



## Course of Outpatient Pneumonia in Children of Early Age Depending on the Premorbid Background

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**Abstract:** The article analyzes the current situation with antibiotic resistance in *S.pneumoniae*. Local (regional) data on the sensitivity of pneumococcus to aminopenicillins, macrolides, cephalosporins, traditionally used in empiric antibiotic therapy for community-acquired pneumonia in children under 5 years of age, are presented. The main principles of rational antibiotic therapy based on the analysis of modern domestic and foreign guidelines for the treatment of community-acquired pneumonia are outlined. Insignificant differences were noted in the schemes of empirical antibiotic therapy, due to the peculiarities of local resistance of *S.pneumoniae* in different states. The correctness of some provisions of empirical antibiotic therapy for community-acquired pneumonia in children of early and preschool age is discussed.

**Keywords:** children, community-acquired pneumonia, empiric antibiotic therapy.

Pneumonia remains one of the most common diseases of the respiratory system in children during the first three years of life. The increase in respiratory diseases is associated with the impact on the reactivity of the child's body of infectious diseases, a wide range of infectious pathogens, the state of the premorbid background, as well as the type of feeding of the child.

According to the World Health Organization (WHO), about 115 million cases of pneumonia in children are registered annually in the world, and about 1.4 million of them die before the age of 5 years. In the vast majority of cases, these deaths can be prevented by both preventive measures aimed at immunization, adequate nutrition, and elimination of environmental factors, as well as by providing all patients with pneumonia with rational care and nutrition [4].

The basis for the treatment of community-acquired pneumonia (CAP) is antimicrobial therapy, the strategy of which is one of the complex and not yet fully resolved issues of modern pulmonology [19].

For effective therapy, it is ideal to prescribe an antimicrobial drug that is most active against the established pathogen. However, in the overwhelming majority of cases, a correct microbiological study is not carried out at all, but even using a variety of modern research methods, it is possible to establish an etiological diagnosis only in half of the cases. At the same time, the epidemiological heading of pneumonia (community-acquired, nosocomial, intrauterine), introduced into domestic pediatric practice in 2010, has a clear practical focus and allows empirical selection of adequate antibacterial therapy immediately after diagnosis.

The principles that allow a rational approach to the choice of an antibiotic are summarized by P. Ball et al.: Treat only a bacterial infection with antibiotics; optimize the strategy through correct diagnosis and assessment of the severity of the disease; to maximize the eradication of pathogens from the source of infection; take into account local resistance data; use pharmacokinetic/pharmacodynamic indicators to select an effective antibiotic in an adequate dose; integrate local data on resistance, efficacy and economic feasibility into the therapy strategy [24].

It should be noted that for an adequate empirical choice of starting antibiotic therapy, in addition to epidemiological characteristics, a detailed analysis of the individual data of the child (age, background conditions, comorbidities) and ongoing preventive measures against H. influenzae type b and S. pneumoniae is also necessary.

The choice of an antibacterial drug for the treatment of CAP is determined by the etiology of the disease, which has certain age characteristics.

Pneumococcal infection is a problem in young children: the peak of pneumococcal carriage occurs in early childhood up to 2 years, while the carriage of pneumococcus in closed institutions reaches 50%; the prevalence of resistant strains among young children makes this population a dangerous reservoir of invasive pneumococcal infection [8]. Among the etiologically significant flora in CAP, S.pneumoniae occupies the first place (26–72%), H.influenzae is determined in 7.5–20% of patients [20, 22]. The unceasing flow of information about antibiotics contains messages about the wide spectrum of action of each drug, unlimited indications for its use and high therapeutic effect. However, the possibilities of these drugs are becoming limited, since in recent years there has been a rapid increase in the resistance of pathogens to the antibacterial drugs used throughout the world. Since the beginning of the 21st century, international resistance monitoring programs have revealed significant age-related differences in the proportion of S.pneumoniae strains with reduced sensitivity to penicillins and resistance to erythromycin if patients are stratified by age [37].

