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PATHOGENETIC SUBSTANTIATION OF THE EFFECTIVENESS OF COMPLEX THERAPY FOR ACUTE HEMATOGENOUS OSTEOMYELITIS IN CHILDREN

Shamsiev Azamat Muxitdinovich

Doctor of Medical Sciences, Professor of the Department of Pediatric Surgery No. 1 of Samarkand State Medical University

Belyalov Arsen Marlenovich

4-th year student of the Faculty of Medicine, Samarkand State Medical University

Yusupov Shuhrat Abdurasulovich

MD, Professor, Head of the Department of Pediatric Surgery No. 1, Samarkand State Medical University

Abstract: Acute hematogenous osteomyelitis (AGO) is a common serious infection in children, characterized by inflammation of the bone and surrounding tissues as a result of bacterial infection. The pathogenetic mechanisms of this condition involve a complex interplay between the host's immune response and microbial virulence factors. The purpose of this article is to provide a pathogenetic basis for the effectiveness of complex therapy for the management of OGO in children.

Key words: acute hematogenous osteomyelitis, children, complex therapy, antibiotic treatment, inflammatory response, pain management, rehabilitation, bone necrosis, microbial elimination, clinical results, surgical intervention.

Osteomyelitis (purulent inflammation of the bone) is an intraosseous element; is a purulent inflammation of bone marrow, bone marrow, tissue inside the bone. This disease is mainly caused by blood infection. The reason it is called hematogenous osteomyelitis is because they accumulate in the bones along the blood vessels, damaging the bone. Osteomyelitis in infants and children differs anatomically, clinically and with treatment. In babies, it occurs in the epiphyseal part, and in older children, it occurs in the metaphyseal and diaphyseal parts. If acute osteomyelitis is observed in babies, then it can also turn into chronic osteomyelitis in older children.In infants, general clinical signs are stronger, and in children, local signs prevail. If arthrotomy is performed in infants, osteoperforation is performed in children. Patients are mainly children under 1 year old - 64 (62.7%), children from 1 to 3 years old are 48 (37.3%). 52 of them were boys (51%), 50 were girls (49%). The analysis of the medical records of patients admitted to the specialized surgical department showed that 35 (34.3%) patients were admitted to the hospital with suspected AHO in the first days of the disease. Most of them, 48 (47%) patients were treated with qualified surgical care on the 25th day of the disease, 19 (18.7%) patients were later transferred to the surgical infectious department. The reasons for the late admission of young children to the hospital were explained by the lack of complaints specific to the disease, errors in diagnosis, the lack of opportunity to communicate with a patient under 3 years of age, and the dispersion of the response reactions of the child's body to local reactions. Pain in the affected limbs was observed in 82 (80.4%) children with local manifestations of the disease. Symptoms of

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general internal (intoxication) poisoning developed rapidly in toxic form: an increase in body temperature was noted in all patients. General restlessness, weakness, loss of appetite were observed in 71 (69.6%) children. Very rarely, dyspeptic changes (diarrhea, abdominal pain and vomiting) were observed. In patients with common clinical symptoms in the widespread septicopemic form of the disease, systolic noise, meningeal symptoms. hepatomegaly was detected. In patients under 1-3 years of age, local symptoms of the disease appeared quickly, so the scores for the appearance of general symptoms were slightly slower. 59 (57.8%) of the patients admitted to the surgical infectious department with AHO had moderate general condition. Children suspected of AHO were admitted to the hospital mainly in serious condition - 40 (39.2%), 3 (3%) in extremely serious condition. The reason for this is late resorting to surgical care, rapid development of pathology in early childhood due to the predominance of the alternative component of the inflammatory response, non-specific resistance mechanisms and specific immunological protection, lack of resistance of the body. Manifestation of local symptoms depends on the location of the affected area. The evaluation of the localization of primary lesions of different bones of the skeleton showed that the primary source of inflammation was mainly inflammations in the epiphyses of the proximal and distal part of the long tubular bones of the skeleton. 85 (83.3%) were observed in the proximal and distal part of the shoulder bone, femur. Thus, osteomyelitis of the proximal part of the femur occurred in 44 (43.1%) patients, in the humerus - 24 (2%), in the large tibia - in 18 (17.6%), in the small tibia - in 3 patients (3%), wrist bones and spinal cord - 2 (14.7%) were found. In 15 (16.3%) children, AHO was found in one or at the same time in the proximal and distal parts of the bones. 89 (87.2%) of the children who were in the clinical examination were found to have a forced position in the limbs, limited movement or increased pain when moving.

