

Clinical And Pathogenetic Significance Of Endogenous Intoxication In Children With Acute Pneumonia

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Summary. For quite a long time, various aspects of the diagnosis and prognosis of pneumonia in young children continue to be an urgent problem clinical pediatrics. So, according to WHO, this pathology is one of the main causes of infant and child mortality. Pneumonia kills more than million children, which corresponds to a figure of 17.5% in the structure death of children under 5 years of age. For clinicians and researchers, the problem of an increase in the number of complicated forms of pneumonia among young children remains relevant. The main reason, according to most authors, is the deterioration of the state of resistance of children in modern conditions, as a result of a pronounced intoxication syndrome, which is the more pronounced, the younger the child. The study of peripheral blood is the most reliable mediator of children's health assessment.

Key words: pneumonia, endogenous intoxication, the erythrocyte sedimentation rate

Introduction

Emerging changes in the body lead to immune disorders, which, in turn, contributes to the appearance of changes in reactivity and adaptive capabilities. The child's body, which indicate nonspecific resistance of the organism [6, 7]. The study of the leukocyte formula is of great scientific and practical importance in the diagnosis of most diseases, as well as for assessing the severity of the condition and the effectiveness of the therapy. To the most informative factors reflecting the degree the severity of endogenous intoxication (EI) and the actual the state of the adaptive capabilities of the body, in full measure can be attributed to the integral leukocyte index [8,9]. Its components are the parameters of the leukocyte formula and the erythrocyte sedimentation rate (ESR). In most cases, the pathological process is difficult, which contributes to the syndrome of intoxication, which has a pulmonary and extrapulmonary character. Therefore, the faster the degree of intoxication is recognized, the earlier it becomes possible to start timely correction and therapy, which directly affect the outcome of the disease [10].

Syndrome of endogenous intoxication (ESI) to the present time continues to be one of the most urgent problems of pediatrics [2]. About 90% of all pathological conditions in pediatrics occur against the background of endogenous intoxication. SEI includes a complex process related to biological activity of a large number of substances from various groups (urea, creatinine, intermediate products of the free radical oxidation process), which under normal conditions, they are excreted from the body [3,5].

The authors distinguish three components of SEI, in particular, microbiological, biochemical and immunological [6, 7].

Despite some progress in the diagnosis and treatment of pneumonia in general [1, 2], nevertheless, aspects related to clinical features and dynamics of changes in laboratory and biochemical parameters in pneumonia, accompanied by endogenous intoxication syndrome, are not up to end illuminated in the literature.

Purpose of the study

To study the clinical features of the course and the dynamics of some hematological indices in the syndrome of endogenous intoxication in children with pneumonia.

Material and methods

The studies are based on prospective observation and analysis of medical records of 80 children under the age of 3 years, of which the control group consisted of 20 practically healthy children. In the process of performing the work, the levels of milk and urinary acids and leukocyte index of intoxication (LII).

Results and its discussion

Condition of 89.4% of hospitalized sick children was assessed as severe, they mainly recorded signs of severe endogenous intoxication, respiratory failure (DN), changes in hemodynamic parameters and capillary disorders. Distribution of children by terms of admission to the hospital showed that during 69.4% of children were hospitalized during the first 6 days of illness, by the end of the first week - 22.5%, by the beginning of the second week - 8.1%.

In 65% of children, fever reached 38.5°C, rapid breathing occurred in 91.3% of cases, mild cough with poor sputum - in 88.2%, psycho-emotional lability - in 79.5% of patients; most of the children had little appetite.

Almost all children belonged to the group of frequently ill ARI (79.3%). As you know, the risk of developing frequent acute respiratory infections depends on the influence of ante- and intranatal factors, both endo- and exogenous. So, from the obstetric anamnesis, it was found that the threat of termination of pregnancy occurred in 57.3% mothers, pregnancy against the background of preeclampsia proceeded in 48.4%, with violations of the uteroplacental blood flow - in 46.1%. Extragenital diseases occurred in 41.6% of mothers, in 39.4% - pregnancy proceeded against the background of iron deficiency anemia, and in 35.3% - against the background of the pathology of the genitourinary system.

Most of the observed children (79.3%) were born physiologically, 12.5% - as a result of caesarean section, and in 8.2% of cases were provided with various obstetric benefits. AT 21.8% were born with asphyxia, 15.8% were born with low birth weight, and 56.8% of children were born with perinatal damage to the central nervous system of hypoxic origin.

Of the observed 58.6% of children from birth were on artificial feeding. At an early age, 56.2% patients were diagnosed with rickets, anomalies of the constitution (39.5%), ENT pathology (48.1%). The combination of these diseases occurred in 31.3% of cases.

The frequency of physical changes depended on the depth of lung tissue damage. In most cases (69.5%) had place the presence of a shortening of the percussion sound.

In the projection of the pathological process during auscultation, weakened breathing and crepitus were heard (61.6%). Virtually everyone children, the presence of wet, rarely dry, wheezing with an extended expiratory phase over the entire surface of the lung fields.

Oxygen dependence was established in all children, in 45.3% condition worsened during the first 2 days, which was the reason for admission to the intensive care unit and required mechanical ventilation. Upon enrolment in the hospital oxygen saturation was 75-85%. 60.5% children, on the basis of clinical and radiological data, a bilateral process in the lungs was diagnosed, in 39.5% - unilateral.

The revealed regularities allowed us to assume the fact that an increase in this parameter over 130 $\mu\text{mol/l}$ can serve as an unfavorable prognostic criterion in terms of convalescence. It is known that uric acid is the end product of the metabolism of purine bases, the breakdown of which is enhanced by hypoxia. The highest scores urate were registered by us at the height of the disease in patients with the most severe course of pneumonia in DN III, especially with lethal outcome.

Table data analysis. allowed us to accept the level of urate as the most accurate biochemical criterion for the severity of hypoxia in pneumonia. We found that the more pronounced DN, the higher the concentration of milk and urinary acids in the child's body. So, in children with DN I concentration lactic and uric acids differed slightly from healthy ones, this fact indicates a slightly pronounced syndrome of endogenous intoxication. However, in children with DN II and III levels of lactic and uric acids in relation to children control group statistically significant ($p < 0.001$) were higher, which indicates a fairly pronounced syndrome endogenous intoxication.

Another important criterion for the severity of endogenous intoxication syndrome is the leukocyte index intoxication (LII). We have calculated LII in 20 healthy children, and at the same time, normative (reference) values of LII were determined - from 1 to 3 conventional units.

Changes in LII in the acute period of the disease in children with pneumonia had a wave-like character (Fig.). The beginning of the increase in LII indicators was registered on the 2nd day and kept up to 5 days. On the 7th day, as complex intensive therapy was carried out, there was a tendency to decrease in LII, and by 12 days there was a statistically significant ($p < 0.05$) decrease to the level of the control group.

Conclusion

Syndrome of endogenous intoxication in children with pneumonia clinically manifested in the form of excessive sweating (59.4%), acrocyanosis (46.6%), perioral cyanosis (55.5%), marbling of the skin (49.2%) and severe subcutaneous venous network (48.2%). Dynamics of milk and uric acid depended on the severity of DN and indicated the severity of the endogenous intoxication syndrome. The indicator of LII in the acute period had a pronounced tendency to increase up to 5 days of the disease, and its decrease to level 3.0 arb. units by the end of the first week of illness, it was stated as a favorable prognostic sign.

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