International Journal of Scientific Trends- (IJST)
ISSN: 2980-4299
Volume 3, Issue 5, May - 2024
Website: https://scientifictrends.org/index.php/ijst
Open Access, Peer Reviewed, Scientific Journal

Dental Caries in Young Children: Epidemiology, Etiology, Prevention, Treatment

Turayev Alimjan Baxriddinovich
Samarkand State Medical University

Abstract
Dental caries in children is a special disease that has a complex multifactorial nature of multifaceted interactions. The assessment of the strength and degree of influence of risk factors for the development of this disease should be carried out in the specific conditions of the patient, taking into account the stage of development and age-related structural features of the baby's teeth, as well as exogenous and endogenous conditions. Since some of the risk factors for caries are associated with more or less objective conditions, attempts by the "patient" or dentist to influence them are limited and can only be partially changed. However, a large group consists of risk factors that depend on the behavior of the child and his parents and can be minimized by both the dentist and self-help efforts. In this case, these factors are the main objects determining the scope and focus of therapeutic and preventive measures.

Keywords: Baby teeth, childhood caries, risk factors, therapeutic and preventive measures.

Introduction

Epidemiology of dental caries in children Dental caries remains the most common chronic disease among the child population [4]. According to world statistics, a large proportion of the structure of this disease is caries of baby teeth in children under 6 years of age [10]. In general, the prevalence of dental caries in young children varies widely - from 17 to 94%. The prevalence in developed countries (Western Europe, USA) is, according to various estimates, from 1 to 12%, and in developing countries it can reach 99% [14, 27]. In the USA, the prevalence among children aged 2-5 years has increased by 15.2% over the last decade, with 8.4% of 2-year-olds and about 44% of 5-year-olds having at least one carious or filled tooth [18]. Among Brazilian children, caries affects 26.8% of one-and-a-half-year-olds and 46.8% of three-year-olds [18]. In Iran, the prevalence rates in these age groups are 19.5 and 44%, respectively [11]. In Germany, the number of teeth affected by caries in 6-year-olds is almost twice as high as in 12-year-olds [15]; In a Japanese national study conducted in 2007, 2.8% of 18-month-olds and 25.9% of 3-year-olds were affected by caries [13, 28]. It is noteworthy that the prevalence of molar caries increases with the age of the child: if we compare 6-year-old and 1-year-old children, the prevalence of caries increases 7 times. At the same time, this indicator increases sharply from the age of one to three years (five times). Similar results are observed when assessing the intensity of caries in artificial teeth: when comparing six-year-olds and one-year-olds, this indicator increases 17 times. It is also

characterized by the greatest increase in the age group of 1-3 years [15]. The structure of hard tissues and features of the clinical picture of pseudodontic caries. Studies by domestic and foreign authors have shown that baby teeth in children are more susceptible to caries than permanent ones, which is associated with anatomical and physiological features of the structure and development of hard tissues [4, 15]. The characteristic of baby teeth is a thin thickness of enamel and dentin (compared to permanent teeth) and a low degree of mineralization; - weak or absent periapical dentine zone, special structure of dentine tubules (wide and short); - the absence of an "immune" zone; - the dental cavity has a significant volume, and the highest position (pulp angle) is located close to the junction of enamel and dentin; - morphologically and functionally immature pulp, which can hardly form replacement dentin at the stage of formation of baby teeth [25]. The hard tissues of the newly cut crown are immature. Full maturation (tertiary mineralization) occurs during the first year after the eruption of the baby tooth. The relatively "mature" enamel layer is at the stage of structural and functional stability. However, over time, defects appear on the outer surface caused by external factors (mechanical, chemical, temperature, etc.), which weaken the resistance of the tooth and make the underlying tissues vulnerable to the development of caries, accelerating and slowing its progression [2, 4, 14]. In addition, the imperfection of the structure of the hard tissues of baby teeth may be associated with the presence of non-carious lesions, genetic disorders and the appearance of congenital and acquired anomalies of the alveolar bone, which are also risk factors for the development and progression of childhood caries [15]. In this regard, temporary caries has a specific clinical picture, different from permanent caries, which is due to the anatomical and physiological features of the structures of hard tissues, the time of occurrence and the age model of the child's development [11, 13]. Caries damage to false teeth often coincides with the order of their eruption. In the first year of life, maxillary incisors and canines are often affected (the so-called "bottle caries"). Depending on the stage of eruption, the place of caries may be different. In incompletely erupted teeth, caries is limited to the vestibular or palatine surface in the center of the crown, spreading "zonally" to other surfaces or completely covering only one or more surfaces in the form of a "flat lesion" [16, 17]. [16, 17]. By the age of two, chewing teeth are affected. Caries occurs in the area of pits on occlusal surfaces and in the vestibular zone of vestibular surfaces, where hypomineralization and dental deposits are present. There is also an approximate localization of caries in the chewing groups of teeth. In severe caries, the buccal surfaces of the maxillary molars may be affected [17, 19]. The mandibular incisors are most resistant to the progression of caries, as they are washed with saliva from the hyoid bone and submandibular glands and are protected from the tongue and lips [15, 28]. According to the foreign classification, depending on the prevalence and localization, childhood caries can be divided into three types [12]: - Type S I (mild) is characterized by the presence of isolated carious lesions on incisors or molars (most common at the age of 2-5 years). - Type S II (moderate) is characterized by damage to the anterior and palatine surfaces of the maxillary incisors and temporary molars. - Type S III (severe) is characterized by the presence of multiple carious pits on almost all teeth, including the incisors of the lower jaw (most often occurs at the age of 3-5 years). A characteristic feature of caries of baby teeth is that it spreads along the plane and quickly, sometimes with lightning speed, passes from one form to another [15]. The earlier a child develops the first caries lesion, the higher the probability of multiple lesions on all remaining teeth. Caries of baby teeth

