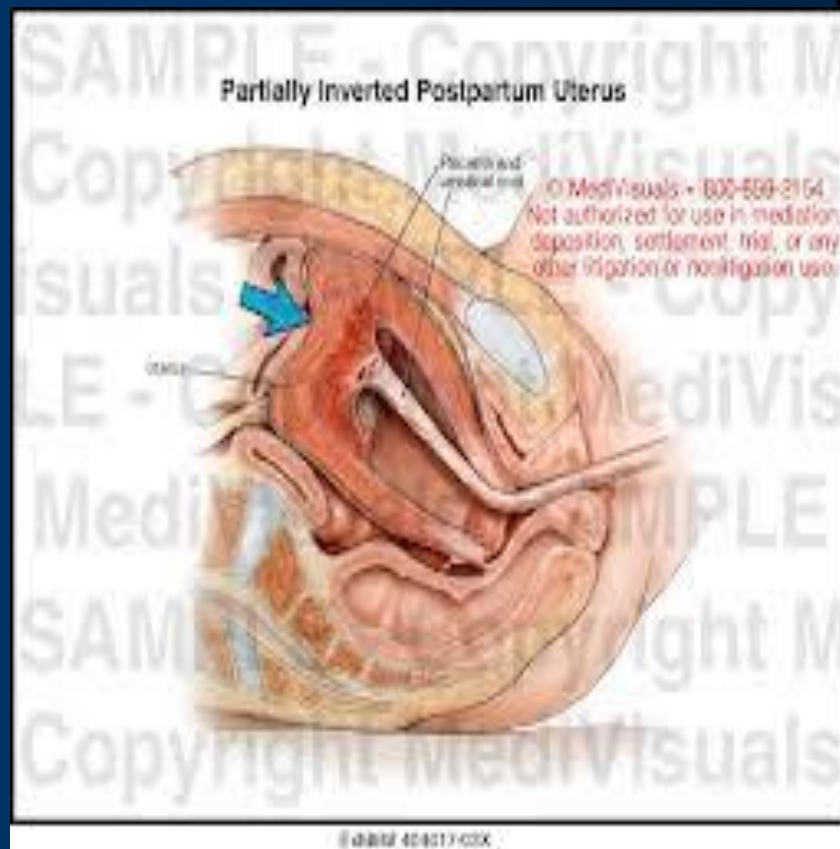


Postpartum septic diseases

Department of Obstetrics and
gynecology number 1

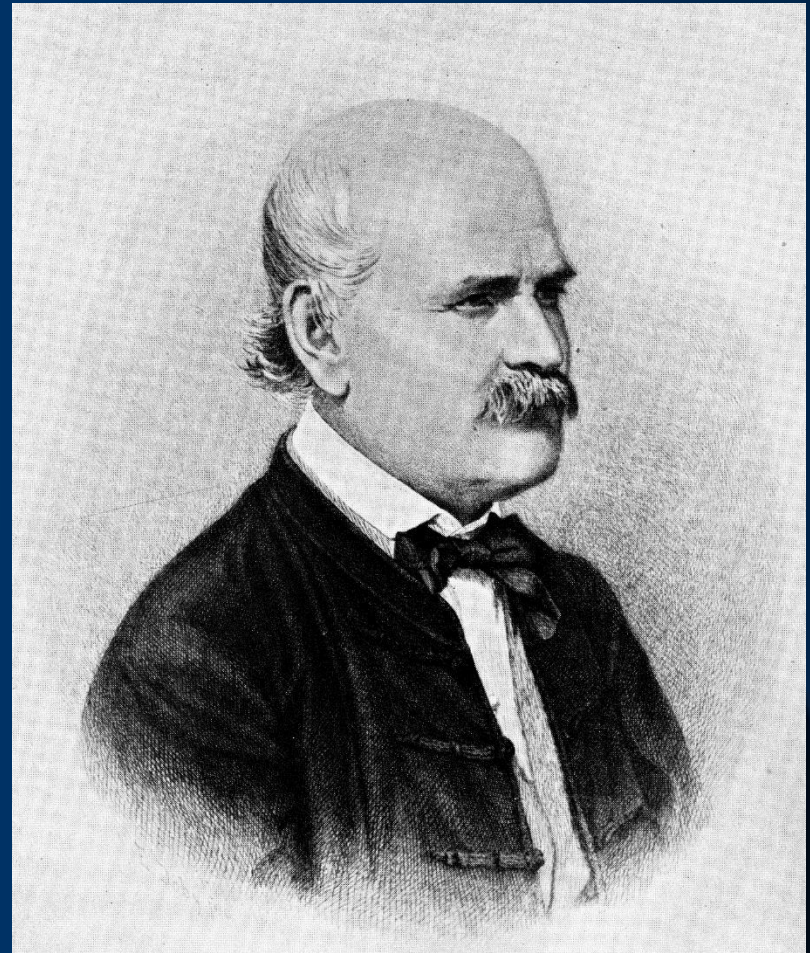
Postpartum septic diseases

- Puerperal fever (postpartum sepsis) - the collective name for diseases that caused by infection in childbirth. Description of this kind of disease is found already in Hippocrates. The disease was of an epidemic before the establishment of the first maternal hospital in the XVII century. This disease was studied by obstetricians in hospitals in XVIII-XIX centuries.



Ignaz Philipp Semmelweis

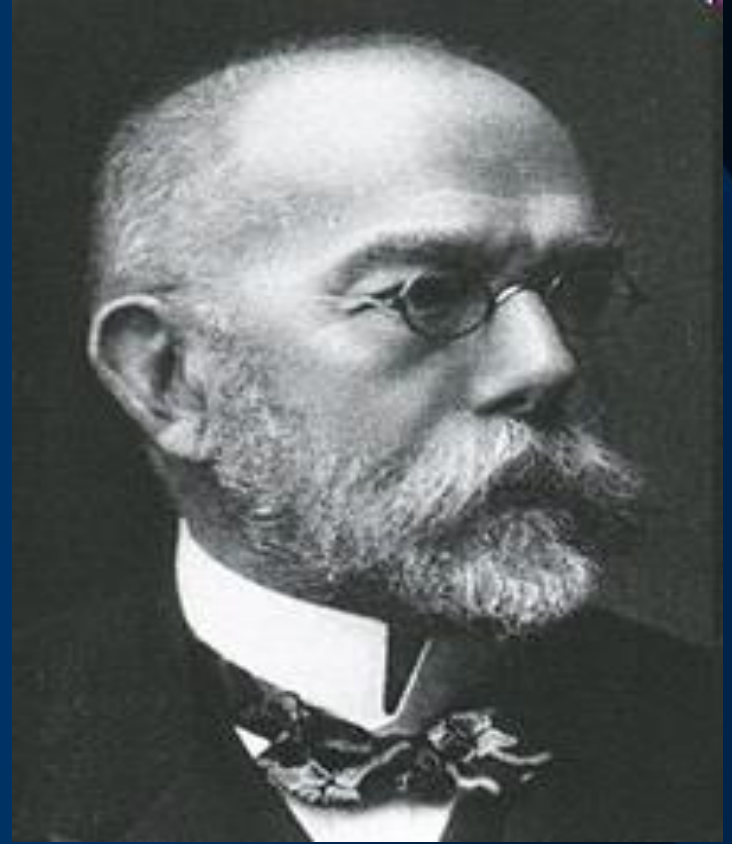
- The cause of the disease was discovered in 1847 by Ignaz Semmelweis, who pointed out the need for antiseptics - his discovery was not recognized by contemporaries and antiseptics have been used in surgery and obstetrics only in the 1880's.



Ignaz Philipp Semmelweis

- In 1847, trying to understand the causes of postpartum fever (sepsis) in many pregnant women, the fact is that the mortality rate for hospital births (30-40 or even 50%) is far superior to death at home birth, Semmelweis suggested that infection is brought from the infectious and pathologic departments of the hospital and ordered the hospital staff to decontaminate hands by dipping them in a bleach solution before manipulation on the pregnant women and mothers. Mortality rate of women and infants dropped more than 7 times - from 18 to 2.5%.





- Louis Pasteur in France and Robert Koch in Germany discovered the extensive new research area - infectious diseases in the period of 1876-1880 years . L. Pasteur proved that agents of many unexplained infections were microorganisms, which presence can be detected using a microscope in a patient's blood and tissues.

Postpartum septic diseases -

- ✓ disease observed in postpartum women directly related to pregnancy and childbirth, and caused by a bacterial infection occurring within 42 days from the date of delivery.

Contributes to the high incidence of postpartum septic diseases:

- ✓ severe extragenital pathology;
- ✓ Late gestoses;
- ✓ anemia during pregnancy;
- ✓ gestational pyelonephritis;
- ✓ placenta previa;
- ✓ placental insufficiency;
- ✓ intrauterine infection of the fetus;
- ✓ polyhydramnion;
- ✓ induced pregnancy;
- ✓ hormonal and surgical treatment of miscarriage;
- ✓ genital infection.

