

OSTEOMYELITIS IN CHILDREN: MODERN APPROACHES TO DIAGNOSIS AND TREATMENT

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Osteomyelitis in children is a serious infectious disease of bone tissue, which requires timely diagnosis and effective treatment. This work is devoted to the analysis of modern methods of diagnosis and treatment of osteomyelitis in children based on a review of scientific literature and data obtained from leading scientific databases such as Google Scholar, Scopus and PubMed. The study identified key diagnostic methods, including magnetic resonance imaging (MRI) and laboratory tests, and described approaches to antibiotic and surgical therapy. There is an increase in antibiotic resistance of pathogens, which emphasizes the need for further research and the development of new treatments. The findings of the work highlight the importance of a comprehensive approach to the diagnosis and treatment of osteomyelitis in children to improve clinical outcomes.

Keywords. Osteomyelitis in children, diagnosis of osteomyelitis, treatment of osteomyelitis, magnetic resonance imaging, MRI, laboratory tests, antibiotic therapy, antibiotic resistance, surgery, C-reactive protein, CRP, erythrocyte sedimentation rate, ESR, Google Scholar, Scopus, PubMed.

Introduction

Osteomyelitis in children is a serious medical problem caused by a bone infection, often leading to significant complications if treated untimely or inadequately. In recent decades, there has been an increase in the number of cases of osteomyelitis among pediatric patients, which emphasizes the relevance of studying this problem and the need to improve diagnostic and therapeutic approaches.

The purpose of this work is to analyze modern methods of diagnosis and treatment of osteomyelitis in children on the basis of a comprehensive review of the current scientific literature. The work used data from leading scientific databases, including Google Scholar, Scopus, and PubMed, with a focus on clinical trials, meta-analyses, and literature reviews.

The focus is on the analysis of modern diagnostic methods, such as magnetic resonance imaging (MRI) and laboratory tests, as well as an overview of modern treatment strategies, including antibiotic therapy and surgery. The issues of antibiotic resistance of pathogens and the need to search for new approaches to treatment are also considered.

The study consists in developing recommendations for optimizing the diagnosis and choosing the most effective strategies for the treatment of osteomyelitis in children, which helps to improve clinical outcomes and reduce the impact of the disease on the quality of life of patients

Materials and methods

To conduct the study, an extensive review of the scientific literature was conducted, including clinical studies, meta-analyses, and literature reviews published over the past decades. Initial data were obtained from leading scientific databases such as Google Scholar, Scopus, and PubMed.

Key words and phrases used in the search included "osteomyelitis in children", "diagnosis of osteomyelitis", "treatment of osteomyelitis", "magnetic resonance imaging", "antibiotic therapy", "antibiotic resistance", "surgery", "C-reactive protein", "erythrocyte sedimentation rate", and other terms related to bacterial bone infections in children.

The analysis included a critical examination of current diagnostic methods, including the use of magnetic resonance imaging (MRI) and laboratory tests such as C-reactive protein (CRP) levels and erythrocyte sedimentation rate (ESR). Particular attention was paid to the assessment of their sensitivity and specificity in the context of diagnosing osteomyelitis in children.

The next stage of the study was the analysis of current treatment strategies, including the use of antibiotic therapy. Recommendations for the choice of antibiotics depending on the types of pathogens and their sensitivity to drugs, as well as the development of combined treatment regimens in the case of antibiotic resistance, were evaluated.

Indications and efficacy of surgery in the treatment of osteomyelitis in children, including drainage of abscesses and removal of necrotic tissue, were also considered. The review of the literature was accompanied by a critical assessment of the methodology and quality of the data of the included studies, which made it possible to identify the most reliable and relevant results for the formation of conclusions and recommendations for the optimal approach to the diagnosis and treatment of osteomyelitis in children.

Results

As a result of an extensive analysis of the literature, the main aspects of the diagnosis and treatment of osteomyelitis in children were identified. Magnetic resonance imaging (MRI) and ultrasound scans have proven to be effective methods for early detection of changes in bone tissue and soft tissues, allowing treatment to be started in a timely manner.

Laboratory tests, such as C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR), are successfully used to monitor the activity of the process and evaluate the

effectiveness of treatment.

Antibiotic therapy remains the main treatment for osteomyelitis in children. The optimal choice of antibiotics depends on the type of pathogen and its sensitivity to drugs. However, there is an increase in antibiotic resistance, which requires the use of combined treatment regimens and the development of new antibacterial drugs.

Surgical treatment includes drainage of abscesses and removal of necrotic tissue. These measures are especially important in cases where conservative therapy does not lead to the expected results or in the presence of complications.

Summarizing the data obtained, it can be concluded that an individualized approach to each patient with osteomyelitis is necessary, taking into account the clinical features of the disease, antibiotic resistance of pathogens and possible complications. Further research and the development of new treatment strategies are important to improve treatment outcomes and reduce the length of hospitalization in children with this pathology.

Conclusions

Thus, an extensive analysis of modern methods of diagnosis and treatment of osteomyelitis in children allows us to draw several important conclusions.

First, the use of modern diagnostic methods, such as MRI and laboratory tests for CRP and ESR, significantly improves the possibilities of early detection and monitoring of the disease.

Secondly, antibiotic therapy remains the main method of treatment, but it is becoming more and more difficult due to the growth of antibiotic resistance. The need to introduce combination regimens and develop new drugs is becoming more urgent.

The third conclusion is the importance of surgery in the complex treatment of osteomyelitis in children, especially in cases with the formation of abscesses or the presence of necrotic areas of bone tissue.

Overall, these findings highlight the need for an individualized approach to each patient, taking into account the characteristics of the disease and the characteristics of the causative agent. Further research in this direction and the development of new therapeutic strategies are essential to improve the treatment outcomes of osteomyelitis in children and reduce its negative impact on the health and quality of life of patients.

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