

RESULTS OF LOCAL ENAMEL DEMINERALIZATION TREATMENT IN PRIMARY INCISORS IN YOUNG CHILDREN

Kamalova M.K.¹, Kamennova T.N.², Osokina A.S.², Afonina I.V.², Ogonyan V.R.², Maslak E.E.²,

¹Bukhara State Medical Institute, Uzbekistan,

²Volgograd State Medical University, Ministry of Health of Russia.

✓ Resume

The article presents the results of enamel demineralization treatment in primary incisors in young children. It was revealed that intensive fluoride varnish course increased significantly the treatment efficiency in comparison with the basic scheme which included recommendation in diet and fluoride toothpaste use. Additional daily application of remineralization agent, which contained calcium and phosphates, only slightly reduced the rate of demineralization progression and carious cavities development.

Key words: local enamel demineralization treatment, fluoride toothpaste, fluoride varnish, remineralization agent.

РЕЗУЛЬТАТЫ ЛЕЧЕНИЯ ОЧАГОВОЙ ДЕМИНЕРАЛИЗАЦИИ ЭМАЛИ ВРЕМЕННЫХ РЕЗЦОВ У ДЕТЕЙ РАННЕГО ВОЗРАСТА

Камалова М.К.¹, Каменнова Т.Н.², Осокина А.С.², Афонина И.В.², Огонян В.Р.², Маслак Е.Е.²,

¹Бухарский государственный медицинский институт, Узбекистан,

²Волгоградский государственный медицинский университет, Минздрава России.

✓ Резюме

В статье представлены результаты лечения очаговой деминерализации эмали временных резцов у детей раннего возраста. Установлено, что применение интенсивного курса фторидного лака существенно повышало эффективность лечения, по сравнению с базовой схемой, включавшей рекомендации по питанию и применению фторидной зубной пасты. Дополнение схемы лечения ежедневными аппликациями реминерализующего препарата, содержащего кальций и фосфаты, незначительно снижало частоту прогрессирования деминерализации и образования кариозных полостей.

Ключевые слова: лечение очаговой деминерализации эмали, фторидная зубная паста, фторидный лак, реминерализующий препарат.

ЭРТА ЁШДАГИ БОЛАЛАР ҚОЗИҚ ТИШИ ЭМАЛИНИНГ ҶОҚЛИ ДЕМИНЕРАЛИЗАЦИЯСИНИ ДАВОЛАШ НАТИЖАЛАРИ

Камалова М.К.¹, Каменнова Т.Н.², Осокина А.С.², Афонина И.В.², Огонян В.Р.², Маслак Е.Е.²,

¹Бухоро давлат тиббиёт институти, Ўзбекистон,

²Волгоград давлат тиббиёт университети, Россия.

✓ Резюме

Мақолада эрта ёшдаги болалар қозиқ тиши эмалининг ҷоқли деминерализациясини даволаш натижалари келтирилган. Фторли лакнинг интенсив курсини қўлаш жамланмадаги схема билан солиштирганда даволаш самарадорлигини сезиларли даражада оширганлиги аниқланди, унда фторидли тиш пастасини ишлатиш ва овқатланиш бўйича тавсияларни ўз ичига олган. Таркибда кальций ва фосфатлар бўлган реминерализация препаратининг кунлик қўлланилиши билан даволаш режимининг қўшилиши деминерализация ва кариоз бўшлиқларнинг шаклланишини бироз пасайтирди.

Калит сўзлар: эмалининг ҷоқли деминерализациясини даволаш, фторли тиш пастаси, фторли лак, реминерализация қилувчи дори.

Relevance

Caries of temporary teeth has a high prevalence and is a significant public health problem [4,10]. The modern concept of minimally invasive therapy in dentistry is aimed at detecting the early stages of dental caries and their effective treatment [3,8]. For the treatment of the initial stage of dental caries - enamel caries in the form of a chalky spot (focal enamel demineralization), various strategies are proposed, including the use of fluoride toothpastes [1], silver diamine fluoride [2,11], fluoride lacquers [12], preparations containing calcium and phosphates [7,9]. However, there is not enough information about the clinical effectiveness of various medications and treatment regimens for focal demineralization of tooth enamel in young children [5,6].

