

PRINCIPLES OF THERAPY OF ACUTE BRONCHIOLITIS IN CHILDREN

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Abstract. Acute bronchiolitis is one of the most common lower respiratory tract infections in children and causes airway obstruction in 10%-30% of cases. In this regard, the aim of the study was to optimize the principles of therapy and enhance the prevention of recurrence of the disease. 54 children with acute bronchiolitis under the age of two were examined. The study revealed irrational use of antibiotics and incorrectly selected starting doses for children with acute bronchiolitis. Despite the existence of a large number of risk factors, in order to reduce the incidence of acute respiratory infections and bronchiolitis, breastfeeding should be recommended for at least the first 6 months of life. In case of bronchiolitis, antibiotic therapy is possible only in the presence of bacterial complications.

Introduction: One of the most common lower respiratory tract infections in children is acute bronchiolitis, which causes airway obstruction in young children with a frequency of 10% to 30% [1,2].

Infectious bronchiolitis is common in young children. By the age of three, almost every child is infected with the respiratory syncytial virus, which most often affects the lower respiratory tract. Every year, 7-13% of patients with acute bronchiolitis worldwide require inpatient treatment and 1-3% require hospitalization in the intensive care unit [3]. The role of the etiological factor in the development of the disease depends on the child's age, time of year, somatic status and a number of other factors [4].

Management of patients with acute bronchiolitis occupies a special place in pediatric practice due to the severity of the course and the tendency to relapse [5]. Repeated episodes of broncho-obstruction create conditions for the subsequent formation of chronic forms of allergic diseases of the respiratory tract, in particular, bronchial asthma [6]. An analysis of the literature indicates that antibiotics are not indicated for acute bronchiolitis, except in situations where there is a concomitant

bacterial infection or a strong suspicion of it [7,8]. The severe course of acute bronchiolitis, the tendency to relapses of broncho-obstruction, transformation into respiratory allergies, determine the need for further study of immune-dependent pathogenetic mechanisms, the deciphering of which will increase the effectiveness of treatment measures for obstructive complications in young children.

The aim of the study: based on the analysis of the treatment of children suffering from acute bronchiolitis, to optimize the principles of therapy and enhance the prevention of recurrence of the disease.

Material and methods of the study. 54 children with acute bronchiolitis under the age of two were examined. The patients were hospitalized in the I and II departments of emergency pediatrics of the Samarkand branch of the Republican Scientific Center for Emergency Medical Care in the period from January to December 2024. All patients were diagnosed based on standard clinical and laboratory data and instrumental research methods. A general blood and urine test, a biochemical blood test with determination of C-reactive protein, a blood gas test, oxygen saturation (SpO₂), chest X-ray, and a bacteriological examination of feces using a modified method by M.A. Akhtamova et al. (1979) were studied.

The following were used as markers of bacterial infection: leukocytosis above $15 \times 10^9/l$; neutrophilia above $10 \times 10^9/l$; neutrophilic index: the ratio of young forms of neutrophils (myelocytes, metamyelocytes, promyelocytes, band neutrophils) to mature forms (segmented neutrophils) more than 0.2; CRP above 5 mg/l.

RSV etiology of bronchiolitis was confirmed by polymerase chain reaction. The severity of broncho-obstruction was determined using the W. Tal scale (1996) [10]. To assess the severity of broncho-obstructive syndrome and determine indications for hospitalization [10], the M. H. Gurelick, S. B. Singh Scale (2001) was used, based on clinical and radiological data.

Research Results. Indications for hospitalization of children with bronchiolitis were: cases of apnea in the anamnesis; signs of respiratory failure of 2-3 degrees; age, premature babies; dehydration, and aggravated premorbid background. Our studies have shown a slight predominance of girls (61.1% - 33) over boys (38.9% - 21) ($p > 0.05$). A study of the anamnesis of life showed that sick children were born with a body weight of 2100 - 4400 g. 5-9.3% of premature babies had a body weight of less than 2500 g, and 3-5.7% of children were delivered by Caesarean section with a body weight of over 4 kg. The patients had a history of a number of risk factors for severe acute bronchiolitis: 6-11.1% of children were born from multiple pregnancies, 8-14.8% were born with intrauterine pneumonia. 28-51.9% of children were breastfed, 5-9.3% of infants were bottle-fed from birth, the rest - 21-38.9% of patients at the age of 2 months were transferred to milk substitutes. The largest number of patients with acute bronchiolitis - 24.1% (22) were admitted to hospital in February, 14.1% (13) - in

March, 18.5% (10) in November, while from May to October 16.7% (9) of children were hospitalized, which confirms the literature data on the increase in the incidence of PCB infection in late autumn, winter and early spring. According to the classification of respiratory failure by S.N. Avdeev (2007), a decrease in SpO₂ within 90-94% is assessed as respiratory failure of the first degree, 75-89% — respiratory failure of the second degree, and below 75% — respiratory failure of the third degree. Upon admission to hospital, respiratory failure of the first degree was diagnosed in 66.7% (36) of cases, respiratory failure of the second degree — in 24.1% (13) of patients, and respiratory failure of the third degree — in 9.3% (5) of patients. In this regard, the patients required oxygen therapy, of which 5 patients were on mechanical ventilation and received therapy in the pediatric intensive care unit.

All examined children had broncho-obstruction of varying degrees. According to the W.Ta1 scale (1996), severe broncho-obstruction was diagnosed in 7-12.9% of patients and moderate in 15-27.8% of children.

