

Neonatal sepsis

Department of pediatrics

Neonatal infections

► bacterial:

- The systemic - neonatal bacterial sepsis
- Localized forms - meningitis, pneumonia, acute infectious diarrhea, urinary infections, infections of the soft tissues etc.

► viral:

- Maternal-fetal defects
- Pery- and postnatal

The notion of contaminated and infected newborn

► Contaminated

Bacteriological culture: Taken from the shaft smear are

positive (culture nose, throat, stool, cultures of skin)
Without clinical signs of disease

➡ Infected

- ➡ Clinical manifestations, central bacteriological cultures taken are positive (uroculture, blood culture, CSF culture) associated with a biological inflammatory syndrome (↑ leukocytes, the white blood cell counts deviation to the left, ↑ protein C, ESR, fibrinogen, serum mucoid)

Ways of transmission

- ➡ Haematogenous- transplacental
- ➡ Ascending
- ➡ Descending
- ➡ Required (Nosocomial infection)

Hematogenous transplacental

- ➡ Congenital infection

- ➡ Ex.: *Treponema pallidum*,
Listeria monocitogenis,

Micobacterium tubrculozis

Ascending

- Infection vaginal flora associated with acquired shortly before birth rupture of membranes (or not) - amnion, pneumonia, preterm delivery
- Ex .: streptococcus group B

Descending

Infection by passing the vaginal canal.

-Gonococcal chorioretinitis neonatal septicemia and meningitis E. coli -septicemia caused by streptococci group B Late

-Ex .: Neisseria gonorrhea, Escherichia Colli, group B streptococci

Acquired

► The infection from the environment:

- At medical institutions
- Milk infected squeezed
- Infection stump umbilicus
- Vein catheterization
- Resuscitation and intubation procedures
- When given IV solutions
- Contact with infected staff
- At home

Nosocomial infections

- according to pathological classifications, presents a generalized or localized disease caused by an infectious agent or its toxins

in the patient, which is in stationary more than 48-72 hours; or one that is stationary No more than the incubation period of the infection, usually after 5-7 days of life (from the Greek "nosokomeo" - caring for the sick

Neonatal sepsis

- is a systemic disease with fatal acyclic generalized bacterial infectious processes caused by microbes conditionally pathogenic polyresistent to some antibiotics, hospital strains; which occurs due to ingress of large amounts of bacteria in the blood

under a defect of natural barriers or mixed infection, the fund lowered immunity or modified organism.

The risk factors

- Prematurity
- alichidian long period
- Chorioamnionitis to mother
- mother carrying group B streptococcus
- vessels catheterization
- tracheal intubation
- urogenital system infection from mother;
- amniotic fluid aspiration (meconium);
- multifetal task;
- galactoseemia.

Key moments in sepsis pathogenesis

entry “pathway”
inflammatory foci

local

bacteriemia

sensitivity and immune

changes

septicemia

septicopyemia

Early sepsis

- Fourth day earlier
- A history of infection from mother
- Infection ways - up and down
- Fulminant evolution, includes organs and systems.
More often meets pneumonia: breathing disorders - tachypnea, respiratory distress

- Lethality - 15 - 50%

Late sepsis

- V day and later
- The routes of transmission - and acquired descending
- Evolution - slowly progressive, with outbreaks
purulent meningitis is more often

- Lethality - 10 - 20%

Fulminant sepsis

► I phase:

- dyspnea
- tachycardia
- manifestations of hypovolemia
- low BP
- ordinary colored skin
- normal body temperature
- excitability, restlessness
- hyperkinesia, tremor
- abdominal defense
- General Dynamic worsening

Fulminant sepsis

► Second phase:

- emphasizing tachycardia and dyspnea
- heart sounds attenuated
- acrocyanosis
- edema (back, abdomen)
- hepatomegaly
- it emphasizes indolence, passivity
- hypotonia

- seizures
- pale "spots"
- purpura or other manifestations of SCID: intestinal bleeding, pulmonary bleeding at the injection site; oliguria or anuria
- progressive neurological disorder
- Waterhouse syndrome development - Friedericksen

Sepsis on premature newborns

- subacute evolution
- In the first days or weeks of life
 - manifested as respiratory distress, pneumonia
 - dyspnea and slow breathing with periods of apnea
 - bradycardia
 - lack sucking reflex
 - hypotonia or dystonia
 - indolence
 - hypothermia
 - hyporeflexia
 - Digestive disorders abdominal distension
 - edematous syndrome
 - pale skin and jaundice
 - sclera
 - signs of infectious intestinal damage: EUN
 - hemorrhagic syndrome
 - Symptoms "broken belly button".