Purpose: the purpose of the study: to study the results of using various schemes for the treatment of focal demineralization of enamel of temporary incisors in young children.

Materials and methods

The prospective study included 57 children aged two to three years who were diagnosed with caries in the form of focal enamel demineralization on the vestibular surfaces of the upper jaw incisors. For differential diagnosis and assessment of the degree of enamel demineralization, vital staining of teeth with 1% methylene blue solution was performed. Parents signed a written informed consent for their children to participate in the study. All children included in the study had a good level of overall health

(group 1 or 2) and positive behavior (on the Frankl scale) during preventive procedures. Among the study participants, 3 groups were randomly formed, 19 children each. In the first group, children and their parents were trained in the standard method of brushing their teeth, methods of controlling oral hygiene, received recommendations on caries-phylactic nutrition and brushing their teeth twice a day using aminofluoride-containing toothpaste (Colgate Elmex®, children's toothpaste, 500 ppmF⁻).

In the second group, in addition to the previous one, a fluoride varnish containing 6% of sodium fluoride and calcium fluoride (Bifluoride-12, VOCO, Germany) was used.

The course of treatment included applying varnish to the teeth for three days in a row, then once a month. Children of the third group, in addition to the scheme for the second group, parents daily after evening oral hygiene (before bedtime) applied a remineralizing drug containing bioavailable calcium and phosphates (GC Tooth Mousse®) to their teeth. Repeated examinations of children were carried out every month, checked the hygienic condition of the teeth, gave repeated recommendations to parents, performed the necessary preventive procedures. After 6 months, all groups evaluated the effectiveness of the measures carried out

according to the criteria "improvement", "stabilization", "deterioration".

The improvement was characterized by restoration of enamel color and gloss, reduction of the size of the demineralization center and intensity of staining with methylene blue. In the absence of any positive or negative changes, stabilization of the carious lesion was registered. The deterioration was accompanied by the progression of demineralization and the formation of a carious cavity. Given that the main task of the modern concept of karjalohja - prevention of cavities, treatment of caries of the enamel is believed effective to improve or stabilize, ineffective in cases of deterioration of carious lesions and the formation of cavities. Statistical data processing included determining the proportions and differences between groups according to the student's criterion at a significance level of $p < 0.05$.

Results and discussion

Research result. Initial examination revealed caries lesions of enamel in the form of foci of demineralization in 73 incisors of the upper jaw in children of the first group, 72-the second, 74-the third. After 6 months, the condition of the areas of carious lesions of the incisor enamel in children of the observation groups differed (table 1.).

Table.1

Results of treatment of dental caries in children

Group	Number of teeth (%) with treatment results:					
	Improvement		Stabilization		Decline	
	ab.	%	ab.	%	ab.	%
First, n=73	8	11,0 ^{a,b}	37	50,7 ^b	28	38,3 ^{a,b}
Second, n=72	31	43,1 ^{a,b}	35	48,6 ^c	6	8,3 ^a
Third, n=74	46	62,3 ^{b,c}	24	32,4 ^{b,c}	4	5,4 ^b

a - significant differences ($p < 0.05-0.001$) between the first and second groups, b - the first and third groups, c-the second and third groups. In children in the first group, improvement was registered in 11.0% of teeth, in the second - 43.1%, and in the third-62.2%. the differences between the groups were statistically significant ($p < 0.001$).

Stabilization of carious lesions occurred in 50.7% of teeth in children of the first group, 48.6% - in the second and 32.4% - in the third. The differences between the first and third, second and third groups were statistically significant ($p < 0.05$), while the differences between the first and second groups were insignificant ($p > 0.05$). Deterioration in the form of progression of demineralization and formation of carious cavities was detected in 38.3% of the teeth of the first group, 8.3% - the second, 5.4% - the third. The differences between the first and second, first and third groups were significant statistically ($p < 0.001$), while the differences between the second and third groups were insignificant.

The obtained data showed that in young children, the introduction of anti-carious nutrition and improved oral hygiene, the use of toothpaste with a low concentration of fluoride is sufficient only to stabilize every second carious lesion of the incisor enamel and reduce the foci of demineralization of every tenth tooth. In more than a third of the teeth, the situation deteriorated, the progression of demineralization foci and the formation of carious cavities.