When assessing the severity of bronchiolitis using the scale of M.N. Gorelick, S.B. Singh (2001), the average score in the sample was 6.71 ± 0.22 , the distribution of scores was as follows: 4-7.4% of children had 4 points, 6-11.1% of patients had 5 points, 16-29.6% of patients had 6 points, 14-25.9% of children had 7 points, 8-14.8% had 8 points, and 6-11.1% of patients had 9 points. In the blood of patients, leukocytosis above $15 \times 10^9/l$, neutrophilia more than $10 \times 10^9/l$ were observed, and every third patient had an increase in the level of CRP.

In 2 children, the chest X-ray was practically unchanged; in the remaining patients, various combinations of increased pulmonary markings, signs of emphysema, hypoventilation, and interstitial edema were detected.

In children under 3 months of age, the disease lasted longer (12.48 ± 1.08 days), a shorter duration (7.71 ± 0.60 days) was recorded at the age of 5-6 months. Patients stayed in hospital for an average of 10.09 ± 0.71 bed/days.

Studies have shown that the development of acute bronchiolitis is varied and, under the influence of external and internal factors, it occurs with varying degrees of severity - from mild to life-threatening, accompanied by respiratory failure, which requires hospitalization in the intensive care unit.

Long-term repeated courses of antibacterial and hormonal therapy, the presence of concomitant pathology contributed to the weakening of non-specific and adaptive immunity in sick children.

In children with acute bronchiolitis, a microbial imbalance and bacterial colonization of the intestine with opportunistic flora have been identified, which indicates the need to use eubiotics from the first days of the disease.

The main goal of bronchiolitis therapy is to normalize the function of external respiration. It is important to ensure the patency of the upper respiratory tract. In severe

cases (with respiratory failure of stage II and higher), oxygenation and oral hydration are performed.

The patients received inhalation therapy. The effect was achieved in 10-20 minutes (increase in SaO₂, decrease in respiratory rate by 10-15 per 1 minute, decrease in the intensity of wheezing, decrease in intercostal retractions, relief of breathing), which justified continuation of inhalation therapy until the disappearance of respiratory failure.

Sodium chloride in the form of inhalation through a nebulizer is not accepted by all researchers, but it is recommended by the American Academy of Pediatrics (AAP) for children hospitalized for bronchiolitis [9].

It was established that all children with acute bronchiolitis received antibacterial therapy in hospital conditions. However, only in 10 cases were there justified indications for this. All patients used the injection route of antibiotic administration; the stages of their use were not noted in any case.

In addition, 6 children received the same antibiotic at the same time; and in 8 cases, the antibacterial drug was replaced on the 3rd day of hospitalization, which is probably associated with superinfection. As a starting therapy, the overwhelming majority of 6 children received the "gold standard" antibiotics, cephalosporins of the third generation - cefotaxime, and in most cases, cephalosporins of the first generation - cefazolin.

The most effective method of treating acute bronchiolitis is primary prevention. Particular attention should be paid to identifying and eliminating risk factors [1,2] for the development of the disease, such as treating community-acquired respiratory viral infections, reducing the risk of aspiration by changing lifestyle [6].

The results obtained in practical medicine will contribute to improving the quality of medical care, reducing medical diagnostic errors, and developing an individualized approach to the treatment of children with acute bronchiolitis accompanied by broncho-obstruction.

Conclusions. The study revealed: irrational use of antibiotics, incorrectly selected starting doses in children with acute bronchiolitis. In bronchiolitis, antibiotic therapy is possible only in the presence of bacterial complications.

Despite the existence of a large number of risk factors, in order to reduce the incidence of acute respiratory infections and bronchiolitis, breastfeeding should be recommended for at least the first 6 months of life.

1. Azimova K.T., Garifullina L.M. Risk factors for severe acute bronchiolitis in young children Journal of Problems of Biology and Medicine No. 2 (142), 2023 Pp. 25-31

2. Azimova K.T., Garifullina L.M. Bolalarda Ytkir bronchiolitis diagnostics of clinical practice roles Journal of Biomedicine and Practice Vol. 8, No. 6, 2023 Pp. 196-202
3. Ovsyannikov D. Yu. (2010). Acute bronchiolitis in children. Proc. prakt. Pediatrics, 5 (2), 75-8470.
4. Ovsyannikov D. Yu. co-authors. (2015). Lower respiratory tract infections of respiratory syncytial virus etiology in premature infants and children with bronchopulmonary dysplasia Children's infections, (3), pp. 5-10
5. Zakirova B.I., Lim M.V., Shavazi N.M. et al. Broncho-obstructive syndrome: prognostic significance of intestinal dysbiosis in its development. 2020, Journal of Achievements of Science and Education. Issue 10 (64). Pages 83-85.
6. Shavazi N.M., Lim M.V., Lim V.I., Ruzikulov B.Sh., Azimova K.T. Use of inhalations of 10% acetylcysteine in children with acute obstructive bronchitis. 2020, Journal of Issues of Science and Education, Issue 35 (119), Pages 14-18
7. Risk Factors for Bronchiolitis-Associated Deaths Among Infants in the United States / R.C. Holman [et al.] // *Pediatr Infect Dis J.* - 2003. - № 22, Vol.6. - P. 483-490
8. Martinez F.D. Respiratory syncytial virus bronchiolitis and the pathogenesis of childhood asthma / F.D. Martinez // *Pediatr Infect Dis J.* - 2003. - №22. - P. 76-82;
9. Paediatric Respiratory Medicine. ERS. Handbook. 1st Edition Editors E. Eber, F. Midulla. 2013. 719 p.
10. American Academy of Pediatrics. Respiratory syncytial virus. In: Pickering LK editor(s). Red Book: 2012 Report of the Committee on Infectious Diseases. 29th Edition. Elk Grove Village: Churchill Livingstone, 2012:609-18