

Current Principles of Treatment for Chronic Hematogenous Osteomyelitis in Children

Musayev Sodiqjon Toirovich

Assistant, Department of Clinical Pharmacology, Samarkand State Medical University

Abstract: General information Classification Symptoms Causes Diagnosis Treatment Doctor's expert opinion Prevention Rehabilitation Question and answer Osteomyelitis in children is a pathological condition in which purulent damage is caused to all bone structures, as well as 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 orthopedists-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.

Key points: Classification, Exogenous osteomyelitis in children, Symptoms.

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.

Classification

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.

When classifying 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 the 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.

Depending on the nature of the course, the pathology 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 sharp increase in temperature to 39 degrees and above;

strong weakness;

severe headache;

nausea with vomiting attacks;

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.

In the septic form of pathology, a set 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, especially in newborns, death is possible even before the onset of bone pain.

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 due to a sharp increase in pain, 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 is caused by 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.

In addition, experts include predisposing factors:

frequent acute infections;

chronic inflammatory diseases of the body;

diabetes mellitus;

constant hypothermia of the body;

oncological pathologies.

Children with congenital anomalies of bone tissue development, obesity, skeletal deformities and immune disorders are at high risk of developing osteomyelitis.

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 impossible to distinguish specific indicators of a certain pathology in the blood if 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 soft tissue involvement 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 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 doctors change the quality or quantity of blood outside the patient's body with the help of special treatment.

In the absence of conservative treatment and in the severe condition of a small patient, surgical intervention is indicated. The volume of manipulations and tactics also depends on the form of osteomyelitis, severity, localization of the inflammatory process, etc.

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);

bone grafting of various types (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.

List of used literature:

1. Babajanov A. S. et al. Risk factors affecting the prognosis of autodermoplasty in patients with various skin defects. Актуальные проблемы фундаментальной, клинической медицины и возможности дистанционного обучения. – 2020.
2. Карабаев Х.К. и соавт. ОЖОГОВАЯ ТРАВМА У ПОЖИЛЫХ И ПОЖИЛЫХ ЛИЦ //Искусство медицины. Международный медицинский научный журнал. – 2022. – Т. 2. – №. 1.

3. Butolin E. G. et al. ROLE OF BIOMARKERS OF ORGANIC MATRIX OF BONE TISSUE IN CHRONIC HEMATOGENOUS OSTEOMYELITIS IN CHILDREN //European journal of molecular medicine. – 2022. – Т. 2. – №. 5.
4. Prostyakova, N., Solovyova, Y., Sharapova, D., & Shernazarov, F. (2023). Issues of professional ethics in the treatment and management of patients with late dementia. Science and innovation, 2(D12), 158-165.
5. Jalalova D., Raxmonov X., Shernazarov F. РОЛЬ С-РЕАКТИВНОГО БЕЛКА В ПАТОГЕНЕЗЕ СОСУДИСТЫХ ЗАБОЛЕВАНИЙ ОРГАНА ЗРЕНИЯ У БОЛЬНЫХ АРТЕРИАЛЬНОЙ ГИПЕРТЕНЗИЕЙ //Science and innovation. – 2022. – Т. 1. – №. D8. – С. 114-121.
6. Pogosov S. et al. Psychogenetic properties of drug patients as risk factors for the formation of addiction //Science and innovation. – 2023. – Т. 2. – №. D12. – С. 186-191.
7. Sedenkova M. et al. The possibility of predicting the time of formation and development of alcohol dependence: the role of genetic risk, family weight and its level //Science and innovation. – 2023. – Т. 2. – №. D12. – С. 173-178.
8. Shamilov V. et al. Disorders of decision-making in the case of depression: clinical evaluation and correlation with eeg indicators //Science and innovation. – 2023. – Т. 2. – №. D12. – С. 198-204.
9. Uskov A. et al. Modern methods of therapeutic fasting as a way to overcome the pharmacoresistance of mental pathology //Science and innovation. – 2023. – Т. 2. – №. D12. – С. 179-185.
10. Prostyakova N. et al. Strategy for early diagnosis with cardiovascular diseaseisomatized mental disorders //Science and innovation. – 2023. – Т. 2. – №. D12. – С. 166-172.
11. Tahirova, J., Roziklov, N., Mamatkulova, F., & Shernazarov, F. (2022). Insomnia problem causes of sleep disorder, help measures at home. Science and innovation, 1(D8), 521-525.
12. Qizi T. J. I., Farrukh S. Treatment of myocardial infarction and first aid //Science and innovation. – 2022. – Т. 1. – №. D3. – С. 317-320.
13. Rotanov A. et al. Elderly epilepsy: neurophysiological aspects of non-psychotic mental disorders //Science and innovation. – 2023. – Т. 2. – №. D12. – С. 192-197.
14. Abdurakhmanov I., Shernazarov F. SPECIFIC ASPECTS OF TREATMENT OF CHRONIC RHINOSINUSITIS IN CHILDREN //Science and innovation. – 2023. – Т. 2. – №. D10. – С. 164-168.
15. Tahirova J. et al. Neurose causes and mechanisms of development, symptoms, treatment, prevention //Science and innovation. – 2022. – Т. 1. – №. D8. – С. 515-520.
16. Tahirova J., Shernazarov F. Symptoms of hymoritis, treatment, methods of folk medicine, prevention //Science and innovation. – 2022. – Т. 1. – №. D8. – С. 983-990.
17. Shodiyeva D., Shernazarov F. Analysis of the compounds providing antihelmitic effects of chichorium intybus through fractionation. Science and innovation, 2 (D2), 64-70. – 2023.
18. Jalalova D., Normatova N., Shernazarov F. Genetic markers for the development of diabetic retinopathy //Science and Innovation. – 2022. – Т. 1. – №. 8. – С. 919-923.
19. Abdukodirova S., Shernazarov F. SPECIFIC CHARACTERISTICS AND TREATMENT OF ACUTE OBSTRUCTIVE BRONCHITIS IN CHILDREN OF EARLY AGE //Science and innovation. – 2023. – Т. 2. – №. D11. – С. 5-8.
20. Махмудов С. и соавт. Особенности аутодермопластики при травматических ранах кожи и мягких тканей //Международный журнал наук о здоровье. – №. II. – С. 7792-7795.