in childhood is characterized by rapid destruction of the crown, which leads to the progression of caries; in children under 3 years of age, there are no complaints, since it is impossible to determine the location and severity of pain. As a result of untimely treatment, local and systemic complications develop [14, 15, 26]. Consequences of caries in young children, dental caries can have a significant impact on the dental system, as well as on general health [10, 18]. The pain resulting from the progression of caries reduces the child's ability to drink, the desire to chew, limits the choice of food (sour fruits and vegetables, solid foods) and reduces appetite. Malnutrition can lead to weight loss, iron deficiency, and stunted growth and physical development [15]. Pain caused by caries can lead to a decrease in the quality of life, including sleep disorders, concentration and mood in children [14]. With multiple caries, complications may occur (pulpitis, periodontitis). Due to the young age and lack of contact with children, misunderstandings may arise, leading to the need to disinfect the oral cavity of children (especially between the ages of 3 and 10 years) under general anesthesia [13]. Progressive caries inevitably leads to pulp death, inflammation of the surrounding tissues and possible damage to the root growth of permanent teeth. Premature removal of baby teeth leads to the formation of dental anomalies and lack of space for permanent teeth. Early loss of these teeth can disrupt the normal development of speech and lead to pronunciation difficulties [10, 19]. As a result of aesthetic and phonological problems, the child may be teased and offended by other children, which negatively affects self-esteem and leads to further social maladaptation: the child may become withdrawn and unwilling to smile, which contributes to limited communication with peers [16, 18]. The presence of early childhood caries does not necessarily entail a high risk of developing new carious lesions in both permanent and molars [10, 14]. Risk factors for the development of caries In the classical sense is a chronic infectious disease caused by malnutrition. The main "players" in the etiology of the disease are cariogenic microorganisms, substrates in the form of incoming carbohydrates and the host (body resistance and tooth enamel) [14]. Childhood caries is a special form of caries with a multifactorial nature A systematic review of international literature for the period from 1966 to 2002 by R. Harris et al. A systematic review of the literature revealed 106 risk factors for the development of caries in infants [13]. Six groups of factors were identified: microbiological factors, hygienic factors, dietary factors, factors related to the feeding regime, socio-demographic factors and other factors. Cariesogenic microflora. One of the most important etiological factors in the development of caries is the acid-producing microbiota of the oral cavity. The normal microflora at birth is represented by lactobacilli, non-hemolytic streptococci and non-pathogenic staphylococci [11, 24]. The invasion of the oral cavity by cariogenic flora occurs in everyday life through the saliva of the mother, father or other people who surround and care for the child [13, 15]. The transmission of microorganisms occurs during the "tasting" of food, through mannequins moistened with saliva, when "washing" with mannequins, toys, kisses, etc. Such transmission often occurs in childhood through the so-called "window of infection", but may occur earlier or later in life [10, 15]. The main participants in the development of caries, including in children, are acid-forming microorganisms, in particular Streptoccocus mutans (Str. mutans) [14, 21] Str. mutans has a number of pathogenic properties and contributes to the deposition of plaque matrix and further plaque growth, both extracellular and intracellular Streptoccocus mutans has a unique sugar transport system (phosphoenolpyruvate phosphotransferase) and, unlike many

