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Causes of Pneumonia in Children and Modern Possibilities of Prevention

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Abstract: Pneumonia in children is an acute infectious lesion of the lung parenchyma and close functional structures of the respiratory system. Pneumonia in children is accompanied by general intoxication, coughing attacks and impaired gas exchange in the lungs. Diagnosis is made during examination: examination, auscultation, laboratory tests and hardware studies. Therapy for pneumonia in children includes the use of drugs with antibacterial, bronchodilator, antipyretic, mucolytic and antihistamine effects. Physiotherapy treatments, exercise therapy and massage are recommended to restore the body's strength after the acute phase.

Key points: Classification of pathology, Symptoms of pneumonia in children, Diagnosis of the disease, Treatment of pneumonia in children, Prognosis, Prevention.

The information in this section cannot be used for self-diagnosis and self-treatment. In case of pain or other exacerbation of the disease, diagnostic tests should be prescribed only by the attending physician. You should contact your doctor for a diagnosis and to prescribe the right treatment. In order to accurately evaluate the results of your analyzes over time, it is preferable to conduct research in the same laboratory, because different laboratories may use different research methods and units of measurement to conduct the same analysis.

general information

Pneumonia in children is an acute infectious inflammatory process of the lower respiratory tract, which is accompanied by the formation of an infiltrate in the lungs. The highest rate of pneumonia in children occurs during the epidemic season of acute respiratory infections. Preschool children are at risk due to the immaturity and weakness of the immune system, they get pneumonia; At the first signs of pneumonia, the child should be shown to the doctor as soon as possible. Diagnostic methods and treatment plans are determined by a pulmonologist in some cases, consultation with an infectious disease specialist is indicated;

The etiological factors of the infectious process include the activity of various pathogens: bacteria, viruses, fungi, protozoa. Childhood pneumonia is one of the life-threatening pathologies, which includes the risk of developing severe complications with the possibility of subsequent death.

Causes of pneumonia in children

The proportion of pneumonia caused by a virus is pathogenic bacteria in 80% of episodes; Ways of infection are related to the age of the child and environmental factors. Newborns suffer from pneumonia of intrauterine etiology and are prone to nosocomial infection. The causative factor of congenital pneumonia in children is herpes virus of the first and second type, chicken pox, cytomegalovirus and chlamydia. Intrahospital infection occurs with streptococci and staphylococci, Escherichia coli and Klebsiella. Pneumonia in children often appears as a complication against the background of acute respiratory viral infections (including influenza), croup, measles, etc. With

pneumonia in children, infection with the causative agent of pneumonia occurs through the air, through air droplets.

The causes of pneumonia in young children include the activity of the pathogenic microflora of the upper intestine (Escherichia coli, Enterobacter). Schoolchildren often have atypical pneumonia developed as a result of the introduction of mycoplasma and chlamydia into the body.

When swallowed, infected pathological secretions are thrown into the bronchus, and the infection affects the bronchioles. The function of pulmonary microcirculation is disturbed, infiltration areas are formed in lung tissue, gas exchange becomes pathological, respiratory acidosis and respiratory failure develop.

Risk factors for pneumonia in children:

premature birth

weak immunity

low weight

stressful environment

hypothermia

the presence of chronic infection foci in the oropharynx

the presence of chronic pathologies outside the lungs.

The cause of pneumonia in babies can be aspiration due to regurgitation after feeding, gastroesophageal reflux, vomiting.

Nosocomial infection is associated with medical procedures performed on a child. Tracheal aspiration, bronchial washing, inhalation, bronchoscopy and mechanical ventilation are associated with the risk of spreading pathogenic microflora from the upper respiratory tract to the lower respiratory system.

Classification of pathology

Pneumonia in children

When classifying pneumonia in pulmonological practice, the specific clinical appearance of one or another form of pathology, the circumstances of infection, and morphological signs of childhood pneumonia determined by radiography are taken into account; severity, duration, causes and conditions of the occurrence of pneumonia.

Taking into account the site of infection, childhood pneumonia is divided into:

outside the hospital (at home);

in-hospital (hospital);

congenital (intrauterine).

Pneumonia at home is manifested as a complicated course of an acute respiratory viral infection. Nosocomial pneumonia occurs within three days after the child is hospitalized and in the first days after returning home. Hospital-acquired pneumonia in children is more severe and full of complications than other types of pneumonia. This is because nosocomial flora is resistant to antibiotic therapy. Congenital pneumonia is pneumonia, the symptoms of which appear in the first three days of a child's life, and pneumonia in the neonatal period.

According to etiology, childhood pneumonia can be viral, bacterial, fungal, parasitic, mycoplasma, chlamydia, mixed flora.

Childhood pneumonia can occur in uncomplicated and complicated forms. The complex form is fraught with increased respiratory failure, pulmonary edema, purulent-inflammatory events in the pleura and lung tissue, extrapulmonary foci of sepsis, and disorders of the cardiovascular system.

Pneumonia in children occurs in acute and long-term forms. Recovery time for acute pneumonia is four to six weeks. Prolonged pneumonia is considered pneumonia in which the symptoms of pneumonia persist for more than one and a half months.

