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MODERN ASPECTS OF TREATMENT OF CHRONIC PERIODONTITIS IN CHILDREN

Safarov Sherzod Umarovich
Bukhara State Medical Institute

Abstract

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 article analyzes the clinical information content of new treatment methods and possible ways to improve the quality of endodontic treatment of chronic periodontitis in children.

Keywords: children, dentistry, treatment, chronic periodontitis, teeth ,dental diseases, pathology

Introduction. The development of chronic periodontitis (CP) occurs against the background of a combination of two main factors – the effect of an irritant on the tissue and a local tissue reaction. CP occupies a key position among dental diseases because it is widespread all over the world. Cases of periodontitis in children of different ages occur quite often. Acute periodontitis of permanent teeth in children also occurs when caries is complicated. 40-50% of the population aged from 34 to 47 years suffers from this pathology [16]. From 48 to 80% of teeth are removed due to CP. Conservative treatment of periodontitis ends positively in 50-70% of cases [3, 12]. Treatment of CP in children, despite ongoing scientific and practical research, is considered problematic [5]. Modern conservative therapy regimens, used mainly for CP among children, do not always take into account the pathogenetic aspects of the disease, which in some cases reduces their effectiveness. An important component of conservative CP treatment regimens, including in children, is the inclusion of immunomodulators [1, 14]. 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 [2].

The purpose of the study:

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

[20].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 [9].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 [7]. 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 (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 [15]. 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 [19]. 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 [11]. Inflammation associated with microflora, as well as a decrease in the activity of cellular elements, leads to destructive foci in periodontal tissue [2]. 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 [7]. 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.) [10]. 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 [18]. 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].An example of "multifaceted" virulence is R. gingivalis, which produces cytotoxic extracellular hydrolytic enzymes, as well as fibrillar antigens that destroy immunoglobulins. It has also been established that the culture of R. gingivalis causes apoptosis of lymphocytes, which may be an important factor in the pathogenesis of periodontitis, contributing to the occurrence of immunodeficiency. Bacterial components, peptidoglycans, lipopolysaccharides, and short-chain toxic fatty acids also inhibit the function of immunocompetent cells [8].One of the important factors of local nonspecific protection of the oral cavity is the enzyme lysozyme contained in saliva. Lysozyme (muromidase) is a mucolytic enzyme, the main source of which are neutrophils and blood monocytes. The antimicrobial spectrum of lysozyme extends mainly to gram-positive coccal microorganisms, but there are reports of its effect on gram-negative species. This enzyme is capable of depolymerizing polysaccharides of the cell wall of microorganisms. There is an assumption that lysozyme acts as a stimulant for all links natural resistance, acting synergistically with other humoral protection factors [4]. Thus, lysozyme enhances phagocytosis and potentiates the lytic activity of the Ig SA complex with the C3 complement fraction against gram-negative bacteria. According to the authors [10], lysozyme, cooperating with IgA, causes lysis of bacteria resistant to other conditions.Lactoferrin is a protein capable of binding iron and has bacteriostatic activity. By binding iron, it makes it inaccessible to bacterial metabolism. Lactoferrin is found in gingival secretions furrows and is locally synthesized by polymorphonuclear neutrophils. Mixed saliva plays the role of a protective factor, participating in the mechanical cleansing of the oral mucosa from pathological agents. It has pronounced bactericidal properties due to the presence of enzymes, immunoglobulins and leukocytes. Its composition is very complex and varies depending on the state of reactivity of the body, the presence of various diseases, pathological processes in the oral cavity [13].

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.

References:

1. Albandar JM. Epidemiology and risk factors of periodontal disease. Dent Clin North Am, 49: 517-32, 2015.

2. Berglundh T and Donati M. Aspects of adaptive host response in periodontitis. J Clin Periodontol, 32(suppl6): 87-107, 2015.
3. Bimstein E. Extended kindred with 10 children with periodontitis: a sevenyear follow-up report. Pediatr Dent, 25: 389-96, 2023.
4. Boutaga K. // J. Immunol. Med. Microbiol. – 2015. – Vol.45. – P.191–199.
5. Chen T, Yu W-H, Izard O, Baranova OV, Lakshmanan A, Derwhirst FE. The human oral microbiome database: a web based accessible resource for investigating oral microbe taxonomic and genomic information. Available at: http://www.homd.org Database 2020;baq013 doi10.1093/ databasebaq013. Accessed August 15, 2023.
6. Collins FS, Morgan M, Patrinos A. The human genome project: Lessons from large-scale biology. Science, 300: 286-90, 2023.
7. Devaraj S, Hemarajata P, Versalovic. The human gut microbiome and body metabolism: implications for obesity and diabetes. Clin Chem, 59: 617-28, 2013.
8. Dewhirst FE, Chen T, Izard J, Paster BJ, Tanner AC, Yu WH, Lakshmanan A, Wade WG. The human microbiome. J Bacteriol, 192:5002-17, 2020.
9. Donlan R.M., Costerton J.W. // Clin. Microbiol. Rev. – 2016. – Vol.15, N2.– P.167–193.
10. Lee Y. // Restor Dent Endod. — 2015. — Aug. — Vol. 38 (3). — P. 186—218. 7. Zarei M., Afkhami F., Malek Poor Z. // Dent Traumatol. — 2016. — Vol. 29. — P. 156—160.
11. Meisel P, Wilke P, Biffar R, Holtfreter B, Wallascohofski H, Kocher T. Total tooth loss and systemic correlates of inflammation: role of obesity. Obesity, 20: 644-50, 2012.
12. Ohlrich RJ, Cullinan MP, Seymour GJ. The immunopathogenesis of periodontal disease. Aust Dent J, 54(Suppl 1):S2-10, 2019.
13. Papapanou PN, Abron A, Verbitsky M, Picolos D, Yang J, Qin J, Fine JB, Pavdilis P. Gene expression signatures on chronic and aggressive periodontits: a pilot study. Eur J Oral Sci, 112: 216-23, 2014.
14. Pimentel GD, Micheletti TO, Pace F, Rosa JC, Santos RVT, Sira FS. Gut-central nervous system axis is a target for nutritional therapies. Nutr J, 10;11:22. doi: 10.1186/1475-2891-11-22, Available at http://www.ncbi. nlm.nih.gov/pubmed/22490672. Accessed on August 15, 2013
15. Shaddox L, Wiedley J, Bimstein E, Magnuson M, Clare-Seltzer M, Aukhil I, Wallet SM. Hyper-Responsive Phenotype in Localized Aggressive Periodontitis. J Dent Res, 89: 143-8, 2020.
16. Shaddox LM, Wiedey J, Calderon NL, Magnusson I, Bimstein E, Bidwell JA, Zapert EF, Aukhil I, Wallet SM. Local inflammatory markers and systemic endotoxin in aggressive periodontitis. J Dent Res, 90: 1140-4, 2021.
17. Suvan J, D'Aiuto F, Moles DR, Petrie A, Donos N. Association between overweight/obesity and periodontitis in adults. A systematic review. Obes Rev, 12:e381-404, 2011.
18. Suvan J, D'Aiuto F, Moles DR, Petrie A, Donos N. Association between overweight/obesity and periodontitis in adults. A systematic review. Obes Rev, 12:e381-404, 2018.
19. Teng T-YA, The role of acquired immunity and periodontal disease progression. Crit Rev Oral Biol and Med, 14: 237-52, 2013.
20. Tonetti MS, Mombelli A. Early-onset periodontitis. Annals Periodontol, 4:39-52,2019.