

Modern views on the Causes and Treatment of Caries of Temporary Teeth in Young Children

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Abstract: One of the urgent problems of modern dentistry is dental caries in young children, which is due to both the complexity of providing dental care to young children, and the lack of qualified personnel for its implementation, and the unsatisfactory material and technical base of medical institutions.

This article outlines the generally accepted and modern views on the causes of caries and the solution to these problems in young children.

Keywords: children, oral cavity, teeth, hygiene, caries, microflora, xylitol, mineralization.

Despite the improvement of treatment methods and the efforts made by pediatric dentists, this disease remains common in many countries of the world. Thus, in Russia, caries of temporary teeth occurs in 50-60% of 3-year-olds [1, 3, 6, 10]. It is also important that complications of caries of temporary teeth lead to severe inflammatory processes in the maxillofacial region with damage to the growth zones of the jaw bones. Early removal of temporary teeth is one of the reasons for the formation of dental anomalies.

MATERIALS AND METHODS

According to the foreign classification, any carious dental lesions in children of the first three years of life are designated by the term "Early Childhood Caries" (Ismail, 1998). In the presence of multiple lesions of temporary teeth, including the anterior group of teeth in the upper jaw, the term "Severe Early Childhood Careies" is used [15]. In Russia, the term "multiple caries" or "flowering caries" is used to denote this pathology [2]. In clinical practice, doctors most often have to deal with this extremely active form of caries. Single carious lesions of teeth in young children are extremely rare. In early childhood caries, temporary teeth are affected almost immediately after their eruption. The first diagnostic sign of future caries is a large amount of plaque, often difficult to remove, with a yellowish tinge (Fig. 1). Then the first carious lesions are found in the form of chalky spots, usually occurring on the vestibular surface of the incisors of the upper jaw in the cervical region. Very quickly, within 2-3 months, these foci acquire a light yellow color, and then carious defects appear in this place. The carious process is characterized by rapid flow, spreading in width (planar caries), multiple lesions of the teeth in the order of their eruption (Fig. 2). Usually, parents of babies seek dental care too late, when most of the teeth are affected by caries. In young children, as well as in adults, the main etiological factor in the occurrence of caries of temporary teeth is the presence of cariesogenic microflora in the oral cavity. Moreover, it is absent in the oral cavity of newborns. The presence of cariesogenic microorganisms is associated with a primary infection, the main source of which is the child's mother or caregivers. A pronounced relationship has been proven between the level of caries-causing microorganisms in the saliva of the mother and the risk of infection of the child [11, 13].

Discussion. In this regard, even before the birth of a child, all family members need to cure their teeth and carefully take care of the oral cavity. To reduce the risk of transmission of cariesogenic microflora to caregivers, xylitol-containing chewing gum or xylitol toothpaste can be used during the first years of a child's life [17]. The occurrence of caries in early childhood is also facilitated by: impaired carbohydrate intake, physiological hypomineralization of hard tissues of temporary teeth at this age, a

low level of oral hygiene, the presence of general somatic pathology, unfavorable pregnancy, early eruption of temporary teeth, burdened heredity. In early childhood, of the above pathogenetic factors, the most unfavorable is the violation of the nature and diet of the child, the use of easily fermentable carbohydrates at night. The majority of children of this age with multiple caries who came to our clinic had a factor of prolonged consumption of carbohydrate-containing liquids (sleeping with a bottle filled with sweetened milk, dairy products, juices, compotes and other liquids). In such cases, due to delayed salivation at night, the lack of natural self-cleaning and a decrease in the pH of the oral fluid as a result of prolonged contact of mixtures with a cariesogenic potential in relation to the hard tissues of the teeth, favorable conditions for the development of caries are created. Therefore, it is very important to have a conversation with parents about the need to observe the nature and diet. Parents should be reminded that by the end of the first year, the child should use a spoon and drink from a cup. It is very important to introduce hard food (vegetables, fruits, etc.) into the diet, which promotes self-cleaning of the oral cavity, ensure sufficient intake of essential minerals (calcium, phosphorus, etc.), trace elements and vitamins into the child's body, limit the consumption of sweets and exclude disorderly night and evening feeding with sweetened drinks. It is also important to explain to parents the importance of regular preventive visits to a pediatric dentist at least once every six months starting from the age of 6 months.

