

PNEUMONIA IN CHILDREN WITH CONGENITAL DEFECTS: COURSE, TREATMENT, PREVENTION, PROGNOSIS AND MODERN SOLUTIONS

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Annotation. *This article examines the course, diagnosis, treatment, and preventive measures of pneumonia in children with congenital defects. Factors such as congenital heart defects, immunodeficiency, and airway anomalies can exacerbate the development of pneumonia. It is also noted that in such children, the infection lasts longer, antibiotic-resistant forms are observed, and there is an increased risk of complications.*

Key words: *pneumonia in children with congenital malformations, Immune deficiency, Respiratory tract abnormalities, Antibiotic resistance, Complications of pneumonia.*

INTRODUCTION

Pneumonia is a serious disease characterized by infectious inflammation of the lung tissue, which is especially severe in children with congenital malformations. In such children, developmental anomalies of the respiratory tract, defects in the cardiovascular system, weakened immunity, stagnation in the small blood circulation, poor blood circulation, and malnutrition can cause a severe course of the disease. This article provides detailed information about the course, treatment methods, preventive measures, and prognosis of pneumonia in children with congenital malformations.

1. The course of pneumonia in children with congenital defects.

Pneumonia in children with birth defects may last longer, be more severe, and recur more frequently than in normally healthy children. This is due to the following factors:

1. Respiratory system anomalies - congenital defects in the development of the trachea, bronchi, and lungs make it difficult to clear sputum and accelerate the development of infection.

2. Decreased immunity - children with weak immune systems are more susceptible to bacterial and viral infections.

3. Cardiovascular system diseases - children with heart defects may have impaired pulmonary circulation, which leads to a severe course of pneumonia.

4. Pneumonia is more common and lasts longer in children born with metabolic and genetic diseases - for example, cystic fibrosis or connective tissue dysplasia.

5. In children with congenital defects, malnutrition, delayed physical development, and abnormalities of the gastrointestinal system weaken their ability to fight disease.

Clinical Signs of Pneumonia

Temperature rise to 38-39°C - in children with congenital malformations, the body temperature rises to a febrile level and its elimination is somewhat difficult. In particular, infusion therapy is limited in patients with congenital heart defects. In premature and malformed children, low body weight and sensitivity to antipyretic drugs are important. Shortness of breath, rapid breathing (tachypnea) - in premature infants. Patients often have severe symptoms of obstruction due to the fact that the causative agent is often viral in etiology, the bronchi and bronchioles have a narrow mucous membrane and strong secretions. In addition, if the patient has abnormalities in the cardiovascular system and the central nervous system, he is very susceptible to respiratory failure.

Cough (first dry, then with phlegm) - usually in the first 2-3 days of the disease, the cough in children is dry and painful. In this case, the patient is observed with discomfort and crying when coughing. After the 4th day of the disease, patients begin to cough up phlegm. Sputum discharge is important for young children, premature babies, patients with defects in the central nervous system and cardiovascular system. Because phlegm aspiration is often observed in this category of patients. Chest pain is often an active complaint in older patients. In younger patients, a painful cough is also observed if the etiology of the disease is viral. Blueness of the lips and fingers (cyanosis) is the most common clinical sign, especially in children with heart defects. Especially in cyanotic defects. In them, venous blood mixes with arterial blood even without pneumonia. In pneumonia, the oxygen supply of the blood is reduced due to lung disease and obstruction.

2. Treating Pneumonia

Because pneumonia can be complicated in children with congenital defects, the treatment approach must be individualized. The main treatment methods are:

Treatment depending on the cause of the disease: Bacterial pneumonia - antibiotics (penicillins, cephalosporin, macrolides) are prescribed. Initially, when the patient is admitted to the hospital, a bacteriological smear is taken from the patient. Alternative antibacterial therapy is prescribed until the results of the analysis are available. When prescribing antibacterial therapy, laboratory analysis results, i.e. leukocytosis in the blood, the patient's age, common bacteria in the region of residence, previous antibacterial therapy, and the patient's age are taken into account.

Viral pneumonia - antiviral drugs (interferons, oseltamivir) are recommended. When prescribing antiviral drugs, the patient's concomitant diseases should be taken into account. toxicity of antiviral drugs is especially important in patients with liver disease.

Fungal pneumonia - antifungal drugs (fluconazole, voriconazole) are used. Antifungal drugs may also be recommended, taking into account the possibility of an

increase in the number of fungi in patients who have received multiple antibacterial treatments.

