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PNEUMONIA IN CHILDREN

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Abstract
Pneumonia in children remains a serious public health problem, requiring the introduction of new approaches to diagnostics. Modern research emphasizes the importance of a combination of clinical, laboratory and radiological methods. According to the World Health Organization, millions of cases occur each year, especially among infants and young children. The persistent high level of morbidity and mortality determines the relevance of the problem.

Keywords: Streptococcus pneumoniae, etiology, pathogenesis, laboratory diagnostics, instrumental diagnostics, prevention.

Introduction

Acute respiratory infections are one of the most common diseases among children and adolescents worldwide. Pneumonia caused by infectious agents is a dangerous disease of the lower respiratory tract that can be fatal. The etiology of pneumonia in children is a complex and multifaceted process that includes many factors. The most common pathogens are viruses, bacteria and, in rare cases, fungi. Viral infections such as respiratory syncytial virus and influenza are leading causes of childhood pneumonia, causing inflammation and blockage of the airways. Bacterial pathogens, including Streptococcus pneumoniae and Haemophilus influenzae, often follow viral infections, worsening the condition [4,7,12].

Exposure to environmental factors such as air pollution, passive smoking and inadequate vaccination significantly increases the risk of developing pneumonia. Children's vulnerability to infections is explained by their immature immune system, which makes preventon and timely diagnosis especially important.

The pathogenesis of pneumonia in children is a multi-stage process involving various factors, ranging from the effects of pathogenic microorganisms to the individual characteristics of the child's immune system [2,8,15]. In younger children, whose immune systems are not yet fully developed, pneumonia can develop rapidly, requiring immediate intervention. The risk of

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developing severe forms of the disease increases in the presence of predisposing factors such as prematurity, chronic diseases or poor socioeconomic conditions.

Symptoms of pneumonia can vary depending on the age of the child, but the most common signs include fever, cough, shortness of breath, and difficulty breathing. The child may complain of chest pain, fatigue and general weakness. When pneumonia occurs, there is also an increase in heart rate and a change in skin color, which may take on a bluish tint. In some cases, children may experience vomiting and a reluctance to eat, which worsens their condition. It is important to note that symptoms may be less severe in infants, so parents should be aware of any changes in their baby's behavior, such as fussiness or refusal to feed [3,9,10].

Laboratory diagnostics of pneumonia in children is an important step in the process of early detection and effective treatment of this disease. The main goal of diagnostics is to determine the causative agent of the infectious process and assess the severity of the patient's condition. To begin with, a general blood test is performed, which helps to establish the presence of an inflammatory process, revealing leukocytosis and an increase in the level of C-reactive protein.

Microbiological testing, including sputum culture and nasopharyngeal swabs, helps identify bacterial agents, while PCR testing can provide information about viral or mycoplasma infections. In addition, blood gas testing provides information about the degree of respiratory failure. The combination of these laboratory diagnostic methods allows doctors not only to confirm the diagnosis of pneumonia, but also to choose the optimal therapeutic strategy for each child [5,14]

Instrumental diagnostics of pneumonia in children plays a key role in the timely and accurate detection of the disease. The most common method is chest X-ray, which allows visualization of inflammatory changes in the lungs. It helps differentiate pneumonia from other diseases such as bronchitis or pleurisy due to the clarity of the images showing areas of darkening or consolidation of the lung tissue. In addition, ultrasound examination of the lungs is actively used to assess the condition of the pleura and the presence of fluid in the pleural cavity. This method is safe and non-invasive, which makes it particularly attractive for children. Ultrasound can help diagnose complications of pneumonia, such as pleural effusion [6,11].

Computed tomography (CT) is used less frequently, but in complex cases it provides more detailed images and helps determine the extent of lung tissue damage. It is important to note that the choice of diagnostic method always depends on the clinical picture and condition of the patient, as well as the age of the child and the presence of concomitant diseases.

Prevention of pneumonia in children is an important task that requires a comprehensive approach. The main measures to prevent this disease are vaccination, compliance with hygiene standards and strengthening the immune system. Vaccination against pneumococcal infection and influenza helps reduce the risk of developing pneumonia, especially in young children who are more susceptible to infections. Strengthening the immune system also plays a key role. Proper nutrition, rich in vitamins and minerals, physical activity and hardening will help the body resist infections [11,13,14].

Conclusion

Thus, early diagnosis and prevention of pneumonia in children is not only relevant, but also necessary to reduce morbidity and improve the overall health of the younger generation.

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