A serious aggravating factor is the complete lack of oral hygiene [4, 5, 8]. In children with multiple caries in the oral cavity, a large amount of plaque with a yellowish tinge and associated manifestations of catarrhal gingivitis are detected.

To reduce the effect of the etiotropic factor (acid-forming microflora), it is necessary to maintain the hygienic condition of the child's oral cavity at a high level. Pediatric dentists or hygienists should teach parents about the hygienic oral care of children.

An approach to the treatment of dental caries in young children is very important. Traditional preparation and filling of such lesions is difficult, which is due not only to medical aspects, but also to the negative attitude of young children to the use of a drill. Previously, the most common method of treating caries in early childhood was the silvering method, which consists in threefold application of solutions of silver salts (nitrate or diamminfluoride). However, this method has a number of significant disadvantages: the possibility of using it for the treatment of caries only at the spot stage, a violation of aesthetics due to the appearance of black staining on treated teeth (psychogenic trauma), many complications when used to treat later forms of caries. In this regard, in recent years we have not used the silvering method, and the treatment of temporary teeth in children of the first years of life is carried out according to the concept of minimally invasive interventions, the advantages of which are: early diagnosis and minimization of risk factors for caries (effects on all links of etiopathogenesis), carrying out all therapeutic measures against the background of preventive if treatment is unavoidable, the use of minimally invasive dissection techniques with the preservation of the maximum amount of hard tissues. Following the basic principles of minimally invasive dentistry, the Department of Pediatric Therapeutic Dentistry of the Moscow State Medical University has developed an algorithm for providing conservative dental care to children with early childhood caries:

1. Improvement of the hygienic condition of the oral cavity.
2. Normalization of the nature and diet (elimination of the carbohydrate factor).
3. Local antimicrobial therapy.
4. Local pathogenetic therapy, including the use of remineralizing and fluoride drugs.
5. Sealing of fissures of temporary molars.
6. General endogenous fluoroprophylaxis (carried out when living in an area with a low content of fluoride in drinking water).
7. Examination by a pediatrician to identify general somatic pathology and possible hypocalcemia of the body.

8. Medical supervision.

The advantages of this patient management tactic are: the technical simplicity of performing all stages, the absence of the need for expensive equipment, the possibility of carrying out all manipulations without the use of anesthesia, a gentle attitude to the child's psyche. The main criteria for the success of the events are the motivation and discipline of the patients' parents.

In the presence of extensive carious lesions and related complications, we perform oral cavity sanitation under general anesthesia, followed by the mandatory appointment of the above-described complex of conservative therapeutic and preventive measures in order to prevent the development of relapse of the disease.

The choice of a drug for local antimicrobial therapy is essential. Currently, very few substances are known that can significantly affect the cariesogenic microflora in the oral cavity. Drugs based on chlorhexidine, xylitol, iodides and their combinations are usually used abroad to suppress the activity of cariesogenic microorganisms [12, 14, 18, 19]. However, to obtain the effect of using these drugs, a long course of treatment is necessary [12, 14, 19], and when using broad-spectrum antiseptics, they negatively affect the microbiocenosis of the tooth biofilm, causing dysbiosis in the oral cavity [7, 9]. In addition, when using chlorhexidine-based drugs, tooth staining and impaired taste sensitivity are possible [14, 16]. In Russia, silver-based preparations with the above disadvantages are used to suppress the activity of the cariesogenic microflora in young children. Our clinical and microbiological studies of the antimicrobial efficacy of xylitol gel (10%) in children with early childhood caries have demonstrated its high effectiveness as a factor inhibiting the colonization of pathogenic microorganisms and normalizing the microbiocenosis of tooth biofilm [7].

For effective and timely prevention of early childhood caries, pediatricians should inform parents about hygiene and early diagnosis of dental diseases. It is also necessary to teach parents to examine the child's teeth and notice undesirable changes starting from the first months of his life, since with timely access to the dentist it will be possible to limit conservative treatment.

Conclusion. In conclusion, it should be noted that if all the above recommendations are followed, the carious process is most often stabilized: the initial lesions are remineralized, which is accompanied by the appearance of enamel gloss in the area of white spots; the development of carious defects is suspended, the affected hard tissues are compacted, delimited from healthy tissues, that is, the course of caries acquires a compensated character. This tactic allows you to suspend the development of a cariesogenic situation, stabilize the carious process, and also delay the use of technically more complex and uncomfortable methods for the treatment of caries and its complications for a child.

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