The diagnosis

► sowings:

- use any media body fluids
- Tests for antigens. Research blood serum, urine, CSF.
- Antibody titration.
- Gram staining after antigen detection liquid environments.
- Laboratory Tests
- Polymerase chain reaction
- calculation of leukocytes and differentiation
- Leukocyte index of intoxication (ILI)
- protein C
- VSH
- orosomucoid
- haptoglobin

Laboratory findings

- neutropenia sepsis is an unfavorable sign
below 5000 mm³; in absolute terms - below 1750 mm³
- Neutrophil index - the ratio of young forms by neutrophils - less than 0.2
- ILI greater than 1.24
 - Report by segmented rods greater than 0.3
 - C - reactive protein levels greater than 10 mg

/ 100 ml on the first day, the next days for more than 6 mg / 100 ml

- ESR - less than 15 mm / hour

- If three criteria are positive suggest of systemic infection is 90%

Dynamics of neutrophils in the blood in the first 60 hours of life

- Neutrophil count is determined by the formula:
(segmented neutrophils+non-segmented x total leucocytes /100

Indices which is below the bottom of the chart are significant for bacterial infection.

Radiologic exams

- Chest Radiography
- urinary viewing
- USG of kidney
- intravenous pyelography
- cistourethrography

The placenta investigation

- physical exam
- placental histology:
- Villitis (ischemic necrosis, thrombosis)
- Abnormal placental vessels (Chorioangioma)

The risk of developing sepsis score

The risk of developing sepsis score

The treatment

- proper nutrition
- Caring
- antimicrobial therapy
- rehab therapy
- immunostimulatory treatment
- energy support and treatment membranice-stabilizing ventilatory assistance
- treatment of complications: convulsions, cardiac

- failure, circulatory disorders, renal, adrenal, hemorrhagic syndrome, metabolic disorders
- intrauterine infection prophylaxis
 - treatment of septic foci

Empiric antibiotic therapy

B-lactimice + Cefalosporine G3 + Aminoglicozide

Schema N1: Ampicilin 100 mg/kg/24 ore + Claforan 50-100 mg/kg/24 ore + Ghentamicin 5-7 mg/kg/24 ore i/v.

Schema N 2: Piperacilin 50-100 mg/kg/24 ore + Fortum (sau Cefobid) 50-100 mg/kg/24 ore + Amicacin 15 mg/kg/24 ore (sau netilmicin)+ 6-7,5 mg/kg/24 ore i/v (Gram -)

Schema N3: Vancomicina 40-60 mg/kg/24 ore + Amicacina sau ghentamicina în infecția stafilococică iatrogenă

Schema N4: Augmentin sau Ghentamicin + Metranidazol 20-40 mg/kg/ i/v (sau Cefalosporine de G3) in aenaerobe infection.

Note!: use one of these schemes.

Antibiotic therapy when causal bacterial agent is known

- **Micoplasma, Hlamidii** – Macrolide (eritromicină) 30-50 mg/kg/24 ore + Ciprofloxacină 20-30

mg/kg/24 ore

- **Candida** – Amfotericină B i/v + Micostatin peros
- **Stafilococi** – Vancomicină 40 mg/kg/24 ore + Singestin 50 mg/kg/24 ore + Aminozone
- **Streptococul grupei B** - Amoxicilin i/v 200 mg/kg/24 ore sau Cefotaxim 200 mg/kg/24 ore sau Ceftriaxon 50 mg/kg/24 ore + Aminozone
- **Escherichia Coli** - Cefotaxim 200 mg/kg/24 ore sau Ceftriaxon 50 mg/kg/24 ore + Aminozone
- **Anaerobi, Enterobacterii** – Tetraciclină (a. Clavulonic) 150-200 mg/kg + Aminozone
- **Anaerobi** – Metronidazol 15 mg/kg

Prophylaxis of nosocomial infections

- Reducing hospital newborns during their stay in the polling Pathology (□ 10 days)
- Isolation of patients
- Treating pregnant women cytomegalovirus (CMV)
- Limitation of vaginal examinations;
- Strict adherence to aseptic principles;
- Development of finding common maternal mother and newborn,
- Organizing block birth conditions for early breastfeeding of newborns (in the first half an hour after birth)
- Establishing techniques for breast feeding
- Correct storage of breast milk; milk pasteurization

- Planning correct sections for newborns.

Prophylaxy of nosocomial infections

when caring newborns

- Hand processing
- correct processing of the umbilical wound, skin and mucous membranes
- using gowns, masks, caps a
- The speech minimized
- Reducing the visits of foreigners
- The reduced number of diagnostic and curative interventions in newborns;
- The manipulation and procedures applied in the single-use instruments