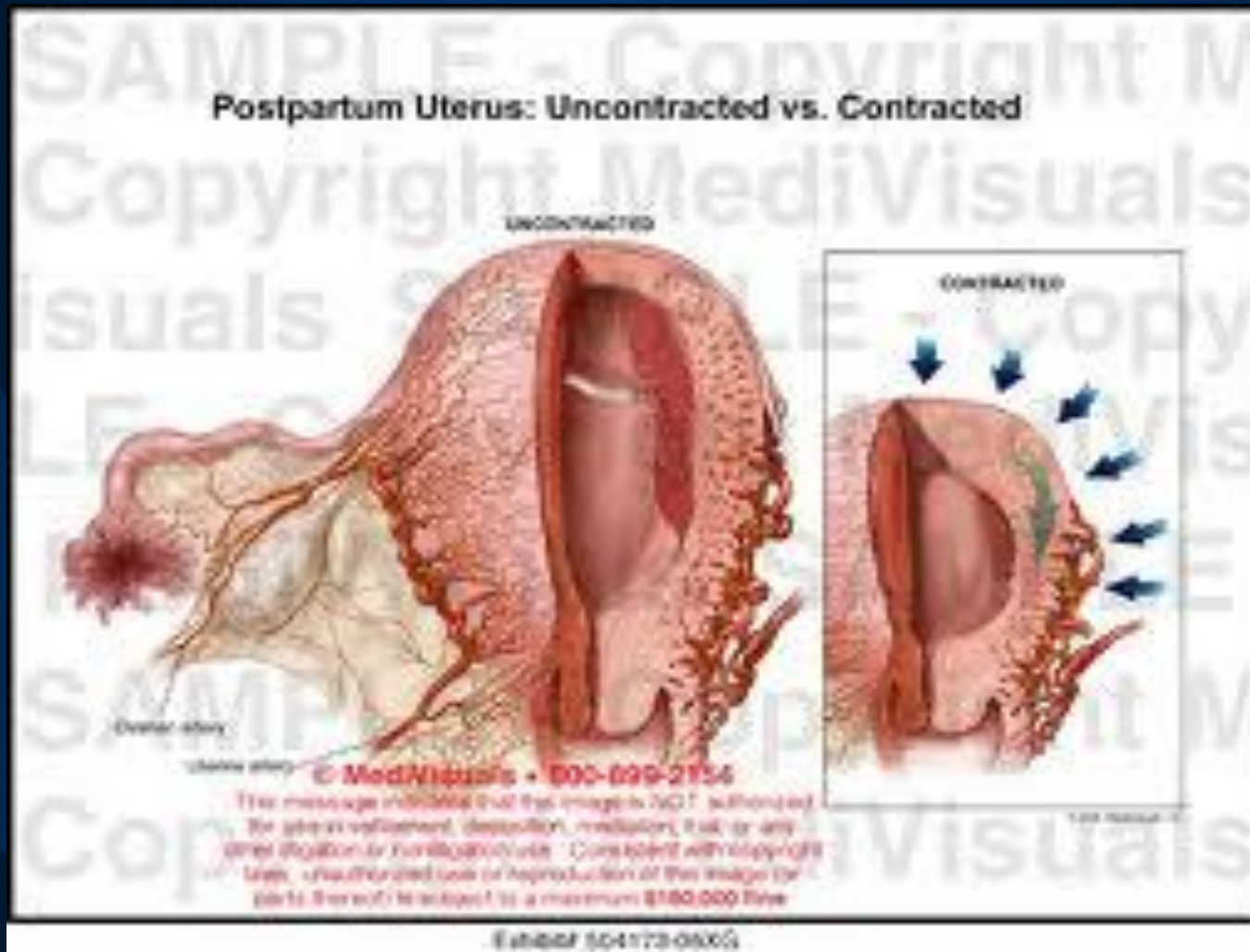
Contributes to the high incidence of postpartum septic diseases:

- ✓ long dry (without amniotic fluid) period;
- ✓ uterine inertia;
- ✓ multiple vaginal research;
- ✓ chorioamnionitis in labor;
- ✓ trauma of the birth canal;
- ✓ bleeding;
- ✓ invasive study of the fetus during labor;
- ✓ surgical interventions in childbirth.

Factors contributing to the development of infection in the postpartum period:

- ✓ subinvolution of the uterus;
- ✓ the delay of the placenta;
- ✓ inflammatory diseases of the genital organs in history;
- ✓ the presence of extragenital source of bacterial infection;
- ✓ anemia;
- ✓ endocrine diseases;
- ✓ violation of sanitary-epidemiological regime.

Subinvolution of the uterus

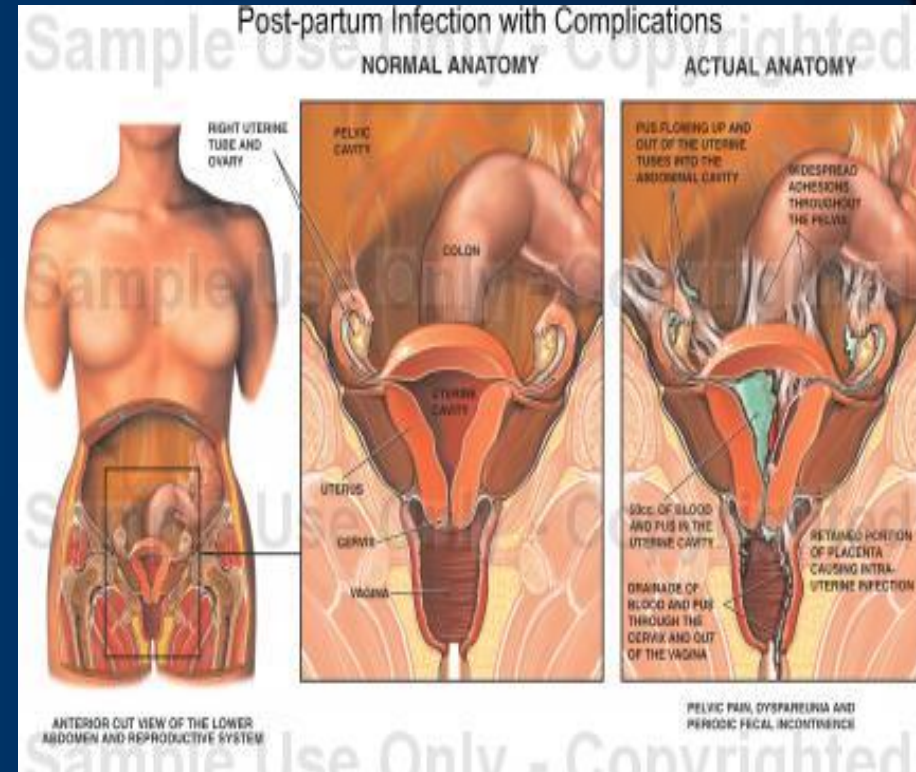


Pathogens of postpartum septic diseases:

- ✓ Gram-positive (enterococci, Staphylococcus epidermidis and Staphylococcus, Streptococcus of group A and B);
- ✓ Gram-negative (Escherichia coli, Klebsiella, Proteus, Enterobacter cloacae, Pseudomonas aeruginosa);
- ✓ anaerobic bacteria (Bacteroides, Peptococcus, Peptostreptococcus);
- ✓ Association microorganisms of different species

PATHWAYS of puerperal infection:

- ✓ hematogenous;
- ✓ lymphogenous;
- ✓ intracanalicular;
- ✓ perineural;
- ✓ combined
(haematogenously-
lymphogenous).



Pathogenesis of postpartum septic DISEASES

- ✓ Pathophysiological mechanisms in septic puerperal diseases are based on the systemic inflammatory response syndrome, which is considered as a universal body's response to the impact of infection.

Stages of the systemic inflammatory response syndrome:

- ✓ I - a local stage of cytokines production;
- ✓ II – stage of release a small amount of cytokines in the systemic circulation;
- ✓ III – stage of the generalized inflammatory response.

Classification of postpartum septic diseases (by S.V.SAZONOV and O.V.BARTELS)

- ✓ The first stage - a limited form of septic infection, which does not extend beyond the uterus: postpartum ulcers (purulent inflammation of the perineum, vulva, vagina, cervix) and postpartum endometritis.

Classification of postpartum septic diseases (by S.V.SAZONOV and O.V.BARTELS)

- ✓ The second stage - the infection is not being generalized, beyond the uterus, but is limited to the pelvic cavity (metritis, parametritis, salpingoophoritis, pelvioperitonitis, metrotromboflebitis, thrombophlebitis of the pelvic veins, thrombophlebitis of femoral veins);

Classification OF postpartum septic diseases (by S.V.SAZONOV and O.V.BARTELS)

- ✓ The third stage - the infection has gone beyond the pelvis and has a tendency to generalization: diffuse peritonitis, bacterial endotoxin shock, progressive thrombosis, anaerobic gas infection;

Classification of postpartum septic diseases (by S.V.SAZONOV and O.V.BARTELS)

- ✓ The fourth stage - the generalized forms of general septic infection (septicemia, pyosepticemia).

Lochiometra

- ✓ occurs when are violations of evacuation of discharges from the uterus due to its sharp bend, spasm of the internal uterine os or blockage of the cervical canal by blood clots, fragments of fetal membranes.