Currently, in 21 countries of the world, including Ukraine, a multicenter study of antibiotic resistance SOAR is being conducted. According to the results of the analysis of this study, in 2010–2012. in Ukraine, the most active antibiotics against S.pneumoniae were amoxicillin/clavulanate (100%), ceftriaxone (100%), levofloxacin (100%), lower activity was observed in cefuroxime (95.5%), oral penicillin (87.3%). The activity of macrolides decreased markedly: azithromycin (88.1%), clarithromycin (88.1%), erythromycin (88.1%). Only 9.7% of S.pneumoniae strains were sensitive to trimethoprim-sulfamethoxazole [29].

A multicentre prospective study of PeGAS (1999–2009) revealed the continued high activity of  $\beta$ -lactam antibiotics against pneumococci [7].

The highest sensitivity was found to meropenem (99.4%), ceftriaxone (98.9%), cefotaxime (97.8%), vancomycin (93.3%), chloramphenicol (90.6%), levofloxacin (89.5%), slightly lower - to cefuroxime (87.8%), penicillin (80.0%). A decrease in the sensitivity of S.pneumoniae to amoxicillin/clavulanate (67.3% of strains were sensitive, 28.3% moderately sensitive), erythromycin (67.3%), azithromycin (67.8%) was noted. Almost half of pneumococcal isolates were not sensitive to cotrimoxazole (43.3%), 100% were not sensitive to ciprofloxacin (natural resistance). 20% of penicillin-resistant strains of pneumococcus were detected, while 12.2% of isolates were double insensitive, 35% were multidrug-resistant. Children of different age groups were equally often carriers of multidrug-resistant strains of pneumococcus. Prematurity, protein-energy deficiency, chronic and recurrent respiratory diseases, chronic heart diseases, allergic diseases, primary immunodeficiency did not increase the risk of colonization of the nasopharynx by multiresistant strains of pneumococcus. The results obtained exceed the rates of resistance to penicillin (12.7%) established in children and adults during the SOAR multicenter study [13].

Rational feeding and nutrition is the most important condition for the harmonious growth and development of the child, and at the same time, one of the main problems of pediatric science and practice, which has not only medical, but also great social significance, is malnutrition in infants. Feeding children with the milk of any animal is an "environmental disaster" for the child. Only human milk, "white blood", is the gold standard for balanced nutrition and protection against many diseases.

**The purpose of this study** was to study the features of the course of pneumonia in infants in conjunction with the picture of the child's premorbid background.

**Material and methods.** Under our supervision were 80 children aged from 3 months to 2 years with the main diagnosis of pneumonia. The examined children, depending on the type of feeding of the

remorbid background, were divided into 3 groups: 30 children who were exclusively breastfed made up group I, group II - 25 children receiving mixed feeding, group III consisted of 25 children receiving artificial feeding. All children underwent a study of some indicators of the immune status in the acute period of the disease (the number of serum immunoglobulins JgA, JgM, JgG (g/l), the level of CD3, CD4, CD8, CD16, CD25, and CD20 lymphocytes).

**Result and discussion.** A more severe course of the disease in the form of segmental and polysegmental pneumonia was detected (based on X-ray examination of the lungs) in 50% of children on mixed and artificial feeding versus 30% of children in the 1st group. Complications of the underlying disease in the form of toxic carditis, toxic hepatitis, toxic nephritis, intestinal dysbacteriosis and anemia were also more often observed among children of the 2nd and 3rd groups. The above data were a prerequisite for shorter hospital stays for patients in group 1, a smaller amount of therapy and, accordingly, cost-effective treatment of children with pneumonia.

In children of groups 2 and 3, there was a more pronounced decrease in immune parameters (the relative number of T-lymphocytes, T-helpers and, accordingly, the immunoregulatory index (IRI). In addition, a decrease in the functional activity of the T-system was revealed (decrease in DM16, DM25, DM95). In the group of children who were breastfed, a pronounced increase in the concentration of all immunoglobulins, and especially IgA and IgG, was noted. In children of the 2nd and, especially, 3rd groups, the immune response was manifested by a decrease in IgM. ( $1.12 \pm 0.1$  vs.  $1.39 \pm 0.17$  in healthy children and  $2.11 \pm 0.6$  in children of the 1st group).