Attention was paid to local temperature, swelling in the joint, increased pain during palpation. In 76 patients (74.5%) on 2-5 days from the onset of the disease and after that, a clear and permanent contracture of the joint was noted, because the focus of inflammation is located close to the joint, and this process involves tendon attachment and paraarticular tissue. It is characteristic that it spreads to the tissues. 60 (58.8%) patients with AHO were found to have thickening of the joint size and fluid. It should also be noted that in the diagnosis of AHO in children of early age, bacterioscopic and bacteriological examination is prescribed to determine microbial pathogenicity and sensitivity to antibiotics, and to determine the etiological factor. 66 (64.7%) of primary inflammatory foci and triggers identified in blood in different forms of AHO. Bone marrow, early opening of the canal (osteoperforation) and drainage are the main rules in the treatment of children with AHO, which determine the outcome and development of the disease. must be done within the first 2-3 days.

We consider the operation of choice to be osteoperforation with sanitation and drainage of the medullary canal, as well as opening and drainage of osteomyelitic phlegmon. During the operation, the bone marrow canal was washed with antiseptic or antibiotic solutions. In some cases, if necessary, the drainage was left in the medullary canal. In this form of the disease, the child feels tired. He complains of weakness and throbbing headache. The body temperature is observed at 38-39" C, sometimes it drops. Local changes are observed in the patient after several hours or days.The purulent process can also metastasize. In this case, pericarditis is caused by damage to the heart, and cardiogenic conditions also occur. Symptoms of pneumonia may occur in the lungs.In this process, the spread of microbes can

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occur through blood vessels. Chronic conditions and complications are not observed. Diagnosis: increased leukocytes, shift to the left are observed in the blood analysis. At the beginning of the disease, hemoglobin and erythrocytes decrease.

EChT rises to 40-60 mm/s.X-ray: this may show signs of osteomyelitis after 3 weeks. In this case, periostitis in the form of a thin linear plate is detected in the metaphysis or diaphysis. Treatment: the soft tissues are opened up to the bone and the periosteum is opened, the bone is osteoperforated and the pus is removed. The inside of the bone is washed with antiseptic substances. strong antibiotics are injected into the bone marrow canal. It occurs as a result of the recurrence and prolongation of the acute period of osteomyelitis to make the disease chronic. After 2-4 months, it becomes chronic. In this case, changes in the bone sequestral layer and capsules completely fail.Their gap is covered with pus. When the disease recurs, the eye of the wound bursts, and as a result of re-opening, a new hole appears from the hole of the old wound, and a fistula is formed.During this period, the patient's condition worsens again, his general condition worsens (anxiety, increased body temperature, pain). In some cases, the leg muscles do not grow, and the bone thickens and enlarges. X-ray shows signs of osteosclerosis at the site of osteoparosis.Treatment: in chronic osteomyclitisthe surface of the bone is scraped open, soft tissue and bone are trepanated, sequestrations are removed, pus granulations are scraped. Epiphyseal osteomyelitis occurs in babies, and it can rarely go to the metaphyseal and diaphyseal parts.

These mainly depend on the anatomo-physiological characteristics of the bone and the baby.It mainly enters through skin, umbilical cord, and fetal contamination, as well as by isolated hematogenous and lymphogenic routes. The disease often occurs in the proximal part of the bones of the leg, hip, and shoulder. The lower the baby's weight, the more severe the osteomyelitis.Osteomyelitis in babies is divided into the following types depending on the course:

1. Toxico-septic;

2. Septic-pyemic;

3. Acute local.

AHO is primarily caused by hematogenous spread of pathogens, most commonly Staphylococcus aureus, including methicillin-resistant strains (MRSA). The disease can lead to significant morbidity, including bone necrosis and long-term functional impairment. Understanding the pathogenetic mechanisms is crucial for developing effective treatment strategies.The infection typically originates from a distant site, with bacteria entering the bloodstream and localizing in the metaphysis of long bones due to their rich vascular supply. Once bacteria colonize the bone, they trigger an inflammatory response characterized by the release of cytokines and recruitment of immune cells. This response leads to increased vascular permeability and edema.The inflammatory process can compromise blood supply, resulting in ischemia and subsequent bone necrosis. The presence of abscesses may further exacerbate tissue .Children may have immature immune systems, making them more susceptible to severe infections and complicating recovery. Early initiation of appropriate antibiotics is critical. Empirical therapy should cover common pathogens, with adjustments based on culture results. MRSA coverage is essential in endemic areas.Surgical drainage of

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abscesses and necrotic tissue debridement are often necessary to control infection and promote healing.Pain management, hydration, and nutritional support are vital components of care that enhance recovery. In some cases, immunomodulators may be considered to enhance the host's immune response against infection.Studies indicate that a combination of surgical intervention and targeted antibiotic therapy significantly improves outcomes in children with AHO. Early diagnosis and aggressive management are associated with reduced complications and better functional recovery. The complex therapy for acute hematogenous osteomyelitis in children is substantiated by an understanding of its pathogenesis. A multidisciplinary approach that includes antibiotic therapy, surgical management, and supportive care is essential for optimal patient outcomes.

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