

## Efficacy of Lincomycin in Chronic Hematogenous Osteomyelitis in Children

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**Abstract:** Osteomyelitis in children is a pathological condition in which purulent damage is caused to all bone structures, as well as to the bone marrow, along with the surrounding tissues. The disease in childhood is characterized by an acute onset, rapid development of symptoms and severe pain. Pediatricians, pediatric orthopedic traumatologists, surgeons and other specialized specialists are involved in identifying the symptoms of bone osteomyelitis in children, searching for its causes and treating it.

Most of the cases detected are between 6 and 14 years of age. At an early age, the main peak is observed in children under one year of age, and boys are twice as likely to have osteomyelitis than girls.

Pathology can cover any type of bone structure, but it is mainly diagnosed with damage to tubular femoral, humerus and less common tibial bones. Childhood osteomyelitis is one of the most dangerous diseases of the musculoskeletal system: the probability of various complications, disability and even death of the child is very high.

**Key words:** Osteomyelitis, treatment, etiology, prevention

Experts distinguish two main forms of the disease: hematogenous (endogenous) and exogenous. Hematogenous osteomyelitis is the result of transmission of infection through the bloodstream, and the initial focus can be any acute or chronic inflammation. The hematogenous form of the disease is up to 80% of the total number of cases.

In the classification of exogenous osteomyelitis in children, three subtypes are distinguished:

post-traumatic - appeared after open or closed fractures;

postoperative - develops after various types of surgical interventions (osteosynthesis, bone grafting, etc.);

contact - appears against the background of deep purulent lesions of soft tissues (these include abscesses, phlegmons, boils).

In childhood, two more variants of pathology, shooting and atypical osteomyelitis, are very rarely detected.

Taking into account the spread of symptoms, three forms of the disease are distinguished:

septic-pyemic;

local;

septic.

According to the nature of the pathology, it can be acute or chronic. In most cases, osteomyelitis first appears in an acute form and then becomes chronic.

### **Symptoms**

Clinical presentation depends on the type and duration of the disease.

Symptoms of acute hematogenous osteomyelitis in children with septic-pyemic form:

a sudden increase in temperature of 39 degrees and above;

strong weakness;

severe headache;

nausea with vomiting;

dry, pale skin;

blue discoloration of mucous membranes;

decrease in blood pressure;

rapid pulse.

In some children, poisoning is so severe that they can lose consciousness. In some cases, convulsions, hallucinations and delusional states are observed.

Such symptoms last for 2-3 days, after which they subside a little, and sharp, painful, sometimes cramping pain comes to the fore in the affected bone area. The pain syndrome is severe, grows slowly and causes real suffering to the child. Any movement causes a new attack of pain, so children literally freeze and try not to move at all.

Discomfort and pain in the area of infection with local hematogenous osteomyelitis in a child are the leading symptoms. It is difficult to move, mainly children complain of pain in the bones. General symptoms of intoxication are mild.

With the septic form of the pathology, the complex of symptoms characteristic of severe toxicosis comes to the fore. The child has dizziness, nausea, headache and muscle pain. The temperature does not rise much, but the condition quickly worsens, heart failure increases, electrolyte imbalance is disturbed. With this form of osteomyelitis, death is possible even before the onset of bone pain, especially in newborns.

The main symptoms of exogenous osteomyelitis of the post-traumatic and postoperative type in childhood:

redness and swelling of the skin in the area of infection;

headache;

increase in body temperature to 38-39 degrees;

formation of pus in the wound.

The pain gradually increases, but the pain syndrome with the exogenous form of the disease is significantly weaker than with hematogenous osteomyelitis.

Since the contact type of the disease is formed against the background of existing inflammation, bone damage can be suspected by a sharp increase in pain, the spread of swelling, and reddening of the skin around the source of inflammation. The child's body temperature may rise. Intoxication is observed in extensive processes. In some cases, 3-6 days after the onset of osteomyelitis, a fistula

with purulent fluid is formed. In such cases, after the discharge of pus, the child's condition improves significantly.