Clinical picture of lochiometra

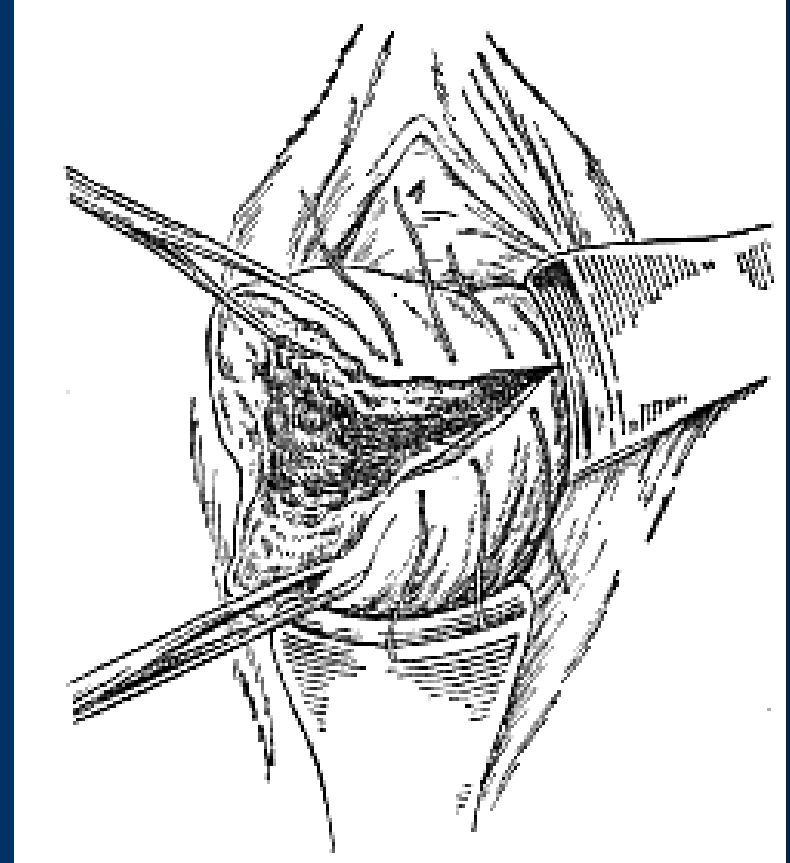
- ✓ temperature rise to 39°C ;
- ✓ signs of intoxication;
- ✓ cramping pain in the lower abdomen.

Treatment of lochiometra

- ✓ Redress the uterus;
- ✓ the introduction of antispasmodics(no-spa, atropine);
- ✓ introduction of uterotonic agents(oxytocin, methilergometrin);
- ✓ mechanically expanding the cervical canal.

Postpartum ulcer

- ✓ formed as a result of infection and ruptures of the perineum, vulva, vagina, cervix, occurring during delivery.



CLINICAL PICTURE of postpartum ULCERS

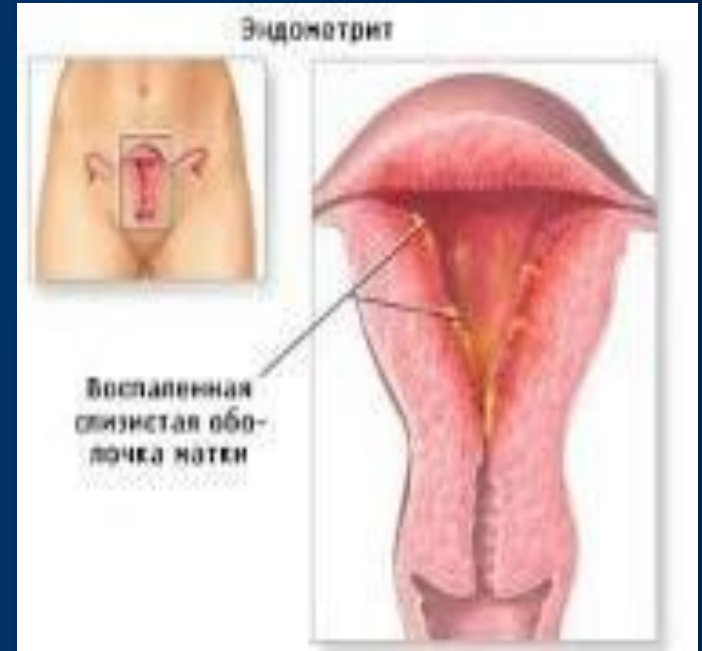
- ✓ fever;
- ✓ pain in the area of damage;
- ✓ edema, hyperemia of tissues;
- ✓ and purulent necrotic plaque on the wound.

Treatment of postpartum ULCERS

- ✓ local treatment (Hydrogen peroxide, a hypertonic solution of sodium chloride, Furacilinum, Dimexid, Dioxydinum, Hlorophilipt, etc.);
- ✓ On the festering wounds after an episiotomy or perinetomy impose secondary seams.

postpartum endometritis

- the most common form of post-natal infections. First of all, the process involved the endometrium and myometrium nearby.



postpartum endometritis

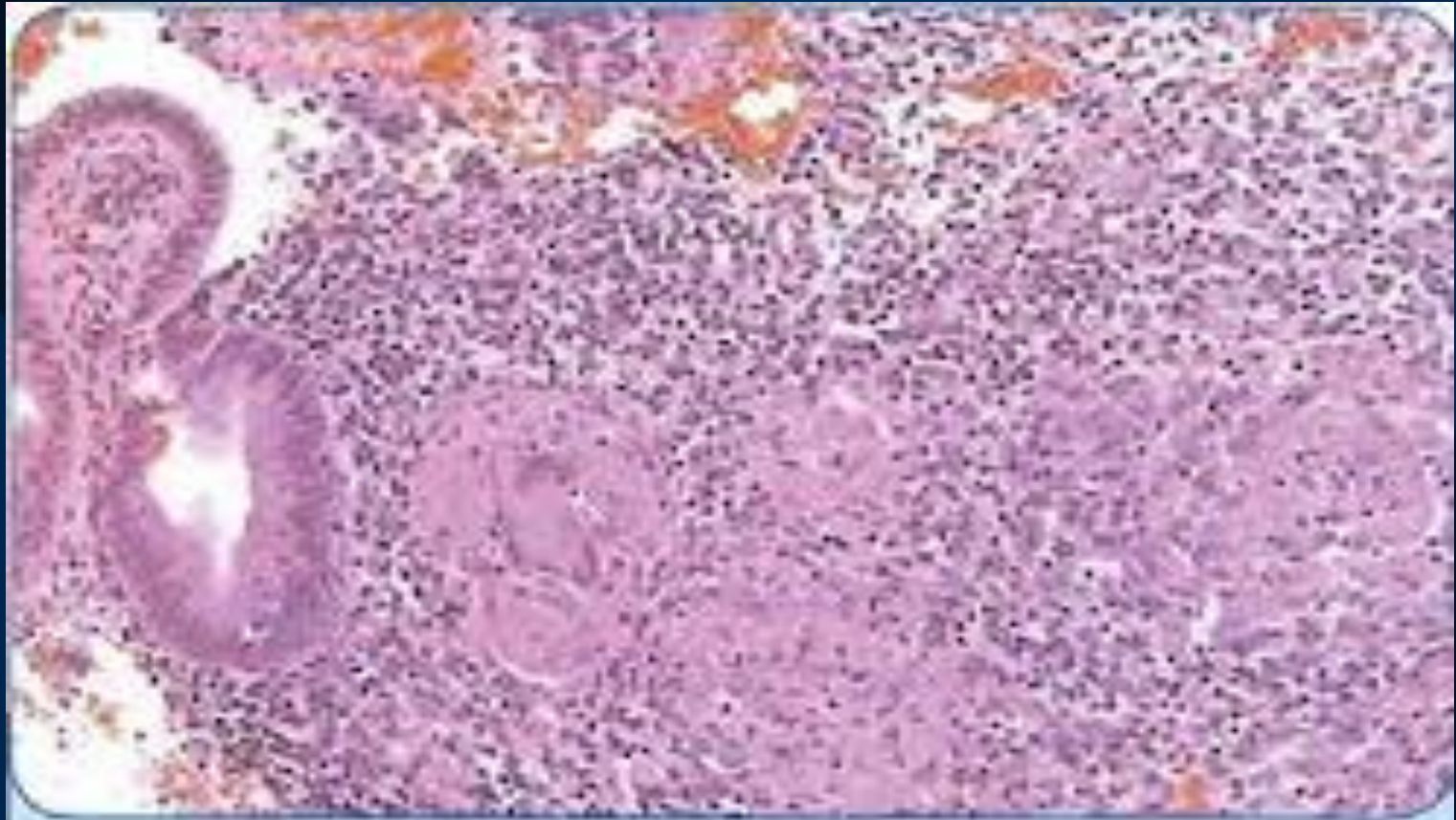


Рис. 16.1. Микропрепарат. Острый эндометрит

Forms of postpartum endometritis

- ✓ mild;
- ✓ severe;
- ✓ subclinical.

CLINICAL PICTURE of postpartum endometritis

- ✓ increase the body temperature;
- ✓ subinvolution of the uterus;
- ✓ bloody or bloody-purulent discharges;
- ✓ leukocytosis, leukocyte shift to the left, increasing the ESR.

Treatment of endometritis after delivery

- ✓ uterine lavage by solutions of antibiotics, antiseptics, etc.;
- ✓ antibiotic therapy (cephalosporins II-III generation aminoglycosides II generation, Metrogil in average doses);
- ✓ infusion therapy;
- ✓ detoxification therapy;
- ✓ immuno-substitutive therapy;
- ✓ stimulative therapy;
- ✓ anti-inflammatory therapy.

