



CRITERIA FOR THE CLINICAL EFFECTIVENESS OF THE DEEP FLUORIDATION METHOD WITH THE “DENTA-FLUO” PREPARATION IN CHILDREN WITH A MIXED BITE

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ABSTRACT

Statistics data of preventive examinations of the child population, carried out in Andijan, in 2015-2018, showed that 86% of children at the age of 6 years, 73% at the age of 12 years have teeth affected by caries. The indicator of the intensity of caries in children aged 6 years in the range of 4.5 -5.6, at the age of 12 years, this figure was 3.7.

It has been proven that fluorides are one of the effective anti-caries agents that slow down the development of caries, reduce the solubility of enamel, changing its structure, and thereby give resistance to the action of acids. For the treatment of caries in the stain stage and the prevention of secondary caries, preparations for deep fluoridation of enamel are widely used.

The aim of our work was to evaluate the clinical efficacy of deep fluoridation with the drug "Denta-Fluo" for the prevention of caries in children.

Based on the foregoing, the dynamics of the intensity of caries of temporary and permanent teeth in children aged 6-7 years was observed in the course of the deep fluoridation method using the "Denta-Fluo" preparation for 12 months.

And in the process we came to the conclusion that, in addition to the effectiveness of "Denta-Fluo" for reotherapy by the method of deep fluoridation, the advantage of the drug is its budget. A significant reduction in the growth of caries and ease of use gives reason to recommend this drug for deep fluoridation as an alternative to imported drugs in this category.

KEY WORDS: prevalence of caries, intensity of caries, remineralization, deep fluoridation of enamel, fluorides, "Denta-Fluo", highly dispersed calcium hydroxide

INTRODUCTION

According to T.A.Akilov (1995), a high prevalence and intensity of dental caries is observed in many regions of Uzbekistan, which obliges specialists in this field to look for the most effective and affordable methods for the prevention and treatment of this disease for different segments of the population. [1]

Despite the developed prevention systems, the developing network of dental clinics, the state of the oral cavity in the population remains at a low level (the intensity and prevalence of dental pathology is increasing).

Statistics data of preventive examinations of the child population carried out in Andijan in 2015-2018, showed that 86% of six-year-olds, 73% of children under the age of 12 have carious teeth. Based on this, the incidence of caries in 6-year-old children was high, and in 12-year-old children, the average. The intensity of caries in children aged 6

years is in the range of 4.5 -5.6, at the age of 12 this indicator was 3.7. 8% of 6-year-old children were diagnosed with caries in the first permanent molars.

According to Kiselnikova L.P. (2009), unsatisfactory oral hygiene in children, insufficient local use of fluoride-containing agents in the form of various rinses, applications are factors contributing to the rapid defeat of temporary and permanent teeth, which are insufficiently mineralized at this age. [2]. All of the above provides the prerequisites for finding more effective methods of caries prevention in children of both school and preschool age.

It has long been proven that fluorides are one of the effective anti-caries agents that slow down the development of caries, reduce the solubility of enamel, changing its structure, and thereby give resistance to the action of acids. Fluorides are also able to inhibit the metabolism of microorganisms, which helps to reduce acid production and prevent the processes of enamel demineralization. [2]



Today, the global dental market is quite saturated with various drugs to effectively prevent and reduce the activity of caries, among which much attention is paid to topical agents, which include fluorides in various combinations with other odontotropic components.

For the prevention and treatment of caries in the stain stage, as well as for the prevention of the development of secondary caries, preparations for deep fluoridation of enamel and dentin are widely used. [6].

Deep fluoridation is understood as enamel saturation due to the formation of highly dispersed CaF₂ crystals in the hard tissues of the tooth after applying a special enamel-sealing liquid. [4]

The deep fluoridation method was proposed by the German professor A. Knappwost. "Enamel-sealing liquid" manufactured by "Human-135 chemieGmbH" (Germany), consists of two liquids.

Liquid composition No. 1: anhydrous magnesium fluoride silicate, anhydrous copper fluoride silicate, sodium fluoride (as a stabilizer), distilled water. Liquid composition No. 2: highly dispersed calcium hydroxide. [3.4]

The high concentration of fluoride and copper ions during remotherapy provides protection of teeth from cariogenic factors

By analogy, in 2019, the domestic manufacturer DentalsPfarma LLC developed and presented its first drug, Denta-Fluo, intended for deep fluoridation of enamel and dentin. The Denta-Fluo kit includes liquid and suspension. Liquid -1, represented by a solution containing fluorine and copper ions. The suspension is highly dispersed calcium hydroxide in distilled water with the addition of a stabilizer. When a weakly acidic solution of magnesium fluoride silicate (liquid -1) and highly dispersed calcium hydroxide (suspension-2), deeply penetrating into the pores of enamel and dentin (about 10 microns deep), are applied to the enamel of the tooth, spontaneous precipitation of highly dispersed calcium fluoride and fluoride magnesium, which has the highest solubility.

Thus, the foregoing served as the rationale for the purpose of our study to assess the clinical efficacy of deep fluoridation with the drug "Denta-Fluo" for the prevention of caries in children.

The purpose of the work is to evaluate the clinical effectiveness of deep fluoridation with the

drug "Denta-Fluo" for the prevention of caries in children.

