УДК: 616[08-039.71+053.5].314-002:612.392.69

THE ROLE OF THE REMINERALIZING PREVENTION OF DENTAL CARIES IN CHILDREN (6-7 YEARS) WITH A HIGH DEGREE OF CARIES ACTIVITY, WHO PERMANENTLY LIVE IN THE CONDITIONS OF BIOGEOCHEMICAL DEFICIENCY OF FLUORINE AND IODINE

Mukhina Y. A.

assistant of the Pediatric Dentistry Department of State Higher Educational Establishment "Uzhhorod National University", Uzhhorod, Ukraine

Introduction. The high occurrence of caries in permanent teeth of children in Ukraine [1, 2, 3] shows the problem of prevention as a major problem in pediatric dentistry. Given the fact that the teeth after eruption are the most susceptible to caries [3, 9] is the particular relevance for the searching of new approaches for the creation of programs to prevent dental caries of permanent teeth, especially at the stage of immature enamel [6, 7, 9, 10].

Caries process on the teeth in the first years after their eruption often develops in fissure and natural hollows on the chewing surfaces of permanent teeth [6, 7], because it is explained by the low mineralization of the specified surface in this period and the complexity of architectonics of occlusal surfaces, creating unfavorable conditions for their cleaning and contributes to the fissure caries [4, 5].

The occurrence of caries is largely conditioned by ecological conditions in which the child lives, namely, biogeochemical deficient micro elements (especially fluorine, iodine, calcium, magnesium, etc.). To those natural areas belong Transcarpathian region, as the natural environment in which man lives [1, 8].

According to the data of O.V.Klitynska (2012) [3, 4] the occurrence of caries on the deciduous teeth in children of 5-6 years, who permanently live in the conditions of biogeochemical deficiencies of fluorine and iodine is 98,3 ± 2,2%, while the intensity of caries at 14,9 ± 0,2, which is extremely high. And more than 60% of patients the activity of caries process was high.

Whereas the eruption of the first permanent molars and the state of unfinished mineralization coincides with the period of high impact of stress from the adaptation of the child to school that reduce non-specific resistance of the body, the conduction of the preventive measures during this period greatly reduce the likelihood of carious affections in the future.

The objective of the research: to determine the effectiveness of the remineralizing prevention of dental caries in children (6-7 years) with different degree of caries activity, who permanently live in the conditions of biogeochemical deficiency of fluorine and iodine.

Materials and methods: for the determination of the role of the remineralizing therapy of early forms of caries was examined 146 school children of the primary classes in the town Uzhhorod, including 63 (46.9%) were boys and 83 (53.1%) were girls.

Remineralizing therapy of the hard tissues of the teeth was conducted by using Biflyuoryd-12 (VOCO, Germany) and aimed in double varnish coating of Biflyuoryd-12, VOCO of all teeth with an interval of 6 months after the thorough cleaning of toothpaste Clint (VOCO, Germany). The pressurization of tooth fissures was made by fissure sealants of light curing according to the screenings. Control of pressurization was carried out during the year.

Treatment of caries and complicated caries was carried out according to the standards of dental care for children.

The restoration of the lost hard tooth tissues was carried out by glass ionomeric and composite materials, according to the indications for their usage, the advantage was given to compomeric materials in temporary teeth (Twinky Star, VOCO, Germany) and composite nano filling materials Polofil Supra (VOCO, Germany) for the chewing group of teeth and Amarys (VOCO, Germany) for the front group of teeth.

Table 1.

The occurrence and intensity of caries in childern at primary exemination

Indexes / Clinical groups	Occurrence of caries, %	Intensity of caries					
		k	p	K	P	V	kp, kp+KPV
Main group, 6–7 years(n=146)	95,3±3,2	5,1±0,2	2,2±0,1	4,1±0,1	1,9±0,1	–	13,3±0,9
Control group,6–7years (n=90)	94,1±3,7	4,9±0,2	2,5±0,1	3,8±0,1	1,9±0,1	–	13,1±0,8

The control group consisted of 90 children of analogical age, whom did not carry out remineralizing therapy and pressurization of shapes.

Results and its discussions. The results of occurrence and intensity of caries in the examined children of the clinical group are represented in Table 1.

The occurrence of caries in the main group was– 95,3±3,2, in the control group was– 94,1±3,7.

Table 2

The occurrence and intensity of caries in children after 24 months

Indexes / Clinical groups	Intensity of caries					
	k	p	K	P	V	kp+KPV
Main group, 8–9 years (n=146)	1,4±0,2*	1,5±0,1	0,3±0,1*	1,6±0,2	–	4,8±0,8*
Control group, 8–9 years (n=90)	5,1±0,2	2,2±0,1	4,1±0,1	1,9±0,1	1,2±0,1	14,5±1,1

Note.*– indexes of authenticity to the indexes of the control group ($p<0,05$).