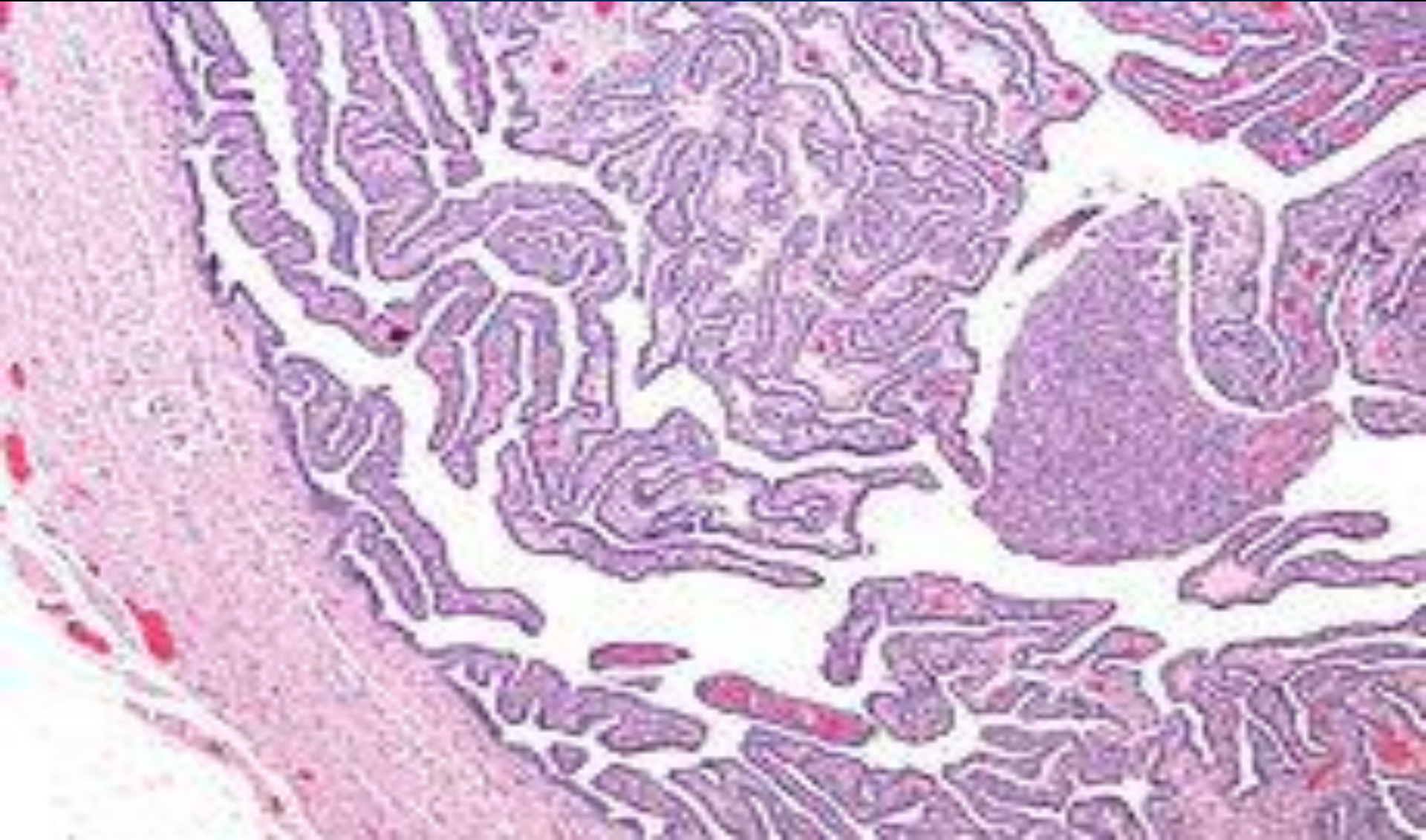
CLINICAL PICTURE of postpartum salpingoophoritis

- ✓ pain in the abdomen;
- ✓ fever;
- ✓ symptoms of peritoneal irritation;
- ✓ in the clinical analysis of blood - leukocytosis, accelerated erythrocyte sedimentation rate.
- ✓ with bimanual study: appendages - sponginess and sharp painfull.

Postpartum salpingoophoritis



Postpartum salpingoophoritis



Complications of postpartum salpingoophoritis

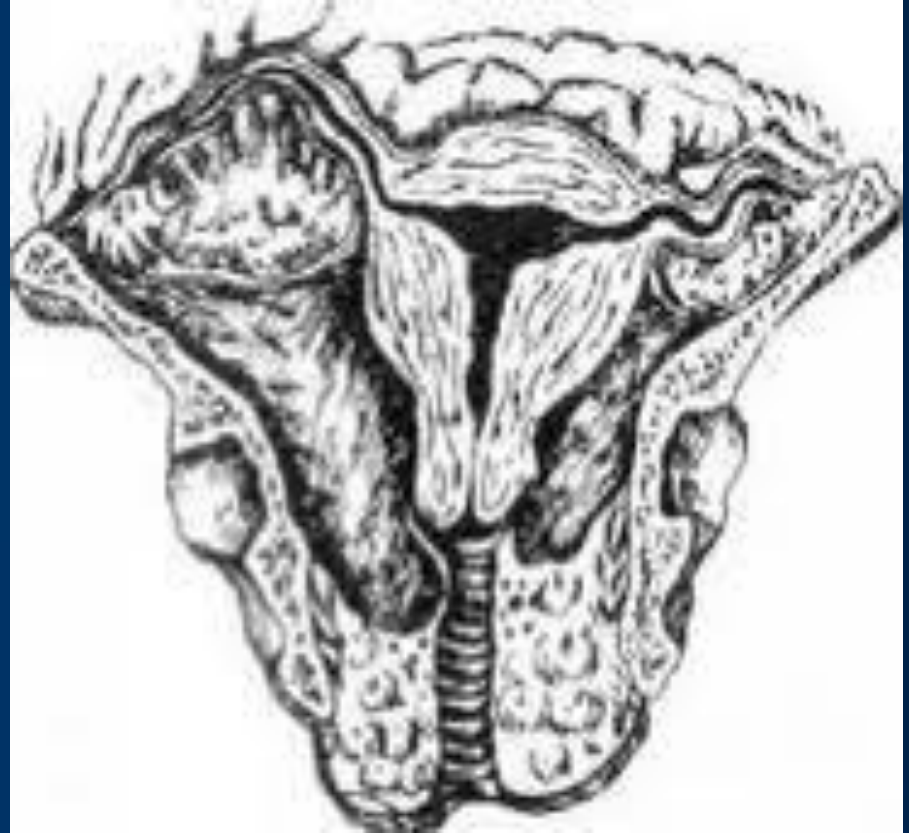
- ✓ Hydro- or pyosalpinx;
- ✓ pyovar;
- ✓ tubo-ovarian abscess;
- ✓ general peritonitis (in contact pus with the peritoneum).

Treatment of postpartum salpingoophoritis

- ✓ antibiotic therapy;
- ✓ infusion therapy;
- ✓ detoxification therapy;
- ✓ puncture of pus formation through the posterior vaginal fornix with the aspiration of pus and the introduction of antibiotics (if it is pyosalpinx);
- ✓ surgery (with tubo-ovarian abscess).

CLINICAL PICTURE of postpartum parametritis

- ✓ temperature rise to 39 ° C;
- ✓ not sharp constant pain in the abdomen, radiating to the lumbar region;
- ✓ in the clinical analysis of blood - leukocytosis, increased erythrocyte sedimentation rate;
- ✓ the localization of infiltration near the bladder or rectum - a violation of the functions of the organs.