Symptomatic treatment - Oxygen therapy to relieve shortness of breath - In any patient with respiratory failure, oxygen saturation of the blood should be determined and monitored. If the SpO₂ is below 90%, humidified oxygen should be administered using a nasal cannula. The oxygen level is increased until the patient's cyanosis disappears and the SpO₂ rises above 90%. This hypoxic state disrupts tissue metabolism. The fastest and most frequent cause of brain damage is brain damage.

Mucolytics and expectorants (ambroxol, acetylcysteine) to liquefy and expel sputum - used with caution in premature infants and patients on constant bed rest. Excessive sputum production can lead to aspiration.

Bronchodilators (salbutamol, ipratropium bromide) are usually effective in opening up narrowed airways. In some cases, discomfort and side effects may occur in younger patients.

Vitamin therapy to support immunity (vitamins C, E, D, zinc) - during acute inflammation, the immune system becomes active. As a result of hypoxia, metabolism in the body is disrupted, free radicals accumulate and have a toxic effect. Vitamin therapy mainly cleanses the body of free radicals with vitamin C. It actively participates in the functioning of the primary and secondary immune systems. Vitamin E is important for oxygen metabolism in tissues. It has an antioxidant effect.

Physiotherapy and Care-nebulizer inhalation are very effective in case of obstruction. In addition, with this method, various drugs, antibiotics, hormonal drugs can be administered directly into the bronchi and respiratory tract. In care, isolating children, providing them with moist and clean air, and nutritional nutrition help the patient recover faster and without complications.

Chest massage improves blood circulation in the lung tissue and helps to expel phlegm. Respiratory gymnastics increases the vital capacity of the lungs and eliminates shortness of breath to a certain extent.

Drink plenty of fluids to maintain water balance - intravenous infusion is limited in pneumonia, especially in severe respiratory failure, congenital heart disease, kidney disease. In such cases, water balance can only be corrected orally. Restoring water metabolism improves blood circulation and prevents ischemia.

Antipyretics (ibuprofen, paracetamol) to reduce fever - in children, lowering the body temperature is prescribed if the patient's temperature is higher than 37.8C, if it causes discomfort to the patient, that is, if the child is constantly restless, does not eat, does not drink fluids, does not sleep. In this case, Paracetamol is prescribed at a dose of

15mg/kg and is recommended to be administered at intervals of no less than 8 hours. Also, when prescribing antipyretic drugs, it is important to remember the patient's risk of hypothermia and blood clotting.

3. Preventive Measures - Prevention of pneumonia is very important, especially for children with birth defects. The following preventive measures should be followed:

Vaccination - Pneumococcal vaccine (PCV13, PPSV23)

Flu vaccination (annually)

Immunization against RSV (Respiratory syncytial virus) is important for children at risk

Prevention of infection.

Wash hands frequently.

Protecting your child from cigarette smoke and dust
Avoiding crowded places during the season of viral infections
Strengthening immunity
Proper nutrition, adequate intake of vitamins and microelement
Physical activity and outdoor activities.

4. Prognosis

The prognosis of pneumonia in children with congenital defects depends on their underlying disease and response to treatment. Good prognosis - If the birth defects are mild and treatment is appropriate, children can make a full recovery. Preventing recurrence of pneumonia through good care and prevention can be obtained. Negative prognosis - In children with severe heart or lung defects, pneumonia can recur frequently and be accompanied by complications. The mortality rate for pneumonia is 1%. However, this figure is higher in children with congenital defects. This is a life-threatening condition for them. While the incidence of pneumonia in patients with heart defects is 80%, severe consequences in these patients are 30%. These consequences range from death to pyopneumothorax, pleurisy, hydrothorax, and fibrosis. It can cause sepsis, respiratory failure, and pulmonary fibrosis in immunocompromised children.

CONCLUSION

Pneumonia in children with congenital defects can be more severe, last longer, and be complicated by various complications than in normal patients. Defects related to the heart, respiratory tract, and immune system in particular have a negative impact on the course of pneumonia. Therefore, it is important to make an early diagnosis, develop an individual treatment strategy, and strengthen preventive measures in such children. Treatment requires the effective use of antibiotics, symptomatic therapy, and immune-supporting agents. Vaccination, hygiene, medical supervision, and immune-boosting are important factors in prevention. In general, effective treatment of pneumonia in children with congenital malformations requires constant monitoring by medical specialists, an

individual approach, and comprehensive preventive measures. These measures help improve the quality of life of sick children and reduce the consequences of the disease.

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