

Pathogenetic Aspects Treatment of Chronic Periodontitis in Children

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Resume: In the review, the author examines the modern pathogenetic aspects of the treatment of chronic periodontitis in children with the study of effective models of disease therapy. The clinical informativeness of new treatment methods and possible ways to improve the quality of endodontic treatment of chronic periodontitis in children are analyzed.

Keywords: children, dentistry, treatment, chronic periodontitis, pathogenesis.

Introduction

The treatment of chronic periodontitis in children, despite ongoing scientific and practical research, is considered problematic [5,9,16]. Modern conservative therapy regimens, used mainly for chronic periodontitis among children, do not always take into account the pathogenetic aspects of the disease, which reduces their effectiveness in some cases. An important component of conservative treatment regimens for chronic periodontitis, including in children, is the inclusion of immunomodulators [7].

Despite the low prevalence of complications of caries in permanent teeth in children, the treatment of destructive forms of apical periodontitis remains a significant problem in pediatric dentistry. The standard treatment of apical periodontitis in permanent teeth in children is carried out in accordance with the principles of modern endodontics [3].

The stages of treatment of the root canal system include the following measures: evacuation of necrotic masses, removal of infected dentin, drug treatment aimed at neutralizing the waste products of pathogenic microflora, reduction of microbial contamination and removal of protein residues, obturation. Then the tooth is restored. However, standard treatment of apical periodontitis in the presence of significant destructive changes in the periradicular region, especially in permanent teeth with unformed roots, does not always give good results, reparative processes may be delayed or not begin at all [5,19].

Often, in the treatment of teeth with unformed roots and destructive forms of periodontitis, at the first stage, calcium-containing pastes are left in the root canals for 2-3 months or more, which stimulate the formation of an apical barrier (due to the formation of cement) and osteointegrative processes in bone tissue. At the same time, recent studies have shown that such treatment reduces the strength of root dentin and increases the risk of root fractures in the future. Therefore, the search for new approaches to the treatment of periodontitis in childhood becomes an urgent problem of endodontics [1, 14].

The purpose of the study:

To analyze modern research by foreign and domestic authors on the treatment of chronic periodontitis in children.

Results.

The forms of chronic periodontitis, the results of treatment and long-term results are traditionally determined on the basis of X-ray examination data. To date, the most modern and reliable diagnostic method of X-ray examination in dentistry is cone-beam dental computed tomography [8].

The issues of endodontic treatment of periodontitis remain relevant today due to the high prevalence of periodontal lesions, the need to eliminate foci of chronic odontogenic infection in the body. The unsatisfactory results of endodontic treatment have been the subject of numerous studies, and this is due to the search for new methods and materials to achieve a positive result in the treatment of periodontal diseases [20].

Clinicians devote considerable efforts to the search and use of antiseptic drugs for endodontic treatment in periodontitis. Destructive foci of tissue inflammation in the area of the apex of the tooth root can reduce nonspecific resistance and contribute to the formation of somatic and focal pathology of the root canals [6, 23].

Great hopes are currently pinned on the temporary filling of root canals with non-hardening pastes based on calcium hydroxide. Due to the highly alkaline reaction ($\text{PH} = 12$ oed), calcium hydroxide, when filling the root canal with it, has a bactericidal effect, destroys necrotic tissues, stimulates osteo-, dentino- and cementogenesis [10].

The disadvantage of hydrocalcium pastes and suspensions for temporary sealing of channels is their loss of bactericidal and, as a result, therapeutic properties over time as a result of the chemical reaction of calcium hydroxide with air carbon dioxide to form calcium carbonate. Numerous attempts to improve the therapeutic properties of calcium hydroxide by mixing it with other substances have failed [12].

According to our proposal, the loss of bactericidal properties by calcium hydroxide can be compensated by the introduction of ionic silver into the filling material. Ionic silver has a wide spectrum of bactericidal action, suppressing both gram-positive and gram-negative microorganisms, and retains a prolonged bactericidal effect in the composition of the material. A comparative study of the characteristics of materials for filling root canals containing calcium hydroxide has been repeatedly conducted by various researchers. However, this problem has not been fully developed for pediatric dentistry, a small number of publications does not allow us to draw unambiguous conclusions and give the necessary recommendations to doctors [17].

The microbial flora of the oral cavity, entering the root canal, undoubtedly plays a leading role in the occurrence of inflammatory processes in the apical region. The presence of a constant source of allergization of the patient's body, in the form of a chronic focus of periodontal inflammation, obviously leads to transformations of the immunological system, a decrease in the degree of nonspecific resistance, which, as a rule, leads to complications of general chronic diseases [13].

Inflammation associated with microflora, as well as a decrease in the activity of cellular elements, leads to destructive foci in periodontal tissue [22]. The development of the course of chronic periodontitis is determined by both local and general factors, among which are the state of general and local immunity, anatomical features of the structure of root canals, the possibility of developing a chronic inflammatory process in the marginal periodontitis. Infiltration of the alveolar walls by neutrophilic leukocytes, which directly resorb the cortical plate of bone tissue, occurs due to frequent reactive inflammatory and dystrophic modifications in periapical tissues. Also, the literature data indicate the maintenance of common chronic diseases as a result of the presence of permanent foci of destructive forms of chronic periodontitis [12].

Despite the interest of scientists in the etiology and pathogenesis of inflammatory destructive diseases of the pulp and apical periodontium, which has not weakened in recent decades, there is still no unified understanding of the problem. Many researchers have shown the polyethological nature of pathology, the leading role in the development of inflammatory and destructive diseases of the pulp and apical periodontium belongs to inflammatory reactions provoked by the microflora of the oral cavity [1, 15].

Conservative therapy without X-ray examination and the lack of the possibility of high-quality endodontic treatment leads to complications such as acute inflammatory diseases of the maxillofacial region, cysts, malformations of hard tissues and anomalies in the position of eruption of permanent teeth, and can also provoke infectious and allergic diseases (myocarditis, nephritis, rheumatism, etc.) [21].

Mechanical and medical treatment of the root canals of the tooth, given their high infection rate, is an important step in the dental treatment of apical periodontitis. The effectiveness of the treatment is assessed taking into account such parameters as shifts in the indicators of the immune and oxidant systems, as well as the state of antioxidant protection, both at the systemic and local levels [6].

A significant increase in relapses and complications of chronic periodontitis prompts the study of immunological parameters of tissues surrounding the pathological focus. Therefore, it is of interest to study the indicators of the local immunogram of a separate element of the dental segment in the area of this tooth [19].

Comparative analysis of epidemiological data on pulp and periodontal diseases is difficult due to the lack of uniform methodological approaches and standards. But regardless of the method of collecting information, epidemiological data for the republic indicate that, against the background of an unsatisfactory level of oral hygiene among the population, as well as a high incidence of caries and periodontal diseases, almost every patient needs endodontic treatment during their lifetime. For almost two decades, there has been no positive dynamics of this indicator [4].

The effectiveness of the treatment in chronic forms of periodontitis is assessed by the parameters of local immunity, the quantitative change of which can be used as a prognosis of bone tissue reparative processes [11].

CONCLUSION

Thus, it can be concluded that, despite the active growth in the level of knowledge and the emergence of new dental technologies, the issue of the effectiveness of endodontic treatment is extremely relevant at the global level. The high efficiency of complex treatment of apical periodontitis of permanent teeth in children has been revealed. Comprehensive treatment of apical periodontitis is recommended in the presence of significant destructive changes in the periradicular area of permanent teeth and a high level of patient compliance.

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