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PNEUMONIA IN NEWBORN BABIES ON VENTILATORS

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Abstract:

Depending on the time and conditions of infection, neonatal pneumonia is divided into intrauterine and postnatal pneumonia, which can be out ofhospital, nosocomial, ventilator-associated, aspiration. Congenital pneumonia, difficult to distinguish from respiratory distress syndrome of newborns, a component of generalized infection of the fetus and newborn. According to the time of clinical manifestations, neonatal pneumonia is divided into early (1st week of life) and late (8-28th day of life). The etiology of pneumonia in newborns depends on the time, path and conditions of infection. Diagnosis of the disease in newborns is determined by the level and equipment of the clinic and is based on the detection of antenatal and postnatal risk factors, respiratory and general symptoms, radiographic signs, markers of systemic syndrome inflammatory reaction / bacterial infection and the results of etiological diagnosis. The deterioration of the newborn on a ventilator may be due not only toventilator-associatedpneumonia, but also to other fan-associated events (ventilator-associated condition; ventilator-associatedevent in children receiving antimicrobials), the causes of which may be pulmonary edema, atelectasis, acute respiratory distress syndrome, recent surgical procedures, sepsis, formation of bronchopulmonary dysplasia. For the initial therapy of early pneumonia of newborns, a combination of ampicillin with gentamicin is used. With late neonatal pneumonia that has arisen in the hospital, primary therapy must necessarily include antipseudomonas and antistaphylococcal antibiotics. For the treatment of community-acquired pneumonia in newborn children, antibiotics are prescribed that act on gram-negative bacteria (inhibitors of protected P-lactams, cephalosporins of the III generation, aminoglycosides).

Keywords: pneumonia, newborn children, congenital pneumonia, ventilator-associated withgenesis, ventilator-associatedpneumonia.

Pneumonia is an acute polyetiological infectious disease characterized by inflammation of the lung tissue distal to the terminal bronchioles with intraalveolar exudation, which is manifested by intoxication, respiratory failure, symptoms of damage to the lowerrespiratory tract (shortness of breath, cough, local physical changes) in the presence of infiltrative changes on the chest radiograph. clinical andradiological diagnosis of pneumonia, with mandatory X-ray confirmation. Congenital pneumonia - a disease that arose in the prenatal period of child development as a result of ascending infection through chorioamniotic membranes by the hematogenous (transplacental) route or with intranatal infection, usually manifests itself in the first 72 hours after birth. Congenital pneumonia is a consequence of infection of the fetus during pregnancy and is usually one of the components of a severe systemic infectious disease. Community-acquired pneumonia develops outside the hospital, as well as within 48 hours from the moment of hospitalization or 48 hours after discharge. Nosocomial pneumonia develops after 48 hours of hospital stay or within 48hours after discharge. Aspiration pneumonia is diagnosed in newborns when infiltrative changes in the lungs are detected during an X-ray examination in cases confirmed by laryngoscopy of aspiration of meconium, blood or milk. VAP is a type of nosocomial pneumonia that occurs in a patient who is at least 48 hours on artificial ventilation (ventilator). Early neonatal pneumonia develops within 1 week after birth and is associated with intrauterine or postnatal exposure to the pathogen or infection during passage through the mother's birth canal (intranatal infection). Early neonatal pneumonia is difficult to distinguish from sepsis, a respiratory distress syndrome of newborns.

The problem of nosocomial infections in newborns in recent years has become extremely important for all

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countries of the world due to their significant increase. The increase in the frequency of nosocomial infections is largely due to premature newborns in intensive care units, in which the most severenovelties with respiratory distress syndrome are concentrated. Among nosocomial infections in newborns, nosocomial pneumonia that develops against the background of artificial ventilation (ventilator), the frequency of which is especially high in newborns, is currently a serious problem. premature babies . Pneumonia in such children is characterized by a widespread nature of inflammation, high mortality (from 14% to 37.5%) and often (in 37%) it proceeds with bronchialstructural syndrome, which can also be one of the manifestations of chronic lung disease formed against the background of pneumoticdisease - bronchopulmonary dysplasia (BPD).

When studying infectious and inflammatory diseases in children, many authors attach great importance to pathological processes occurring at the cellular and molecular-genetic levels, in particular peroxidation processes. Premature babies have an undeveloped system of antioxidant protection and therefore an increased risk of damage to the cellular structures of the body by reactive oxygen species. The latter are generated through the use of high concentrations of oxygen in the inhaled mixture during ventilation, but also due to their formation by cells involved in the process of inflammation. The result of the damaging effect of reactive oxygen species are the initiation of lipid peroxidation (POL). POL leads to an increase in the permeability of the lipid biolayer of membranes, which causes theseparation of the processes of oxidation and phosforylation in the mitochondria, the consequence of which is the energy starvation of cells and their death. In addition, POL leads to a decrease in the stability of the lipid biolayer of the membrane, resulting in the development of electrical breakdown by its own membrane potential and to a complete loss of its barrier properties. Thus, The main links in the pathogenesis of the development of the fan of associated pneumonia in premature newborns are a deep insufficiency of both local and structural immunity against the background of the aggressive effects of nosocomial microflora and the state of oxidative stress caused by hyperoxia and infection. The clinical peculiarity ofbacterial ventilation-associatedpneumoniaand in premature newborns is the rapid development of the disease and the absence of specific clinical symptoms characteristic only of this pathology. Even with the development of a severe inflammatory process in the lungs, clinical signs in this category of patients are nonspecific, can be observed and changed as in infectious processes (pneumonia, common tracheobronchitis), and in non-infectious pathology (respiratory distress syndrome, aspiration syndrome, hypoxic-ischemic lesion of the central nervous system and others). The leading clinical symptoms include respiratory failure against the background of intoxication. Often this is manifested by pronounced oxygen dependence, which increases the duration of hardware ventilation.

Of the laboratory diagnostic criteria, in addition to inflammatory changes in the general blood test (leukocytosis or leukopenia, shift of the leukoformula to the left), biochemical markers of inflammation are used: C-reactive protein, procalcitonin. However, in premature newborns with bacterial pneumonia, the level of C-reactive protein does not increase at the beginning of the disease, but during the period of detailed clinical manifestations and in no more than 60% of children. This appears to be due to the immaturity of the body of premature infants and the weak response to massive bacterial colonization. A more sensitive marker of bacterial complications is procalcitonin.

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