**Thus,** all examined children showed signs of an immunodeficiency state, more pronounced in children of groups 2 and 3. At the same time, significant disturbances were observed both in the T-cell link of the immune system and in the humoral link. A more pronounced allergic mood was also revealed with mixed, and even more so with artificial feeding. In the formation of an immunodeficiency state in children against the background of pneumonia, both isolated and combined damage to the immune system takes place. The combination of syndromes clearly affects the severity and nature of changes in the immune status.

## Bibliography

1. Тураев Т. Т. Особенности Острых Неотложных Состояний У Детей С Аллергией //Central Asian Journal Of Medical And Natural Sciences. – 2021. – Т. 2. – №. 5. – С. 160-162.
2. Temirovich T. T. Current issues in the treatment of acute complicated pneumonia in children //Web of Scientist: International Scientific Research Journal. – 2021. – Т. 2. – №. 06. – С. 148-154.
3. Temirovich T. T. Features of acute emergency in children with allergies //Web of Scientist: International Scientific Research Journal. – 2022. – Т. 3. – №. 1. – С. 126-132.
4. Ishanova B. Design and development of system to control, synchronize and coordinate multiple high-performance microvalves //Вестник. Серия Физическая (ВКФ). – 2014. – Т. 49. – №. 2. – С. 8-13.
5. Ishanova M. et al. Prevalence, prophylaxis and treatment principles of primary teeth erosion in children. – 2020.
6. Kh, Y. F., Ishanova, M. K., Akhmedov, A. B., Kodirova, M. T., Kh, D. E., & Utesheva, I. Z. (2021). Estimation of the diagnostic value of amino acid composition of oral fluid and blood serum in children with dental erosion and their effectiveness of pathogenetic treatment. *International Journal of Pharmaceutical Research*, 3155-3161.
7. Yakubova M. M. et al. Clinical and neurological aspects of multiple sclerosis during infection with covid-19 in uzbekistan //Central asian journal of medical and natural sciences. – 2021. – Т. 2. – №. 3. – С. 186-190.
8. Якубова М. М. Клинико-молекулярно-генетические показатели ишемического инсульта у лиц узбекской национальности в зависимости от полиморфизмов генов FII, FV, MTHFR //Клиническая неврология. – 2008. – №. 2. – С. 16-19.

9. Khuseynovna, Khuseynova Gulshan. "Morphometric parameters of the thyroid gland and physical development." *Биология и интегративная медицина* 2 (55) (2022): 5-13.
10. Khuseynova, Gulshan Khuseynovna. "Biology and iintegrative medicine." *Biology and iintegrative medicine Учредители: Малое частное предприятие «Магия здоровья»* 2: 5-13.
11. Khuseynovna, Khuseynova Gulshan. "Morphological Features of the Kidneys after Drug Correction of Moderate-Severe Cranio-Brain Injury." *Miasto Przyszłości* (2022): 19-22.
12. Kabilova, Gulshan. "General incidence with temporary loss of employment in silk milling plants." *InterConf* (2021).
13. Kobilova, Gulshan. "Modernization of production is a decisive factor of reducing the incidence of diseases in silk industries." *InterConf* (2021).
14. Атаева М. А., Баратова М. С., Кобилова Г. А. Вирусные гепатиты, осложненные кардиомиопатиями //Новый день в медицине. – 2019. – Т. 25. – №. 1.
15. Baratova, M. S., Ataeva, M. A., Yuldasheva, S. T., & Vohidov, U. G. (2020). Periodontal diseases in military age persons and arterial hypertension. *Asian Journal of Multidimensional Research (AJMR)*, 9(4), 111-113.
16. Baratova M. S., Atayeva M. A. The estimation of heart rhythm disturbances at the left atrial stunding on early stages of remodeling left ventricular //World medicine journal. – 2020. – №. 1. – С. 1.
17. Baratova M., Makhmudova M. Predictors of sudden death in patients with arterial hypertension //InterConf. – 2020.
18. Temirovich T. T. The importance of additives that cause respiratory failure in children with pinevmonia //Academicia Globe: Inderscience Research. – 2021. – Т. 2. – №. 6. – С. 219-224.