plaque microorganisms, is tolerant to acidic environments and supports sugar metabolism in a low pH environment In addition to Str. mutans Lactic acid bacteria play an important role in the etiology of caries in young children. An increase in the number of lactobacilli in the oral cavity in children may be associated with frequent carbohydrate intake. At the stages of plaque accumulation and demineralization of the enamel layer, Str. mutans predominate in saliva [14]. As caries progresses and clinical manifestations of the disease develop, with the formation of fossa defects, the predominance passes to lactobacilli [14]. Lactobacilli have rather low adhesive properties and are only mechanically fixed in the recesses of the teeth. However, due to the joint aggregation with various other symbiotic microorganisms, in particular with peptostreptococci and microaerophilic streptococci in the oral cavity, lactobacilli can be quite firmly fixed on the surface of teeth and in the thickness of plaque [15]. In the presence of carbohydrate foods, lactobacilli produce copious amounts of lactic and other acids that contribute to the progression of caries. At the same time, lactobacilli act as important stabilizers of the formation of the oral microflora. Lactobacilli synthesize vitamins B and K, which are necessary for the development of other bacteria and the body as a whole. Given the complex and variable composition of plaque, it should be noted that other microorganisms contribute to the development of caries, although to a lesser extent: Streptoccocus sanguis, Streptoccocus salivarius and Streptoccocus milleri, Actinomycesviscosus and Streptoccocus wiggsiae [17]. In case of childhood caries, the age of infection with these microorganisms is crucial: from the age of 3, and in some cases earlier, the child's social circle expands, and he begins to attend preschool institutions. Communication with peers, shared toys and dishes lead to the exchange of microflora within the team, which is another risk factor for the development of caries [13]. Nutrition and diet. Regular and frequent consumption of fermentable carbohydrates from food and beverages is necessary for the progression of caries [5, 14]. The main sources of nutrition for newborns and infants are breast milk or cow's milk, milk mixtures and water. The effect of breast milk and its substitutes on the development of dental caries in children remains controversial [18]. The unanimous opinion is that the risk of developing caries in young children invariably increases in the presence of other concomitant factors (for example, insufficient oral hygiene, early infection with cariesogenic microorganisms, sweetening of water) [14]. Violation of the natural feeding regime (prolonged night feeding, continuous feeding, calming the crying of the child by "giving" the breast) increases the risk of caries [11]. Another important risk factor at this age is the child's consumption of sweetened beverages, especially compotes and juices, before bedtime and at night. Researchers point out that the only drink that should be given to a child before going to bed should be water [19]. As children grow up, their taste preferences change and the range of products they consume expands. During this period, the taste preferences of the family, especially the mother, play an important role for the child, and he begins to lay down his own taste buds [17]. In families where sugary foods are regularly consumed, children are more likely to consume fermented carbohydrates. Children's eating habits become habitual in adulthood and can increase the likelihood of developing caries of both permanent and molars [18, 23]. Oral hygiene in children. Improper oral hygiene care leads to plaque accumulation on the surface of the teeth and plaque formation. Previously, it was believed that most of the plaque is made up of food residues, but in fact it consists of 70% of microorganisms (1 mg of plaque contains 100 million bacteria). In the

early stages of plaque formation, it consists mainly of coccal flora, with the development of which the number of filamentous fungi and Veillonella increases [14]. In the presence of food, especially sugars and fermentable carbohydrates, cariesogenic microorganisms begin to produce organic acids. These substances contribute to the launch of the enamel demineralization process [15, 17]. The negative attitude of parents towards dental care can be transmitted to their children [12].