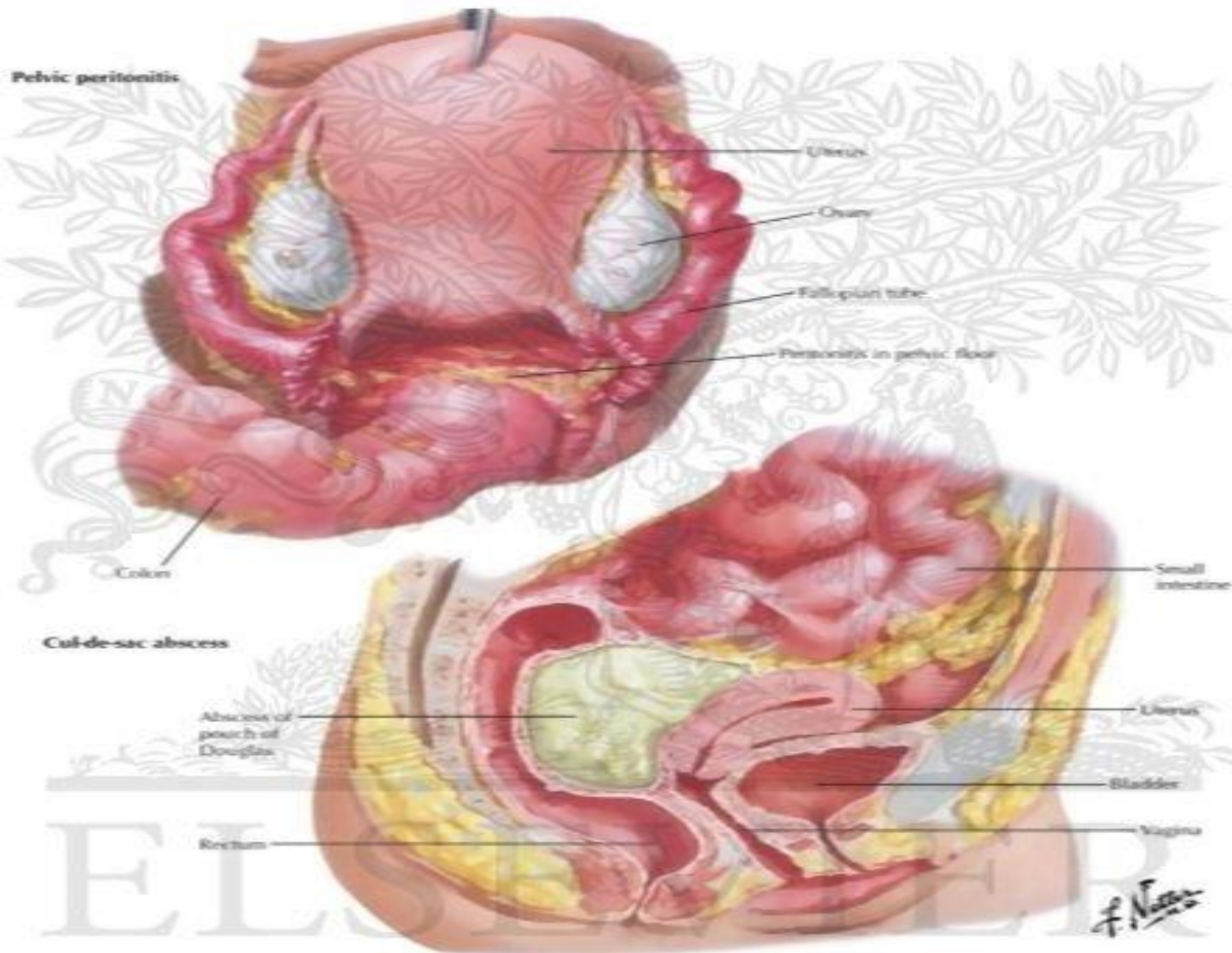
Treatment of postpartum parametritis

- ✓ antibiotic therapy;
- ✓ detoxification therapy;
- ✓ colpotomy with the drainage of the abscess cavity, washing it by antiseptics and the introduction of AB (in the case of sepsis infiltration);
- ✓ puncture of festering infiltrate through the anterior abdominal wall with drainage of purulent cavity (with large amounts of infiltration with peritoneal defeat above the inguinal ligament).

CLINICAL PICTURE of postpartum pelvioperitonitis

- ✓ increased body temperature to 38-40 C, chills;
- ✓ tachycardia to 120 in 1 minute;
- ✓ nausea, vomiting, flatulence;
- ✓ sharp pain in the abdomen;
- ✓ the positive symptoms of peritoneal irritation;
- ✓ in the blood - leukocytosis with a left shift formula, increased erythrocyte sedimentation rate.
- ✓ by vaginal examination: protrusion of the posterior vaginal fornix, the inability to accurately palpate the uterus due to severe pain.

Postpartum pelvioperitonitis

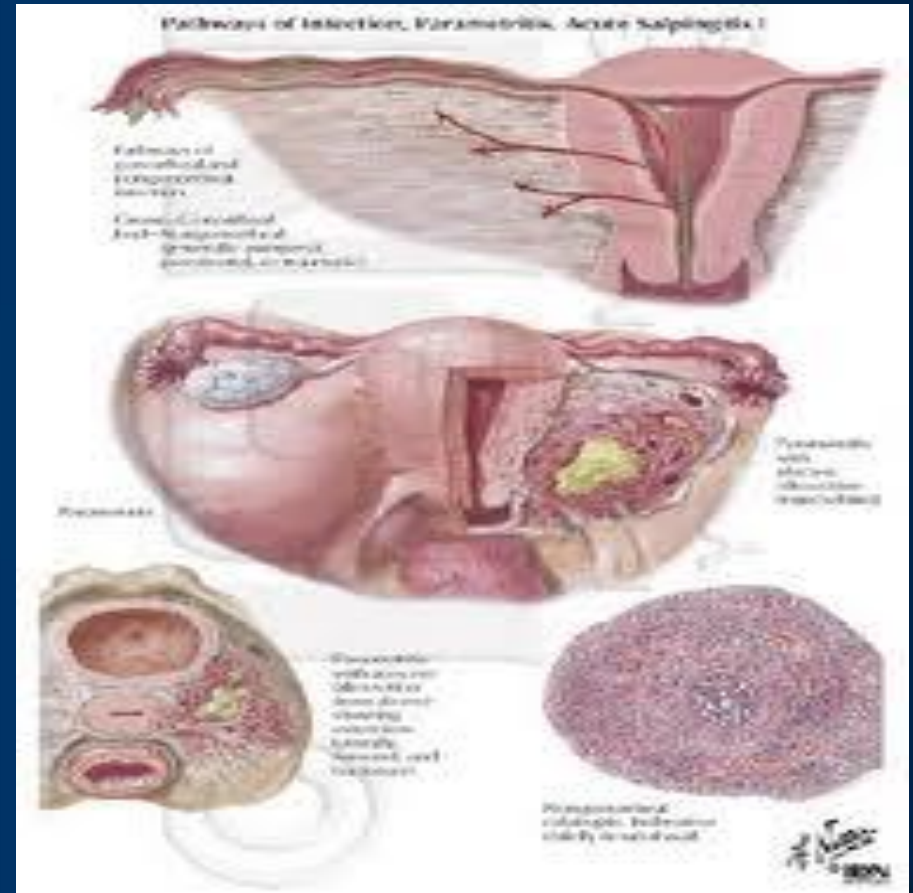


Treatment of postpartum pelvioperitonitis

- ✓ conservative (anti-bacterial, infusion, detoxification therapy, cold on the lower abdomen, a puncture of the abdominal cavity through the posterior vaginal fornix with the evacuation of the pus and the introduction of antibiotics);
- ✓ operative (with no effect on the conservative therapy).

OBSTETRIC Peritonitis

- ✓ mainly occurs as a complication of cesarean section (chorioamnionitis in childbirth, postpartum endometritis, uterine divergence of seams after cesarean section).

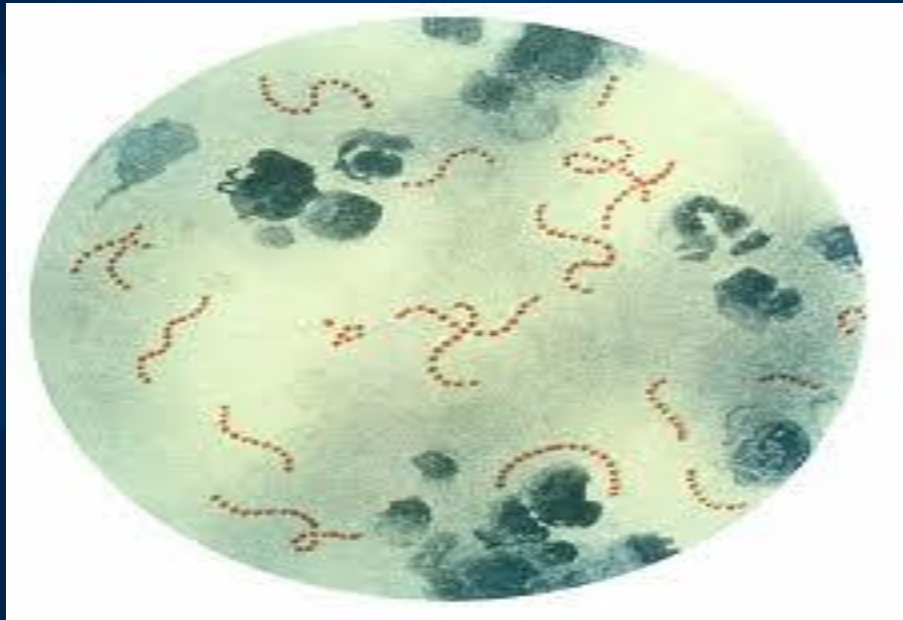


OBSTETRIC Peritonitis



The causative agent of obstetric PERITONITIS

- ✓ predominantly is a mixed aerobic-anaerobic flora (Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa, Proteus vulgaris, anaerobic non-clostridial infection).



Phases of obstetric PERITONITIS

- ✓ 1st, the initial (reactive) - the protection phase (first 24 hours);
- ✓ 2nd, toxic (24-72 hours);
- ✓ 3rd, the terminal (over 72 hours).

The initial (reactive) phase

- ✓ formation of exudate in the abdominal cavity - first serofibrinous, then fibrinopurulent or purulent hemorrhagic;
- ✓ microcirculation: first peritoneum vasospasm, then their dilatation, overflow with blood;
- ✓ hypovolemia;
- ✓ atony of the intestine.

Toxic PHASE

- ✓ pronounced hemodynamic disorders;
- ✓ microcirculation disturbance;
- ✓ degenerative processes in the liver and kidneys, parenchymal organs;
- ✓ progressive tissue hypoxia, disorders of all kinds of metabolism;
- ✓ enteroplegia, continuous vomiting;
- ✓ progressive intoxication.

TERMINAL PHASE

- ✓ body temperature is high, at least a low-grade;
- ✓ tachycardia, hypotension;
- ✓ abdominal pain;
- ✓ nausea, vomiting, flatulence, progressive paresis of the intestine, dry tongue;
- ✓ Symptoms of peritoneal irritation not be expressed;
- ✓ auscultation - does not listen noise of intestinal peristalsis (a symptom of dead silence).
- ✓ abdominal percussion revealed free fluid is determined by positive fluctuation symptom.