21. Musayev S., Kim O. SIGNIFICANCE OF BONE TISSUE ORGANIC MATRIX BIOMARKERS IN ACUTE HEMATOGENOUS OSTEOMYELITIS IN CHILDREN //Science and innovation. – 2024. – Т. 3. – №. D2. – С. 88-92.
22. Musoyev S., Shernazarov F. BIOCHEMICAL METHODS OF ASSESSMENT IN LONG-TERM REHABILITATION IN CHILDREN WITH CHRONIC HEMATOGENOUS OSTEOMYELITIS //Science and innovation. – 2023. – Т. 2. – №. D10. – С. 169-173.
23. Toirovich M. S. CHRONIC OSTEOMYELITIS, CAUSES, SYMPTOMS, DIAGNOSIS, TREATMENT //Science and innovation. – 2023. – Т. 2. – №. Special Issue 8. – С. 599-603.
24. Babajanov A. S. et al. Risk factors affecting the prognosis of autodermoplasty in patients with various skin defects //Актуальные проблемы фундаментальной, клинической медицины и возможности дистанционного обучения. DOI. – 2020. – Т. 10.
25. Мусаев Содик Тоирович ХРОНИЧЕСКИЙ ОСТЕОМИЕЛИТ, ПРИЧИНЫ, СИМПТОМЫ, ДИАГНОСТИКА, ЛЕЧЕНИЕ // ГАИ. 2023. №Спецвыпуск 8. URL: <https://cyberleninka.ru/article/n/chronic-osteomyelitis-causes-symptoms-diagnosis-treatment> (дата обращения: 06.10.2023).
26. Musoyev S. FREQUENCY OF OCCURRENCE AND RISK FACTORS FOR THE DEVELOPMENT OF MEDICINAL POEMS IN CHILDREN IN THE SAMARKAND REGION //Science and innovation. – 2023. – Т. 2. – №. D2. – С. 249-253.
27. Мусоев С., Шерназаров Ф. БИОХИМИЧЕСКИЕ МЕТОДЫ ОЦЕНКИ В ДОЛГОСРОЧНОЙ РЕАБИЛИТАЦИИ У ДЕТЕЙ С ХРОНИЧЕСКИМ ГЕМАТОГЕННЫМ ОСТЕОМИЕЛИТОМ // ГАИ. 2023. №Д10. URL: <https://cyberleninka.ru/article/n/biochemical-methods-of-assessment-in-long-term-rehabilitation-in-children-with-chronic-hematogenous-osteomyelitis> (дата обращения: 15.11.2023).
28. Тойрович М.С., Владиславовна К.О. ЗНАЧЕНИЕ БИОМАРКЕРОВ ОРГАНИЧЕСКОГО МАТРИЦА КОСТНОЙ ТКАНИ ПРИ ОСТРУЕМ ГЕМАТОГЕННОМ ОСТЕОМИЕЛИТЕ У ДЕТЕЙ //Наука и инновации. – 2024. – Т. 3. – №. 2. – С. 88-92.