Conclusion:

Lack of knowledge about dental health, lack of interest on the part of mothers and fathers, and lack of confidence in maintaining dental health inevitably lead to an increased risk of caries in children. If parents monitor the oral hygiene of their children, limit their consumption of sugar-containing products, recognize the first pathological changes in teeth early and seek dental care in a timely manner, the risk of the prevalence and intensity of dental caries in children can be significantly reduced [21]. However, in the practice of dentists, it is difficult to assess all the risk factors for the development of childhood caries, the influence of which has been proven in the literature [15]. At the same time, not all factors are the same in strength and degree of their influence on the launch of pathological processes, there are differences in the combination of factors and the degree of their manifestation at different age stages in children.

References:

1. Asrorovna X. N. et al. Clinical Application Of Dental Photography By A Dentist //The American Journal of Medical Sciences and Pharmaceutical Research. – 2021. – Т. 3. – №. 09. – С. 10-13.
2. Astanovich A. D. A. et al. The State of Periodontal Tissues in Athletes Engaged in Cyclic Sports //Annals of the Romanian Society for Cell Biology. – 2021. – С. 235-241.
3. Shuxratovich S. S. et al. The Country Of Dental Implanting, The Risks Involved //The American Journal of Medical Sciences and Pharmaceutical Research. – 2021. – Т. 3. – №. 09. – С. 142-146.
4. Asrorovna X. N. et al. Methods Of Instrumental Treatment of Root Canals //Texas Journal of Medical Science. – 2021. – Т. 2. – С. 17-19.
5. Asrorovna X. N. et al. Clinical Application Of Dental Photography By A Dentist //The American Journal of Medical Sciences and Pharmaceutical Research. – 2021. – Т. 3. – №. 09. – С. 10-13.
6. Шукурова Н. Т., Муратова С. К., Тураев А. Б. Врачебная тактика при диагностике туберкулеза полости рта //Вестник науки и образования. – 2020. – №. 18-2 (96). – С. 86-91.
7. Тураев А. Б., Муратова С. К., Джавадова Л. М. Повышение эффективности лечения заболеваний пародонта с применением местно действующего препарата" пародиум" //Современные достижения стоматологии. – 2018. – С. 116-116.
8. Fakhriddinovna A. N. et al. Platelet condition in children with congenital cleft palate in chronic foci of infection //Достижения науки и образования. – 2019. – №. 12 (53). – С. 113-115.

9. Zoirov T. E. et al. The influence of hypertension on the Pro-oxidant capacity and lipid peroxidation in oral fluid //Central Asian Journal of Medical and Natural Science. – 2021. – Т. 2. – №. 2. – С. 46-52.
10. Абсаламова Н., Содикова Ш., Гулбоева З. ПРОГРАММА ДЛЯ ОПРЕДЕЛЕНИЯ ВЫБОРА МЕСТНОЙ ТЕРАПИИ ПРИ ВОСПАЛИТЕЛЬНЫХ ЗАБОЛЕВАНИЙ ПАРОДОНТА БЕРЕМЕННЫХ ЖЕНЩИН С ЖЕЛЕЗОДЕФИЦИТНОЙ АНЕМИЕЙ //Медицина и инновации. – 2021. – Т. 1. – №. 4. – С. 536-539.
11. Тураев А. Б. и др. ВЛИЯНИЕ ОРТОДОНТИЧЕСКИХ АППАРАТОВ НА ПАРОДОНТ //TADQIQOTLAR. UZ. – 2024. – Т. 31. – №. 4. – С. 61-64.
12. Муродилло Т. А. В. Х. Т. и др. PERIODONTAL TISSUE CHANGES IN PATIENTS WITH INFECTIOUS VIRAL DISEASES //Journal of Modern Educational Achievements. – 2024. – Т. 1. – №. 1. – С. 223-228.
13. Bahriddinovich T. A. POSITIVE AND NEGATIVE PROPERTIES OF BRACES IN THE TREATMENT OF DENTAL ANOMALIES //Journal of Modern Educational Achievements. – 2024. – Т. 1. – №. 1. – С. 195-199.
14. Bahriddinovich T. A. COMPLEX TREATMENT OF STOMATITIS IN SCHOOL-AGE CHILDREN //Journal of Modern Educational Achievements. – 2023. – Т. 5. – №. 5. – С. 100-103.