Obstetric PERITONITIS

- ✓ operative: hysterectomy with tubes, intubation of the intestine, abdominal drainage by Petrov's method and through the cupula of the vagina;
- ✓ antibiotic therapy (cephalosporins II-III generation aminoglycosides II generation ,metrogil);
- ✓ detoxification therapy (solutions of rheopolyglucinum, gelatinolum, haemodesum, neocompensan, Locke-Ringer's solution, glucose, potassium salts, protein hydrolysates);

Obstetric PERITONITIS

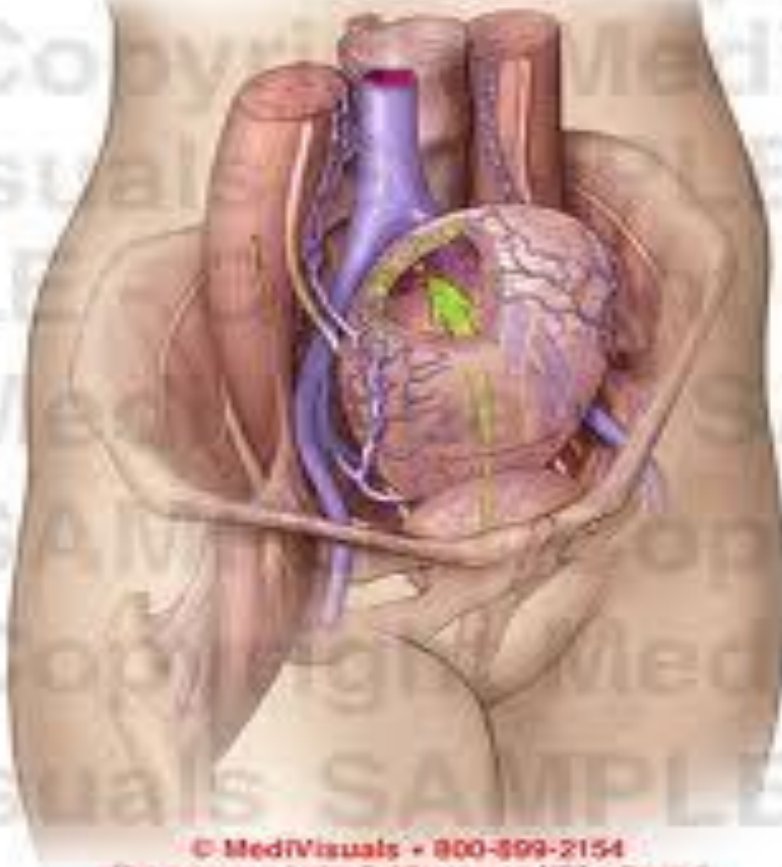
- ✓ correction of microcirculation and DIC - Appointment of anticoagulants (Heparin, Fraxiparine);
- ✓ correction of hemodynamic disorders (cardiac glycosides, steroid hormones, CoCarboxilase, ATP, vitamins, oxygen therapy);
- ✓ appointment of desensitizing and antihistaminic drugs (Diphenhydramine, Suprastin, Diazolin, Promethazine, Tavegil);
- ✓ Dialysis of the abdomen cavity.

postpartum thrombophlebitis

- arises in the case of puerperal infection spread by the pelvic veins;
- associated with changes in the inner surface of the vessel wall, the increased activity of the blood coagulation system, slowing blood flow and reflex spasm of blood vessels.

Postpartum thrombophlebitis

Pathway of Septic Thrombophlebitis
in Post-Partum Uterus



© MediVisuals • 800-899-2154

This message indicates that this image is NOT authorized for use in settlement, deposition, mediation, trial, or any other litigation or nonlitigation use. Consistent with copyright laws, unauthorized use or reproduction of this image for purposes other than as subject to a maximum \$150,000 fine.

© 2006 MediVisuals, Inc.

Exhibit 585067_0100



nmedik.ru

Thrombotic contribute:

- ✓ diseases of the circulatory system;
- ✓ obesity;
- ✓ anemia;
- ✓ varicose veins;
- ✓ pre-eclampsia;
- ✓ prolonged labor;
- ✓ surgical delivery.

CLASSIFICATION of thrombophlebitis

- ✓ local;
- ✓ common
- ✓ superficial thrombophlebitis;
- ✓ deep vein thrombophlebitis

CLINICAL PICTURE of superficial thrombophlebitis of the legs veins

- Local pain in the occluded by thrombus vein;
- bluish or dark purple color of the skin;
- increase in limb volume of 1-2 cm

CLINICAL PICTURE of thrombophlebitis of deep veins

- ✓ metrotromboflebitis;
- ✓ thrombophlebitis of the veins of the pelvis;
- ✓ thrombophlebitis of the iliac-femoral and femoral veins;
- ✓ deep thrombophlebitis of the veins of the legs and feet.

CLINICAL PICTURE of metrotrombophlebitis

- ✓ low-grade fever of the body;
- ✓ rapid pulse;
- ✓ subinvolution of the uterus;
- ✓ prolonged bleeding from the uterus;
- ✓ With bimanual study - facet outer surface of the uterus and winding strands under the serous membrane. The process extends to the pelvic, iliac region, the deep veins of the thigh.

CLINICAL PICTURE of the thrombophlebitis of the veins of the pelvis

- ✓ subinvolution of the uterus;
- ✓ at the base of the broad ligament of the uterus and in the lateral wall of the pelvis palpable vein in the form of painful and winding strands.

CLINICAL PICTURE of thrombophlebitis of the deep veins

- ✓ pain in the extremities;
- ✓ fever;
- ✓ chills;
- ✓ coldness, edema, paresthesia.

CLINICAL PICTURE of the iliac-femoral thrombophlebitis

- ✓ expansion of the saphenous veins in the groin and inguinal region, on the front and side of the anterior abdominal wall;
- ✓ determined by palpation painful infiltration in the iliac region, pain in the upper thigh and swelling;
- ✓ external femoral vein thrombosis accompanied by the appearance of swelling in the lower abdomen and lower back, often swelling of the labias.

CLINICAL PICTURE of the femoral vein thrombophlebitis

- ✓ smoothing the folds of the groin;
- ✓ pain in the femoral triangle, in the depths of which are palpable thickened vessels;
- ✓ expansion of the femoral vein;
- ✓ swelling of the femur and tibia are often;
- ✓ pain in the crus muscles.

Treatment of postpartum thrombophlebitis

- ✓ direct-acting anticoagulants (heparin);
- ✓ antibiotic therapy;
- ✓ desensitizing therapy;
- ✓ antispasmodics;
- ✓ Plasma-substitute solutions;
- ✓ Saline solutions.

Prevention of postpartum thrombophlebitis

- ✓ breathing exercises;
- ✓ massage;
- ✓ exercise;
- ✓ the exalted position of the lower extremities;
- ✓ elastic bandages bandaging;
- ✓ anticoagulants (with a history of venous thrombosis of the pelvis, thighs, etc.).

Systemic inflammatory response syndrome (Systemic Inflammatory Response Syndrom- SIRS)

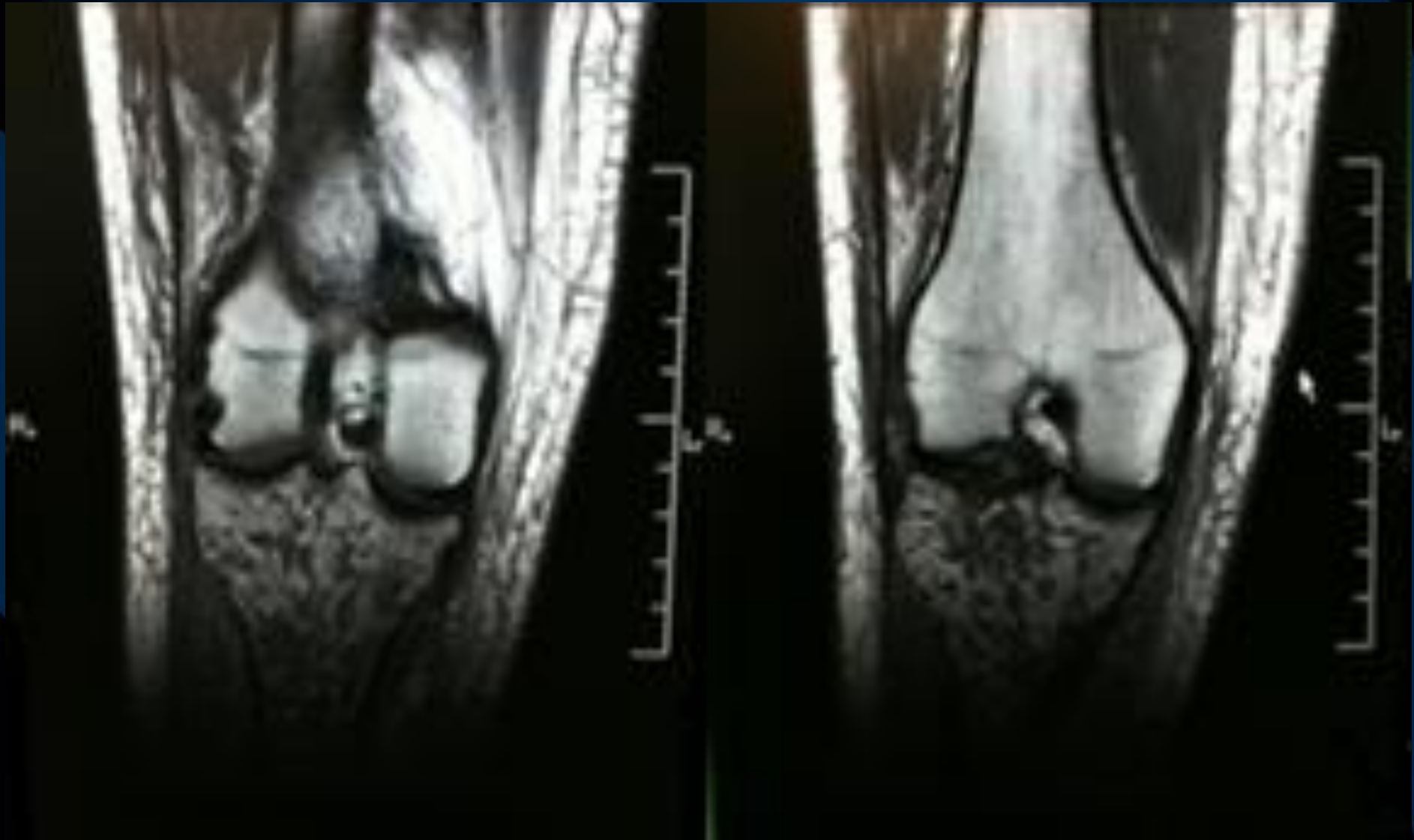
manifests two or more of the following manifestations:

- ✓ body temperature higher than 38°C or below 36°C ;
- ✓ Heart rate greater than 90 beats / min.;
- ✓ respiration rate of 20 per minute or Pa CO_2 below 32 mm Hg;
- ✓ white blood cell count more $12000/\text{mm}^3$, less than $400/\text{mm}^3$ or more than 10% of young forms.

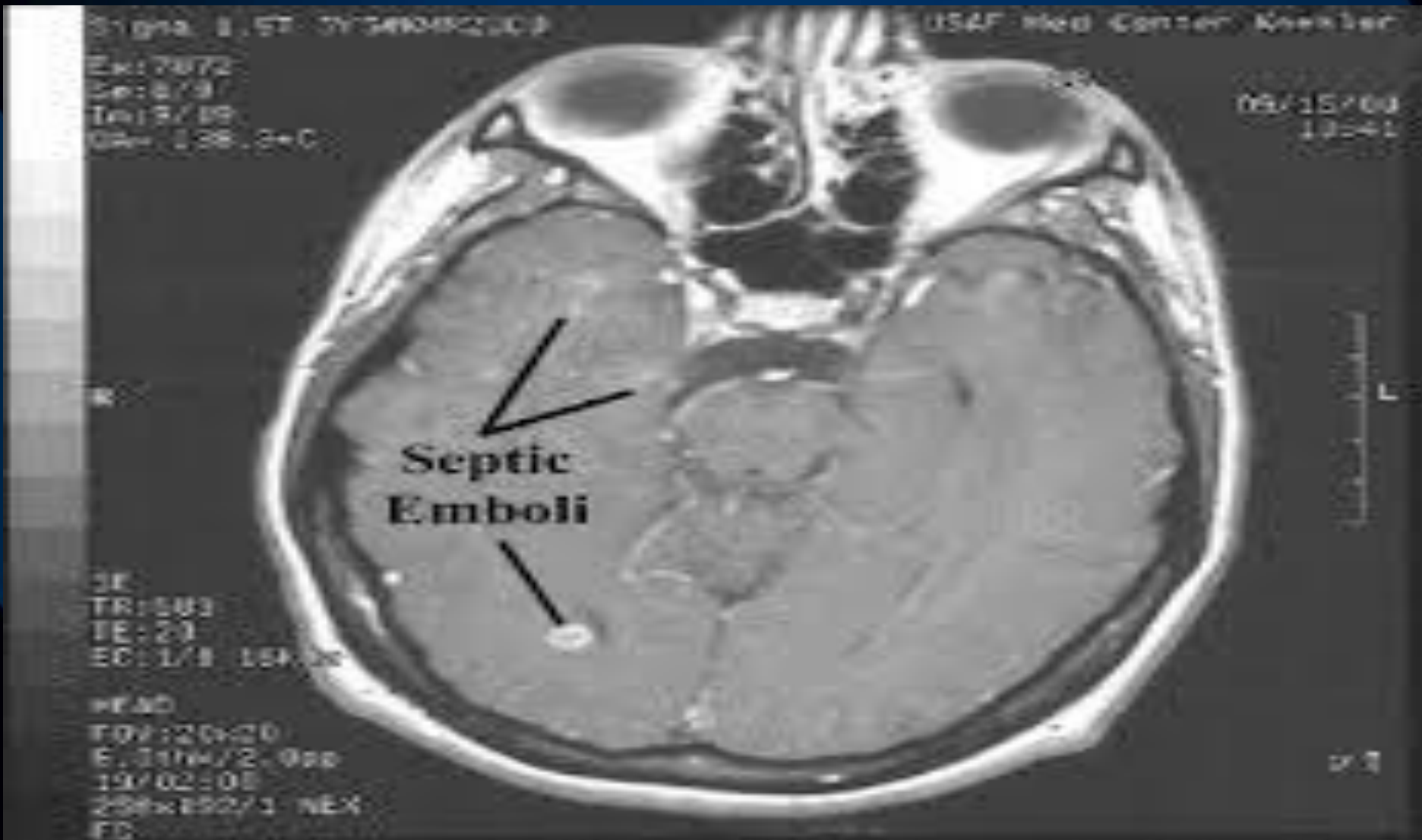
Sepsis

- Systemic inflammatory response to reliable detection of infection when no other possible reasons for the similar changes that are characteristic of SIRS.

Postpartum hematogenous osteomyelitis



Pyosepticemia (brain metastases)



Severe sepsis / SIRS

- Sepsis, which is accompanied by organ dysfunction, hypoperfusion or hypotension.

Hypoperfusion and perfusion abnormalities may include
(but are not limited to):

- ✓ acidosis due to the accumulation of lactic acid;
- ✓ oliguria;
- ✓ acute impairment of mental status.

SEPTIC SHOCK

- ✓ clinical syndrome that occurs when the condition of the systemic inflammatory response to infection and is manifested against the body's ability to maintain homeostasis and hemodynamics as a result of inadequate tissue oxygenation and circulatory disorders.

Septic shock / SIR-SHOCK

- ✓ is a complication of severe sepsis, defined as sepsis-induced hypotension, which can not be corrected by adequate fluid replacement.

EMERGENCE OF SEPTIC SHOCK EFFECT:

- ✓ availability of the source of infection (puerperal endometritis, chorioamnionitis, lochiometra, the remnants of placental tissue);
- ✓ reduction of the total resistance of the organism;
- ✓ the penetration of pathogens or their toxins in the bloodflow.

STAGES of SEPTIC SHOCK

- ✓ hyperdynamic (decrease in peripheral resistance, a reflex increase of cardiac output);
- ✓ hypodynamic (violation of perfusion and oxygenation, secondary in relation to the regional vasoconstriction and myocardial dysfunction).

Diagnosis of severe sepsis

- ✓ Thrombocytopenia $< 100 \cdot 10^9 / l$;
- ✓ elevated levels of C-reactive protein;
- ✓ increase the level of procalcitonin $> 6.0 \text{ ng} / \text{ml}$;
- ✓ positive blood culture with the identification of circulating micro-organisms;
- ✓ positive test for endotoxin (LPS-test).

DIAGNOSIS of SEPTIC SHOCK

(in addition to the above features)

- ✓ hypotension (SBP less than 90 mm Hg. or reduced by more than 40 mm Hg. from baseline);
- ✓ tachycardia over 100 beats / min.;
- ✓ tachypnea more than 25 per minute;
- ✓ impairment of consciousness (less than 13 points on a scale of Glasgow);
- ✓ oliguria (urine output is less than 30 ml / hour);

DIAGNOSIS of SEPTIC SHOCK

- ✓ hypoxemia (PaO₂ of 75 mm Hg. while breathing in the ambient air);
- ✓ SpO₂ <90%;
- ✓ elevated lactate levels over 1.6 mmol / l;
- ✓ petechial rash, necrosis of the skin.

Measures in septic shock

- ✓ monitoring of hemodynamic parameters: blood pressure, heart rate, central venous pressure;
- ✓ parameters control the respiratory system (RR, blood gases, SpO₂);
- ✓ hourly urine output control;
- ✓ measurement of rectal temperature for at least 4 times a day for comparison with the temperature of the body in the axilla;

Measures in septic shock

- ✓ blood cultures, urine, secretions from the cervix;
- ✓ determination of the acid-base balance of blood and tissue oxygen saturation;
- ✓ platelet count and determination of fibrinogen and fibrin monomers;

Measures in septic shock

- ✓ ECG monitoring (to determine the degree of metabolic disorders or myocardial ischemia;
- ✓ Ultrasonography of the abdomen (in order to identify possible hematogenous abscess);
- ✓ X-ray examination of thorax (to confirm ARDS or pneumonia).

Laboratory parameters in septic shock

- ✓ anemia;
- ✓ neutrophilic leukocytosis with a left shift, toxic granularity of leukocytes;
- ✓ thrombocytopenia;
- ✓ lymphopenia.

