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COMPARATIVE EFFECTIVENESS OF TREATMENT OF INITIAL DENTAL CARIES IN CHILDREN

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✓ ***Resume***

In this work, 73 children aged 7 to 15 years with the presence of initial dental caries in the oral cavity were examined in order to assess the effectiveness of conservative therapy in children without the formation of a carious cavity. The studied children were divided into 3 groups by blind randomization. In the first group, remineralizing therapy with an drug was performed, enamel sealing liquid - deep fluoridation. In group 2, remineralizing therapy was performed with a drug containing silver diaminofluoride "Argenate diocomponent". In group 3, remineralizing therapy consisting of a combination of rinsing the oral cavity with an antiseptic 0.01% chlorhexidine followed by the application of ODE with this antiseptic for 1 min. in combination with deep fluoridation. The obtained results revealed that the combined use of antiseptic and deep fluoridation is significantly more effective in suspending the treatment of carious lesions, without cavity formation, respectively, compared only with deep fluoridation and a preparation containing silver diaminofluoride.

Key words: caries, focal enamel demineralization, enamel sealing fluid, remineralization.

БОЛАЛАРДА БОШЛАНҒИЧ ТИШ КАРИЕСИНИ ДАВОЛАШНИНГ ҚИЁСИЙ САМАРАДОРЛИГИ

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✓ ***Резюме***

Ушбу ишда кариоз бўшлиқ ҳосил бўлмаган болаларда консерватив терапиясини олиб бориш самарадорлигини баҳолаш мақсадида оғиз бўшлиғида тишларнинг бошлангич кариеси мавжуд 7 ёшдан 15 ёшгача бўлган 73 нафар бола текширилди. Ўрганилаётган болалар тасодифий рандомизация усули билан 3 гуруҳга ажратилди. Биринчи гуруҳда препарат билан реминераллаштирувчи терапия, эмални герметизацияловчи ликвид - чуқур фторлаш қўлланди. 2-гуруҳда реминераллаштирувчи терапия «Аргенат диокомпонент» кумуш диаминофториди мавжуд препарат билан олиб борилди. 3-гуруҳда оғиз бўшлиғини 0,01% хлоргексидин антисептиги билан чайиш, мазкур антисептик билан 1 дақиқа давомида аппликацияси ва чуқур фторлашни ўз ичига олувчи реминераллаштирувчи терапия олиб борилди.Олинган натижалардан маълум бўлдики, бўшлиқ ҳосил қилмаган кариес шикастланишларини даволашда антисептик ҳамда чуқур фторлашнинг уйғунликда қўлланиши фақат чуқур фторлаш ҳамда кумуш диаминофторид мавжуд препаратни қўллашдан кўра сезиларли даражада самарали.

Калит сўзлар: Кариес, эмалнинг ўчоқли деминераллашуви, эмални герметизацияловчи ликвид, реминерализация.

СРАВНИТЕЛЬНАЯ ЭФФЕКТИВНОСТЬ ЛЕЧЕНИЯ НАЧАЛЬНОГО КАРИЕСА ЗУБОВ У ДЕТЕЙ

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✓ ***Резюме***

В данной работе обследовано 73 детей от 7 до 15 лет с наличием в полости рта начального кариеса зубов с целью оценки эффективности проведения консервативной терапии у детей, без образования кариозной полости. Исследуемые дети разделены на 3 группы методом слепой рандомизации. В первой группе проводили реминерализующую терапию препаратом, эмаль герметезирующий ликвид – глубокое фторирование. 2 – группе реминерализующая терапия проводилось препаратом содержащая диаминофторид серебра «Аргенат диокомпонент». 3 – группе реминерализующая терапия, состоящая из сочетания полоскания полости рта антисептиком 0,01% хлоргексидина с последующей аппликацией данным антисептиком на 1 мин. в сочетании с глубоким фторированием.

Полученные результаты выявили, что сочетанное применение антисептика и глубокого фторирования значимо эффективнее в приостановке лечения кариозных поражений, без образования полости соответственно по сравнению только с глубоким фторированием и препаратом, содержащим диаминофторид серебра.

Ключевые слова: кариес, очаговой деминерализации эмали, эмаль герметезирующий ликвид, реминерализация.

Relevance

Dental caries is a multifactorial infectious disease that can develop at any age – in early childhood, in adolescence and in adults, throughout life, leading to the demineralization of enamel with the formation of a carious cavity. According to VOZ, caries remains a significant problem in most developed countries of the world, affecting from 60 to 90% of children and the vast majority of the adult population [2,4,7,9].

Early diagnosis and prevention of the development of the carious process are still considered the main and not fully understood problems in modern dentistry. It is very important that the progression of the carious process can be stopped before the formation of a carious cavity. The most urgent and expedient is the detection of carious lesions in children at early stages in the treatment of which modern non-surgical methods (interceptive treatment) are used [1,3,5,8].

The main advantages of modern techniques are a boron drilling machine, as well as the possibility of removing lesions of the tooth tissue without affecting its healthy part. The treatment of carious lesions without drilling is based on various principles of exposure [1,6,8,9]. The application of the postulates of the modern concept of dental caries has made it possible to develop methods that not only help prevent the occurrence of the disease, but also allow to suspend carious lesions in the early stages of development without surgical intervention. The methods of treatment of dental caries in the early stages include minimal invasion, preventive, non-operative and interceptive treatment.

Conducting interceptive treatment in temporary and permanent cases in young children is indicated for a number of reasons. It is primarily aimed at the cause of the disease, allows you to save more hard tissues of the tooth compared to dissection, and most importantly - almost painlessly [1,2,3,7].

