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The Probability of Caries in Preschool Children when Detecting STR. Mutant

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Abstract
This paper presents the first results of a study on the diagnosis of early dental caries in Voronezh. The study included 30 preschool children who were examined in the morning and evening for the presence of Str. caries in saliva. The use of a modern reagent made it possible to quickly and reliably determine the quantitative content of cariesogenic Streptococcus spp. This method can be used to identify risk factors for the development of caries at an early stage and for the prevention of caries in young children.

Keywords: Dental caries, Str. mutans, childhood, prevention.

Introduction

The experience accumulated over the past decades has shown that streptococcal microflora, especially Streptoccocus mutans, plays an important role in the development of dental caries, including in young children. However, given the complex and variable composition of plaque, it should be noted that other microorganisms can cause caries. One of the most important biological properties of Streptococcus mutans is its ability to adhere to the smooth surfaces of teeth and form lactic acid. By attaching to teeth, these microorganisms form plaque, and this action is mediated by the synthesis of glucose polymers from sucrose contained in food. The formation of glucans leads to intercellular aggregation of Str. mutans and other bacteria present in plaque. The sticky glucan matrix of plaque prevents the diffusion of a large amount of acid formed by microorganisms and prolongs their stay on the tooth surface, leading to enamel demineralization and causing caries [1]. It has been proven that children are most often infected with cariesogenic microflora, mainly from mothers or other caregivers. Reducing Streptococcus mutans levels in caregivers may reduce the risk of developing caries in young children. Therefore, parents are advised to observe oral hygiene, carefully take care of their teeth and use topical therapeutic and prophylactic drugs that suppress the activity of the microflora that causes caries when its high level is detected in the dental biofilm. The age of infection with Streptococcus mutans is very important. Previously, it was believed that colonization of cariesogenic microflora in the oral cavity of toothless children is impossible. However, recent clinical studies have shown that Streptococcus mutans is able to colonize the grooves on the dorsal surface of the tongue even before teething. Infants, Genotypic analysis of Streptococcus mutans isolates from the oral cavity of children (12-30 months) showed that many children have the same Streptococcus mutans genotype. This fact proves the existence of horizontal transmission as a method of transmission of

cariesogenic microorganisms [2]: the prevalence of caries on false teeth in 3-year-old children is 14-78% with an average caries intensity of 3.7; the prevalence of caries on false teeth in 6-year-old children is 73% with a caries intensity of 4.76; The prevalence of caries on permanent teeth is 22% with a caries intensity of 0.30. 12 years of age In primary school children, the prevalence of caries of permanent teeth in various regions of Russia reaches 61-96% with an intensity of 0.9-4.6 [3]. Taking into account these data, improving the comprehensive prevention of dental caries in children would significantly improve the condition of teeth and prevent functional disorders of the dental system. Microbiological parameters are the amount of Streptococcus mutans and Lactobacillus in saliva, which are recognized as the most important microorganisms for the development of caries. Microbial contamination of saliva positively correlates with the number of bacteria in plaque [4]. The balance between autogenic transient and obligate bacterial flora on the tooth surface (supradingival plaque) initiates the demineralization of tooth enamel; an increase in the number of microorganisms such as S. mutans and Lactobacillus is associated with a decrease in pH (5.0 - 4.5). Plaque is the place where most of the microorganisms of the oral cavity live, and 70% of plaque is made up of microorganisms. Counting the number of microorganisms in saliva is useful for determining the risk of developing caries in patients and for monitoring for prevention purposes. Although there are many studies on the etiology, clinical picture, diagnosis, treatment and prevention of childhood caries, the high prevalence and intensity of this disease in many countries of the world makes it one of the most important problems in the practice of pediatric dentists [5]. Research materials and methods The study included 30 children aged 3-6 years. The average caries intensity in the study group was 3.9 (kpu). Given that the patients had temporary occlusion, the Fedorova-Volodkina index was used to determine the level of oral hygiene. The studies were conducted in the morning after breakfast and in the evening before dinner. The presence of Streptococcus mutans in saliva was determined using the SALIVA-CHECK MUTANS kit. At high concentrations of Streptococcus mutans in saliva, the bacteria reacted with colloidal monoclonal antibodies of S. mutans labeled with gold. In other words, colloidal gold particles are deposited on the surface of Streptococcus mutans. As a result, the bacteria react with other antibodies to S. mutans, and a red line appears in the T-window. Monoclonal antibodies that did not react with colloidal S. mutans bacteria labeled with gold react with immunoglobulins in the control window C, forming a control red line. Patients are given chewing wax and asked to chew the wax for 1 minute to stimulate salivation. After stimulation of salivation, saliva is collected in the provided container. The saliva sample is mixed with reagents. Reagent No. 1 is a NaOH solution, and reagent No. 2 is an organic acid solution. First, add one drop of reagent No. 1 to the saliva sample under study and stir for 10 seconds with your fingers on the neck of the container. Then add four drops of reagent No. 2 and stir for a few seconds. The color of the saliva sample changed to light green (ErH changed from alkaline to neutral). After adding the sample, a wide red stripe appears in the control window (C) of the test device, signaling the beginning of the test; The result is determined after 15 minutes. If a thin red line appears in the T window, the test result is positive, indicating a high concentration of Streptococcus mutans in saliva (>5x105 colony-forming units/ml of saliva) and a high risk of developing carious lesions in the patient in the future; if the red line does not appear after 15 minutes, the test result is negative. The

concentration of Streptococcus mutans is low, which means that the risk of developing caries at this point is also low.

Results and Discussion:

The data of the conducted studies are presented below.In our case, the concentration of Streptococcus mutans in the morning is low. This is due to the satisfactory and good level of oral hygiene in the morning in most children. Thus, the average Fedorov-Volodkina index in the morning was 2.3, and the high level of Streptococcus mutans in saliva (>5×105 colony-forming units/ml of saliva) It was detected in five (16.6%) patients. Low level of Streptococcus mutans in saliva (5×105 colony-forming units/ml of saliva) with an average Fedorov-Volodkin index of 2.7, it was detected in 22 (73.3%) patients. Low level of Streptococcus mutans in saliva Low level of Streptococcus mutans in saliva (5 x 105 colony-forming units/ml of saliva) with an average Fedorov-Volodkina index of 2.7, Streptococcus mutans in saliva was detected in 22 people, 73.3%. Low levels of Streptococcus mutans in saliva were detected in 8 people (26.6%) with an average Fedorov-Volodkina index of 1.9. According to the study, children did not brush their teeth after lunch and did not engage in hygiene activities, which led to a low level of hygiene and, accordingly, to an increased level of mutans streptococcus in saliva.

Conclusion:

Thus, after passing the diagnosis of the risk of developing caries, children become more aware of oral hygiene, and it becomes clear how they can reduce the likelihood of new caries, independently or with the help of parents. The main advantages of this diagnostic system are: - clarity for the patient; - it can be carried out during a dental consultation, without the intervention of a specialist and lengthy examinations. - Reliability - isolation of specific local factors.

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