Objectives: to determine the initial intensity of caries in the prophylactic group and the comparison group; to identify an increase in caries in permanent and temporary teeth six months and a year after the start of prophylaxis by the method of deep fluoridation; compare the increase in caries in the prophylactic group and in the comparison group; to determine the reduction of the growth of caries in permanent and deciduous teeth.

MATERIALS AND METHODS

Among the students in grades 1-2, 2 groups of children 6-7 years old, 30 people in each, were singled out. The intensity of caries in group 1 was 5.4, in group 2, this figure was 4.9. Preliminary sanitation of carious teeth was carried out in both groups. In the first, deep fluoridation of 120 permanent molars and 64 permanent central incisors, as well as 228 temporary teeth was performed. In the comparison group, local prophylaxis with fluoride preparations was not carried out, but the children were trained in oral hygiene.

METHODOLOGY

The Denta-Fluo deep fluoridation kit includes a liquid and a suspension. Liquid is a colorless solution containing fluorine and copper ions. Suspension - finely dispersed calcium hydroxide in distilled water with the addition of a stabilizer. All surfaces of the teeth were thoroughly cleaned with a non-fluoride polishing paste, dried with a stream of warm air, the fissures of the chewing and vestibular surfaces of the anterior teeth were squarely treated with liquid N 1 (a complex solution with fluoride and copper ions) using cotton balls or brushes and then after 1 min - with liquid N 2 (suspension of calcium hydroxide), after shaking it. After another 1 min, the surface of the teeth was washed with a stream of water. For the effectiveness of the method, the procedure was repeated after 2 weeks and was carried out 2 times a year with an interval of six months.

The effectiveness of preventive procedures was assessed by the indicators of caries reduction and reduction of caries growth, which were calculated using the formulas (1, 2):

$$\text{Reduction of caries} = \frac{\text{CPU control} - \text{CPU prevention}}{\text{CPU control}} \times 100\%$$

where CPU control is the intensity of caries in the comparison group;
 CPU prevention - the intensity of caries in the preventive group.

$$\text{Reduction of caries growth} = \frac{\Delta\text{CPU control} - \Delta\text{CPU prevention}}{\Delta\text{CPU control}} \times 100\%$$

where $\Delta\text{CPU control}$ is the increase in caries in the comparison group;

$\Delta\text{CPU prevention}$ is an increase in caries in the prophylactic group.



RESULTS AND DISCUSSIONS

Table 1 shows that at the initial examination, the indicator of the intensity of caries in permanent

teeth was 0.64 in the prophylactic group and was slightly lower (0.53) in the comparison group.

Table 1
Dynamics of the intensity of caries of permanent teeth in children during the deep fluoridation method using the drug "Denta-Fluo"

Observation period (months)	Prophylactic group		Comparison group	
	CPU	Increase CPU	CPU	Increase CPU
Initial value	0,64	-	0,53	-
6	0,79	0,15	0,84	0,31
12	0,83	0,04	1,21	0,37

When viewed after 6 months. the increase in caries in the first group was 0.15, and in the second - 0.31 (almost 2 times more). After 1 year from the moment of the first examination, this indicator in the prophylactic group increased by only 0.05, and in the comparison group by 0.15 (9 times more). As a result, for 1 year the increase in caries in the main group was 0.19, which is almost 3.5 times more than in the comparison group (68). The reduction in the growth of caries in permanent teeth was 72%. A significant reduction in the growth of caries within a year after the start of deep fluoridation gives grounds

to recommend this method for the prevention of caries in permanent teeth.

During the initial examination of deciduous teeth, the value of Kpn values had a large difference in both groups and the intensity was within 5.5. After 6 months. the increase in caries was 0.15 in the prophylactic group and 0.31 in the comparison group. After 1 year, in the prophylactic group, the increase in CP was 0.04, and in the comparison group, the difference increased and the indicator of the increase in caries was in 6 months. 0.37 (almost 10 times more).

Table 2
Dynamics of the intensity of caries of deciduous teeth in children 6-7 years of age when carrying out the method of deep fluoridation using the drug "Denta-Fluo".

Observation period (months)	Prophylactic group		Comparison group	
	Cp	Increase Cp	Cp	Increase Cp
Initial value	5,84	-	5,38	-
6	6,07	0,23	5,69	0,31
12	6,21	0,13	6,98	1,29

The growth of carious cavities after 6 months was equal to 0.23, i.e. 6 teeth were added to the total index in the first group and 0.31 in the second group, thus, to the total index in the control group, 9 carious teeth were added. After 1 year, the number of carious cavities increased to 9 in the prophylactic group, and in the comparison group - to 39. A year later, the increase in newly detected caries in the prophylactic group was 9, and in the comparison group, there were already 39 carious cavities, which is almost 4 times more. The reduction in the increase in decay teeth caries was 77.5%.

Based on the foregoing, the deep fluoridation treatment with the use of the drug "Denta-Fluo" promotes the prevention of caries of both temporary and permanent teeth during the period of changeable bite. years before a complete bite change.

CONCLUSION

In addition to the effectiveness of Denta-Fluo for deep fluoridation remotherapy, the advantage of the drug is its budget. A significant reduction in the growth of caries and ease of use gives reason to

recommend this drug for deep fluoridation as an alternative to imported drugs in this category.

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