At primary examination prevailed bad level of hygiene (57,4% in boys and 45,9% in girls); in 27,2% of boys and in 22,2% of girls the level of hygiene was very bad.

For the improving the level of hygiene were applied group learning methods (narration, dialogue, repeating movements), individual training (instructor with 5 children), theatrical performances for group involving favourite cartoon characters. The control of adherence to the skills of individual hygiene was carried out four times, the first two on the models, the third and the fourth - in the dental office individually with visualization of plaque by using the method of color «Finder Plaque» (Curaprox, Switzerland), which clearly indicates the shortcomings of hygiene care of the oral cavity and the ways of their elimination.

After 12 months was conducted the examinations again and was defined the increase of caries intensity and the index of caries reduction. Children of primary school age, 6- 7 years (7-8 years) increase of caries intensity composed in the main groups, P = 4,8-13,3 = -8.5; and the children of the control group of analogical age P = 14,5-13,1 = 1,4. That is, the children of clinical group after 12 months, the reduction of caries intensity was 8.5 in the age group 6-7 (7-8) years.

After 12 month, in all examined children prevailed satisfactory level of hygiene, namely in 52.5% in boys and 49.7% in girls; good hygiene was 37.7% in boys and 45.4% in girls. A small percentage of poor hygiene was diagnosed in boys – 9.8% and 4.9% in girls. This can be explained by the absence of participation of parents in teaching children to improve their hygiene, which plays a significant role.

Conclusions

The problem of high prevalence of caries of deciduous teeth evidences about caries genetic situation in the oral cavity of children during the eruption of the first permanent molars that is complicated by the reaction of the microorganism to the change of living conditions and the start of the first grade of primary school is a form of stress requires specific planned remineralizing prevention. The usage of the proposed prevention schemes based on adaptation factor of children before school age will prevent the development of caries in permanent molars of the 1st and the 2nd degree of activity.

REFERENCES

1. Каськова Л.Ф.Показники ураженості карієсом зубів у дітей Полтавської області //Л.Ф. Каськова, О.О. Бабіна, О.Ю. Андріянова та ін. // Український стоматологічний альманах. – 2002. – № 4. – С. 13.
2. Кисельникова Л.П. Перспективы местного применения фторидов в клинической стоматологии. / Л.П.Кисельникова // Маэстро стоматологи . - 2010.- №2 (26).- С. 18-22.
3. Клітинська О.В. Аналіз поширеності карієсу у дітей дошкільного віку міста Ужгорода./ О.В.Клітинська, Е.Й. Дячук // Матеріали науково-практичної конференції „Актуальні питання стоматології сьогодення ”.- Тернопіль.- 2010.- С.24-25.
4. КлітинськаО.В. Аналіз стану твердих тканин зубів у дітей, які проживають в умовах біогеохімічного дефіциту фтору та йоду./ О.В.Клітинська// Матеріали науково-практичної конференції „Актуальні питання стоматології сьогодення”.- Тернопіль.- 2010.- С.20-21.
5. Косенко К.Н. Методичне керівництво для стоматологів по впровадженню комплексної профілактики стоматологічних захворювань у дитячого населення України / К.Н. Косенко, О.В. Деньга, Л.О.Хоменко, П.О.Леус//. – Одеса.- 2006. – 43с.
6. Лемко И.С. К вопросу природных биогеохимических провинций в регионах с наличием минеральных вод/ И.С.Лемко, Л.П. Киртич, Л.В.Дичка // “Биометеорология человека”: Материалы конгресса. - Санкт-Петербург, 2010. - С.128-129.
7. Леонтьев В. К. Профилактика стоматологических заболеваний / В. К. Леонтьев, Г. Н. Пахомов. М., 2006. - 416 с.
8. Хоменко Л.О. Терапевтична стоматологія дитячого віку/ Л.О.Хоменко, О.І.Остапко, О.Ф.Кононович, В.І.Шматко та ін. //Підручник.- К.: Книга плюс, 2007. – 766с
9. Cullinan M.P. The effect of a triclosan-containing dentifrice on the progression of periodontal disease in an adult population. /M.P. Cullinan, B.B.Westerman, S.M. Hamlet, J.E. Palmer.// J. Clin Periodontol.- 2009.-№30(5).- P.414-419.
10. Cullinan M.P.Acquisition and loss of Porphyromonas gingivalis, Actinobacillus actinomycetemcomitans and Prevotella intermedia over a 5-year period: effect of a triclosan/copolymer dentifrice./ M.P. Cullinan, S.M.Hamlet, B.B.Westerman, J.E.Palmer, M.J. Faddy, G.J.Seymour.// J Clin Periodontol. – 2009.- №30(6).- P.532-541.