### **Reasons**

The disease occurs as a result of infection by pathogenic microorganisms. In most cases (up to 85%), we are talking about *Staphylococcus aureus*. Less common culprits are:

streptococci;

pneumococci;

coli;

*Pseudomonas aeruginosa*;

*Klebsiella*;

tuberculosis bacillus.

Rare specific forms of pathology can be caused by *Spirochete pallidum* or *Brucella*.

The reasons for the development of osteomyelitis in children can be the following.

caries;

gingivitis;

periodontitis;

acute otitis;

angina;

chronic tonsillitis;

pyoderma;

sinusitis.

The contact type of the disease can appear against the background of deep wounds and long-term untreated infected wounds and deep wounds and abrasions inflamed due to elements of the rash. In newborns and children of the first year of life, the source of pathology can be an umbilical wound or diaper rash.

### **Diagnostics**

In the early stages, the disease can be identified by a specific clinical presentation. At this time, instrumental and laboratory methods of diagnosing osteomyelitis in children are not informative, because clear changes in bone structures appear only on the 5-8th day of the disease, and it is almost possible to distinguish specific indicators of a certain pathology in the blood it's not. any inflammatory process.

To confirm the previously established diagnosis in the future, the following is done:

ultrasound examination of the affected area, which helps to determine the thickening of bone structures and assess the degree of involvement of soft tissues in the pathological process;

radiography, which can show signs of bone damage (the most informative 14-21 days after the onset of the disease);

contrast magnetic resonance imaging, which is necessary to assess blood flow and the extent of purulent tissue damage (can also be used for early diagnosis of osteomyelitis);

various laboratory tests to determine the severity of the inflammatory process in the body.

In the case of chronic osteomyelitis, fistulography is also performed - a method that helps to determine the presence, characteristics and localization of fistulas.

## **Treatment**

Treatment of osteomyelitis in children is carried out according to clinical recommendations. Conservative measures and surgical methods can be used. The tactics of actions are determined by the severity of the small patient's condition, the form of the identified disease and the characteristics of the child's body in general. Hospitalization is carried out in any case.

Conservative treatment methods for osteomyelitis include:

immobilization of the affected area using a hard bandage, plaster or orthosis;  
antibacterial therapy aimed at suppressing pathogenic flora and stopping the inflammatory process;  
infusion therapy, the purpose of which is to restore electrolyte balance and prevent dehydration;  
symptomatic therapy aimed at relieving pain, improving the child's well-being and maintaining the functions of internal systems.

If there are certain indications, extracorporeal hemocorrection can be prescribed - a set of procedures in which, with the help of special treatment, doctors change the quality or quantity of blood outside the patient's body.

The following methods can be used:

opening of the abscess with subsequent drainage;  
arthrotomy - a special puncture of the bone with washing of the purulent cavity with antiseptic preparations;  
sequestrectomy - cutting fistulous tracts, granulation sites, sequestrations, etc. with antiseptic treatment;  
surgical or aspiration decompression of the subperiosteal space (rarely used if the child has immunodeficiency or an atypical course of osteomyelitis);  
various types of bone grafting (performed only after complete sanitation of the source of infection).  
In most cases, children with osteomyelitis are prescribed a comprehensive program that includes conservative and surgical treatment methods.

## **Prevention**

To prevent the development of osteomyelitis in children, experts recommend the following to parents:

carefully monitor children's personal hygiene, teach children to bathe regularly, cut fingernails and toenails, teach cleanliness from early childhood;  
control of chronic inflammatory diseases in children;  
seek professional medical care in case of acute illness;  
regular preventive examination of children at the dentist, cleaning of the oral cavity, caries treatment, etc. in a timely manner;  
following a balanced diet for babies rich in various trace elements and minerals;  
protect the child from hypothermia  
follow child injury prevention measures.

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