Perhaps the reason was the lack of attention of parents to the restriction of sweets in the diet and hygienic care of children's teeth. The introduction of an intensive course of application of fluoride varnish in the treatment of caries

of the enamel of temporary teeth increased by 3.9 times the number of positive results and reduced by 4.6 times the number of failures, while the number of stabilized carious lesions remained at the same level. The addition of a remineralizing drug containing bioavailable calcium phosphate to the treatment regimen for children with home procedures of dental applications contributed to a 1.4-fold increase in the number of successful treatment outcomes in the third group compared to the second group. However, the number of cases of stabilization of carious lesions decreased by 1.5 times, and the decrease in the number of cases of demineralization progression was insignificant statistically.

Thus, treatment of focal enamel demineralization was effective in the first group in 61.7% of teeth, the second - 91.7%, the third-94.7%, ineffective-38.3%, 8.3%, 5.3%, respectively. The differences between the first and second, first and third groups were statistically significant ($p < 0.001$), and insignificant ($p > 0.05$) between the second and third groups.

Conclusion

Intensive course of application of fluoride varnish, in comparison with the appointment of an anti-carious

diet and fluoride toothpastes (500 ppmF⁻), significantly increased the effectiveness of treatment of focal demineralization of incisors of temporary teeth in young children. The inclusion in the treatment regimen, in addition to the fluoride varnish, of daily use of a remineralizing drug containing calcium and phosphates, increased the effectiveness of treatment (an increase in the number of cases of improvement), but differences in the prevention of cavities were insignificant statistically.

LIST OF REFERENCES:

1. Kuzmina E.M. [et al.]. Efficiency of toothpaste with amino fluoride for prevention and treatment of initial carious teeth in children // Dental Forum. - 2017. - No. 4. - P. 86-91.
2. Kurkina O.N. [et al.]. Preliminary harm determination to stability of caries of teeth: results of investigation in vitro (Review of the Literature) // Institute of Dentistry. - 2020. - №1. - P. 95.
3. Maslak E.E. [et al.]. Modern concepts of treatment of caries of dairy teeth in young children // Clinical dentistry. - 2015. - No. 3 (75). - P. 8-12.
4. Osokina A.S. [et al.]. Estimation of prevalence and intensity of caries in children 1-3 years in Volgograd // Dental Forum. - 2019. - No. 4 (75). - P. 78-79.
5. Shakovets N.V. Efficiency of treatment of carious defects without the formation of the cavity in the children of the early age // Modern dentistry. - 2018. - No. 1 (70). - P. 47-51.
6. Ancira-Gonzalez L. [et al.]. White spot lesion remineralization agents in primary teeth: a systematic review // Oral Health Prev Dent. - 2018. - Vol. 16(5). - P. 391-400.
7. Boss M. [et al.]. Enamel remineralization and repair results of Biomimetic Hydroxyapatite toothpaste on deciduous teeth: an effective option to fluoride toothpaste // J Nanobiotechnol. - 2019. - Vol. 17:17 [https://doi.org/10.1186/s12951-019-0454-6].
8. Early Childhood Caries: IAPD Bangkok Declaration // Int J Paediatr Dent. - 2019. - Vol. 29(3). - P. 384-386.
9. Haghgoo R., Ahmadvand M., Moshaverinia S. Remineralizing effect of topical novamin and nano-hydroxyapatite on caries-like lesions in primary teeth // J Contemp Dent Pract. - 2016. - Vol. 17(8). - P. 645-649.
10. Maslak E. [et al.]. Dental caries prevalence in 3-year-olds in Volgograd (1996-2015) // International Dental Journal. - 2016. - Vol. 66, №S1. - P. 9.
11. Maslak E.E., Kamalova M.K. Problems of organizing dental care for preschool children // Journal of Biomedicine and Practice. Tashkent, 2020. - No. 1. - P. 26-32.
12. Petersson L.G. Professional fluoride varnish treatment for caries control: a systematic review of clinical trials // Acta Odontol Scand. - 2004. - Vol. 62(3). - P. 170-176.

Entered 09.09.2020