To reduce the incidence of dental caries in childhood, it is necessary to increase the effectiveness of conservative treatment of enamel caries, since this is the only nosological form of caries that lends itself effectively to conservative treatment and is one of the integral and urgent tasks in pediatric dentistry [2,4,5,8,9].

The purpose of the study: To evaluate the effectiveness of conservative treatment of early caries (ODE) without cavity formation in children.

Materials and methods

73 children aged 7 to 15 years were examined. The intensity of the carious process was assessed according to the VOZ - CPU index. Oral hygiene was assessed using an index developed by E.M. Kuzmina (2000) [2]. The criterion for inclusion in the study was the presence of initial caries, focal enamel demineralization (ODE) in the oral cavity in children.

The results of the study

Before the start of the therapeutic measures, all children underwent oral sanitation and the children were divided into 3 groups by blind randomization. In the first group – 23 children underwent remineralizing therapy with the drug Enamel sealing liquid (Humanhemie. Germany). In the second group, 25 children were treated with a preparation containing silver diaminfluoride "Argenate one-component" ("Vladmiva". Russia). In the third group, 25 children underwent combined

remineralizing therapy with rinsing and subsequent application of 0.01% p-r chlorhexidine for 1 minute before enamel remineralization, sealing liquid.

All methods of treatment of initial caries were carried out according to the methods and with the multiplicity of procedures specified by the manufacturing companies in the instructions for the use of materials. Evaluation of the results of the study was carried out after 3, 6 and 12 months in each age group of children.

Of antimicrobial agents in dentistry, solutions of chlorhexidine in various concentrations are more often used. This antiseptic has a pronounced bacteriostatic and bactericidal properties. Chlorhexidine acts on both gram-positive and gram-negative microorganisms, as well as fungi.

The effectiveness of remineralization was evaluated for initial carious lesions on smooth surfaces in comparison with those in group 1, 2, 3. For this purpose, an analysis of the dynamics of the state of initial carious lesions in the form of chalky spots on the smooth surfaces of incisors, canines and molars was carried out 3, 6 months and 1 year after the start of therapeutic and preventive measures.

In children of group 1, when using fluorolac, there is a decrease in the reduction of ODE by 0.37, in group 2 by 0.46 and in group 3 by 0.65. Also, other studied indicators of TER and CDOERR -test (clinical determination of enamel remineralization rate) in all 3 groups significantly improved after 3 months of follow-up compared with the initial values, which indicates the effectiveness of the remineralizing therapy (Table 1). After 6 months and 1 year after therapeutic and prophylactic procedures, the tendency to decrease in the studied indicators persists and remains significantly lower compared to the data before treatment.

In children of group 1, the remineralization of initial carious lesions was observed in 34.9± 4.97%, in group 2 – in 45.7± 5.79%, in group 3 – 54.5± 6.17% of teeth. The progression of ODE on smooth surfaces during rinsing and application with 0.01% chlorhexidine solution is 1.8 times more effective compared to the application of silver diamine fluoride and 1.4 times more effective compared to deep fluorination with enamel sealing liquid.

Table 1

Dynamics of development of ODE in children under the influence of various methods of remineralizing therapy

Groups	Studied indicators	Terms of observation			
		Initial data	After 1 month	After 6 month	After 1 year
№ 1	TER (1-3 points)	3,96±0,13	3,57±0,11***	3,43±0,11**	3,39±0,12***
	CDOERR (1-3 days)	3,00±0,13	2,57±0,11***	2,65±0,15	2,57±0,11
	ODE intensity	4,32±0,20	3,95±0,20	4,20±0,14	4,27±0,17
№ 2	TER (1-3 points)	3,88±0,12	3,44±0,10*	3,32±0,11**	3,32±0,10***
	CDOERR (1-3 days)	3,04±0,12	2,44±0,12**	2,40±0,12	2,36±0,10
	ODE intensity	4,26±0,24	3,80±0,21	3,60±0,08**	3,60±0,14***
№ 3	TER (1-3 points)	3,76±0,10	3,32±0,10*	3,20±0,10**	3,20±0,10**
	CDOERR (1-3 days)	3,08±0,15	2,32±0,10*	2,32±0,10*	2,32±0,11**
	ODE intensity	4,21±0,18	3,56±0,16**	3,51±0,10**	3,50±0,10**

*Note: * - the reliability of differences in relation to the "Initial data" was noted (* - P<0.001; ** - P<0.01; *** - P<0.05).*

Conclusions

Thus, the inclusion of rinsing and application of 0.01% chlorhexidine solution in the complex of therapeutic and prophylactic mineralizing therapy makes it possible to increase the effectiveness of remineralization of initial carious lesions in the form of ODE located on smooth surfaces of teeth by 27.5%.

Children with an acute course of the carious process, as evidenced by the presence of ODE, along with the elimination of common risk factors for the development of the carious process. The use of therapeutic and prophylactic remineralizing therapy with fluorolac preparations, deep fluoridation of enamel with sealing liquid leads to remineralization of a significant proportion of initial carious lesions, stabilization and reverse development of caries in the spot stage, while the effectiveness remains high both 3 and 6 months and 1 year after remineralizing therapy, which allows us to recommend these drugs for wide use in therapeutic and prophylactic remineralizing therapy of ODE in children.

It should be noted that the effect of remineralizing therapy is enhanced when they are used in combination with the antiseptic 0.01% chlorhexidine during all follow-up periods.

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