SUMMARY OF INTENSIVE CARE of SEPTIC SHOCK

- ✓ immediate hospitalization of the patient in the intensive care unit;
- ✓ correction of hemodynamic disturbances through inotropic therapy and adequate fluid resuscitation with continuous hemodynamic monitoring;
- ✓ maintaining adequate ventilation and gas exchange;
- ✓ Surgical treatment of infection;

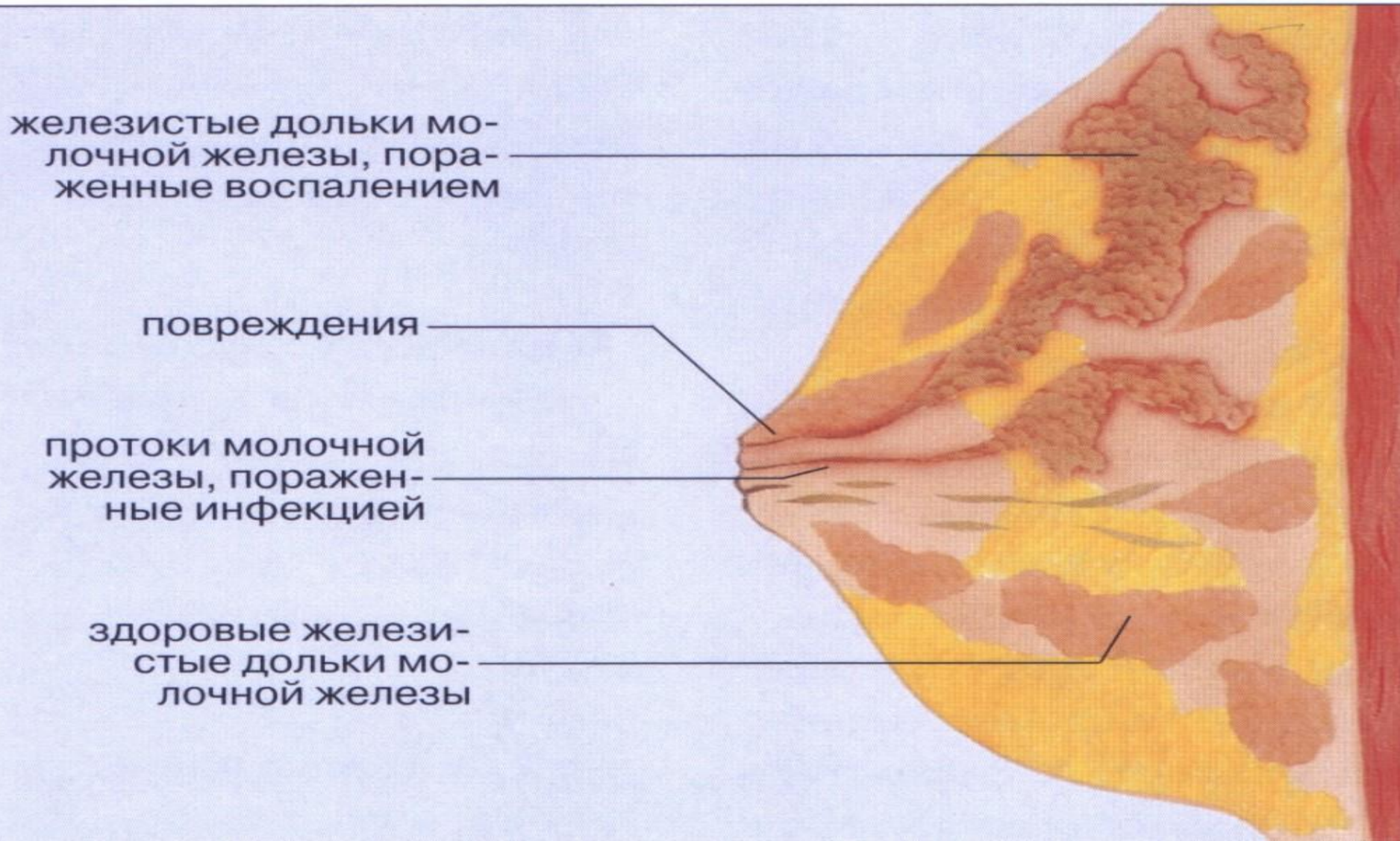
SUMMARY OF INTENSIVE CARE SEPTIC SHOCK

- ✓ normalization of bowel function and early enteral nutrition;
- ✓ timely correction of metabolism under constant laboratory control;
- ✓ antibiotic therapy under constant microbiological control;
- ✓ antimediatric therapy.

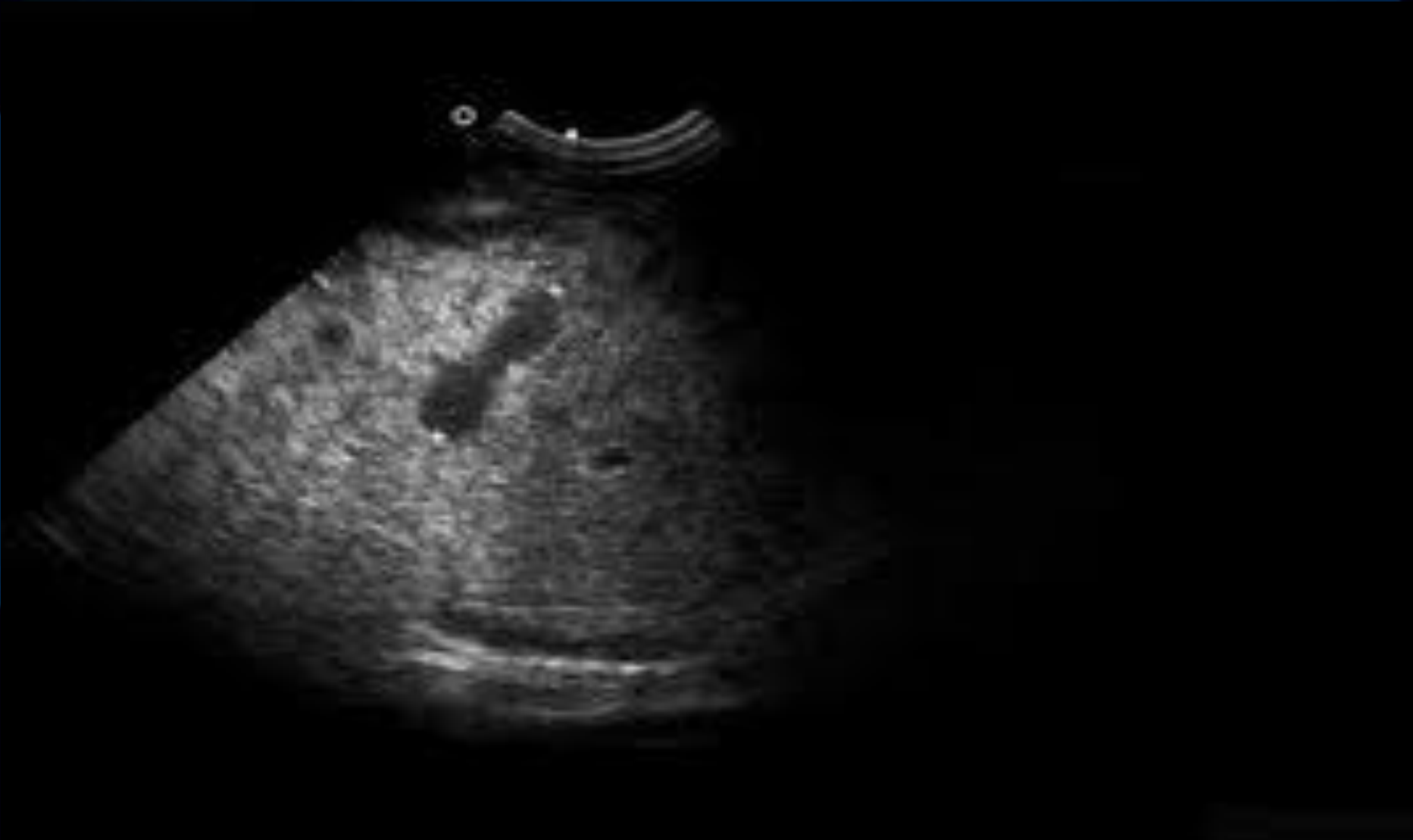
puerperal mastitis

- ✓ inflammatory disease of the breast of an infectious nature that develops in the postpartum period;
- ✓ the main causative agent - pathogenic staphylococci, penetrating into the mammary gland primarily lymphogenous;
- ✓ develops against the background of the pathological lactostasis.

puerperal mastitis



puerperal mastitis



Forms of postnatal mastitis

- ✓ serous;
- ✓ infiltrative;
- ✓ purulent.

CLINICAL PICTURE of postnatal mastitis

- ✓ raising the temperature to 39 C or higher;
- ✓ chills;
- ✓ general weakness;
- ✓ headache;
- ✓ increase in the volume of the breast, pain, flushing of the skin;
- ✓ deep in the gland determined sealed areas;
- ✓ increase in regional lymph nodes.

Principles of treatment of postpartum mastitis

- ✓ cessation of breastfeeding;
- ✓ remedies for the suppression of lactation;
- ✓ antibiotic therapy;
- ✓ detoxification therapy;
- ✓ immunotherapy;

Principles of treatment of postpartum mastitis

- ✓ Sulfocamphocainum or solution of camphor subcutaneously;
- ✓ diuretics;
- ✓ with serous and infiltrative - oil-ointment packs;
- ✓ in purulent - surgical treatment.