According to X-ray morphological features, childhood pneumonia is divided into focal (focal-confluent), lobar, segmental, and interstitial categories.

Symptoms of pneumonia in children

The clinical manifestation of childhood pneumonia of focal type appears at the end of the first week of acute respiratory viral infection. The initial stage of the disease is characterized by signs of general intoxication of the body with exogenous toxins:

fever;

weakness;

insomnia;

pale skin;

loss of interest in food;

in babies - belching, vomiting.

Respiratory syndrome in childhood pneumonia is characterized by wet or dry cough, shortness of breath; The result of superficial ventilation of the lungs is respiratory acidosis. The focal form of the pathology is characterized by a severe course of the disease with respiratory dysfunction and signs of exogenous poisoning with toxins. Focal confluent pneumonia is accompanied by the risk of pleural inflammation or bacterial lung destruction (BDL).

Symptoms of segmental pneumonia in a child: fever, intoxication and respiratory failure. Regenerative processes in affected tissues last several months. At the final stage of the inflammatory process, the collapsed areas of the lungs can be replaced by scar tissue and bronchiectasis.

The clinical manifestation of the lobar form of the pathology begins with a set of bright symptoms: severe hyperthermia and shivering, pain when breathing and coughing, pathologically colored sputum and a clear lack of gas exchange function of the lungs. Often, childhood pneumonia is accompanied by abdominal pain, vomiting and acute abdominal syndrome.

With interstitial pneumonia, in addition to the set of symptoms characteristic of childhood pneumonia, there are specific signs: weakened and shallow breathing, right ventricular heart failure.

Diagnosis of the disease

Clinical diagnosis of pneumonia in children is based on general symptoms, auscultatory disturbances in the lungs and X-ray data. X-ray of the lungs allows to identify infiltration or interstitial foci.

Diagnosis of the etiological factor of the pathology includes the study of the bacteriological flora of the discharge from the nasopharynx and bronchi; methods of virological analysis.

Blood tests reflect the nature of the infectious process: excess leukocytes, neutrophils, ESR. In case of severe pneumonia, a detailed biochemical analysis of blood components is prescribed. The efficiency of gas exchange in the lungs is monitored using pulse oximetry.

It is important to distinguish pneumonia in children from acute respiratory infections, bronchitis, tuberculosis and cystic fibrosis. A pediatrician can usually diagnose childhood pneumonia; If the diagnosis is suspected, the child should be referred to a pediatric pulmonologist or tuberculosis specialist. Computed tomography of the lungs, fibrobronchoscopy and a number of other examinations are recommended.

Treatment of pneumonia in children

The grounds for hospitalization of a child with suspected pneumonia are:

age up to three years;

damage to several lobes of the lungs;

severe respiratory failure;

pleural infection;

severe encephalopathy;

weight loss;

congenital defects of the heart and blood vessels;

chronic pathologies of lungs and kidneys;

immunodeficiency states.

During fever, the child is prescribed rest and bed rest, a balanced diet and plenty of fluids.

The current approach to treating pneumonia in children is a combination of empiric and subsequent etiotropic antibacterial therapy. If the use of the selected antibiotic does not give the expected results within two days, the selected original drug is changed to another antibiotic.

In the complex treatment of pneumonia in children, drugs from the following groups are prescribed:

antipyretics;

mucolytics;

bronchodilators;

antiallergic drugs.

After eliminating the acute stage of pneumonia, treatment with physiotherapy, massage and exercises is recommended to accelerate the regeneration process.

Prognosis

With correct diagnosis and successful treatment, the outcome of childhood pneumonia is positive. Painful conditions with pneumonia caused by microorganisms resistant to antibiotics can be completely eliminated. The result of the course of pneumonia in children lasting up to three years is the risk of the formation of chronic bronchopulmonary pathologies.

Prevention

Preventive measures for pneumonia in children include good care of children, hardening procedures, prevention of acute respiratory viral infections, timely treatment of ENT pathologies and vaccination before the flu season. A child with pneumonia should undergo mandatory pediatric follow-up and registration in the year following the episode of pneumonia. It is recommended to examine the child by a pediatric pulmonologist, a pediatric allergist-immunologist, and a pediatric otorhinolaryngologist.

Pneumonia is a pathological process that develops as a result of the pathogen entering the lower respiratory tract. Most often, the causative agent of an infection is a bacterium or a virus; etiology is a decisive factor in determining the infectiousness of childhood pneumonia. The nature of the pathogen and its spread determine which type of pneumonia is more common in the population. An important factor in determining the risk of infection is the child's individual immunity. If the child's immunity is able to resist the infection, the course of pneumonia does not differ from seasonal ARVI, or the child is not infected at all.

How to distinguish pneumonia from a cold or flu?

In fact, the early stages of pneumonia in children are symptomatically similar to the clinical presentation of acute respiratory viral infections, acute respiratory infections and influenza. It is not appropriate to differentiate these pathologies by themselves. The diagnosis should be made by an experienced pediatrician or pediatric pulmonologist. Chest X-ray is the "gold standard" for diagnosing pneumonia in children. Timely diagnosis and correctly selected treatment will allow you to quickly and completely recover without the risk of dangerous complications or complete elimination of pneumonia in a child.

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