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DIAGNOSTICS AND PREVENTION OF THE DEVELOPMENT OF CARIES AND ITS COMPLICATIONS IN CHILDREN AT ORTHODONTIC TREATMENT

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ABSTRACT:

Today, 80% of patients are treated with non-removable equipment, which, due to its duration, significantly reduces the quality of life; the amount of soft plaque around the base of the locks increases, especially in the cervical areas and contact points, which leads to a quantitative and qualitative change in the composition of micro flora and the appearance of foci of demineralization in these areas. An increase in the pathogenic activity of micro flora and microbial mass occurs, and the cariogenic effect of Streptococcusmutans increases. The analysis of scientific research has shown that fixed orthodontic technique is characterized by prolonged intervention in the homeostasis of the oral cavity, leads to the occurrence of comorbid pathology and has an adverse effect on both the oral mucosa and hard dental tissues.

KEYWORDS: Hard tissues of teeth, stabilize the development of initial caries, a set of diagnostic and preventive measures, R.O.C.S. Medical Minerals.

INTRODUCTION:

Analysis of the literature revealed the widespread use of remineralizing therapy for the treatment of focal demineralization of enamel with the use of fluoride preparations - in the form of dental varnishes, gels, foams). However, attention is drawn to the fact that it is not always possible to achieve a lasting effect from the manipulations carried out due to the complexity of the use of drugs and an unsatisfactory level of hygiene. In the literature, there are data on the use of various drugs for the treatment of caries at the stage of stains in patients undergoing orthodontic treatment. According to scientific work in the treatment of caries in the stain stage, it is proposed to apply the drug "R.O.C.S. Medical Minerals" thin layer on the entire inner surface of the aligners, after which the aligners are installed in the oral cavity. Especially effective is the use of this product at night, when the level of salivation is reduced, the washout of the gel is less, the residence time of the gel on the enamel is longer, the area of contact of the drug with the enamel is greater. However, literature data on the use of the drug "R.O.C.S. Medical" in pediatric patients undergoing orthodontic treatment was not identified.

Thus, the results of numerous scientific studies have confirmed the fact that orthodontic technology has not only a therapeutic effect, but also a side (negative) effect on the state of the oral cavity and the quality of human life. At the moment, there is no consensus in the approaches to the prevention and treatment of caries, periodontal disease in children during the apparatus treatment of occlusion pathologies. The problem remains relevant and requires adequate approaches in the development of effective complex methods of prevention and treatment of dental diseases among pediatric patients undergoing orthodontic treatment.

Purpose: to evaluate the effectiveness of a set of practical recommendations for the prevention of complications at the stages of treatment with fixed orthodontic appliances.

Recently, there have been significant changes in Russian orthodontics. If earlier removable devices were used in 90% of cases, now they are used only in 16% of cases. In this regard, the problem of preventing dental caries

and periodontal diseases in the process of orthodontic treatment is especially acute. Braces, rings, arcs fixed on the teeth significantly complicate the oral hygiene, which leads in 32.7% of cases to damage to the hard tissues of the teeth, mainly surfaces that are immune to caries, and in 92% there is an unfavorable state of the periodontal. To prevent such complications, various preparations containing calcium and fluoride have been proposed. The issues of assessing the resistance of tooth enamel and the effectiveness of remineralizing agents using mouth guards in percent are insufficiently covered

Table 1. Index of clinical assessment of the state of dental hard tissues using light-induced fluorescence

Stages of the carious process Light-induced fluorescence Caries in the stage of a white spot +	530 nm, green 625 nm, red	
	Superficial caries 1 ++	Superficial caries 2 +++ +
Average caries ++++ ++	Deep caries +++++ ++	
Stages of the carious process Light-induced fluorescence	530 nm, green 625 nm, red	Intact Enamel - -
Caries in the stage of a white spot +	Superficial caries 1 ++	Superficial caries 2 +++ +

At the initial examination, professional hygiene was carried out with the selection of individual means and methods of oral hygiene and a set of therapeutic and preventive measures was prescribed:

a) Carrying out endogenous prophylaxis without medication by reducing the frequency of carbohydrate consumption, if possible, exclude their use between meals, fixing the habit of rinsing the mouth with water after each meal. It is necessary to increase the self-cleaning of the oral cavity by eating grated fruits and vegetables, which contribute to abundant salivation, which reduces the viscosity of saliva and flushes food debris from the mouth. Consumption of solid foods - cookies, caramel, chips, ice cream and fizzy drinks is strictly prohibited. It is recommended to eat food rich in micro and macro elements, vitamins, amino acids and proteins.

b) Implementation of exogenous prophylaxis through the implementation of professional oral hygiene and training in individual hygiene procedures for 3 months during orthodontic treatment.

c) The use of exogenous drug prevention of dental caries using the drug "R.O.C.S. Medical Minerals "and kapp. For patients with revealed signs of caries, it is necessary to process the teeth before fixing the braces twice with an interval of 2 weeks and during orthodontic treatment 2 times with an interval of 7 days every 3 months. For children without caries, it is advisable to prevent its development only during orthodontic treatment by double coating the teeth with the drug every 2 weeks every 6 months.

d) Endogenous medicinal prophylaxis of dental caries should be carried out with the help of the mineral and vitamin preparation "Oligovit" and the preparation of immunostimulating action "Immunal". The drug "Oligovit" and "Immunal" are administered orally to patients without signs of caries, 1 tablet a day, for 1 month, 1 time per year and 10 drops 3 times a day for 5 weeks, 1 time per year, respectively. Patients with revealed signs of caries should be prescribed Oligovit 1 tablet a day for 1.5 months, 2 times a year, Immunal - 15 drops 3 times a day for 6 weeks, 2 times a year.

According to the WHO criteria, indicators of the intensity of dental caries varied from low to high - in the range of 1.96 - 4.67. Before the study, all patients underwent oral cavity sanitation, after which only component P was present in the index structure. Changes in the caries intensity

indicators were revealed in all examined patients. Thus, in the children of the main group in the complex of preventive measures, the increase in carious cavities was - 0.09, while in the patients of the comparison group, the increase in caries was found both on the chewing and on the contact surfaces of the teeth. In the comparison group, where pr

Table 2. Intensity and reduction of dental caries in patients in the dynamics of treatment

KPU groups KPU structure Caries reduction (%)	Main (n = 19) 2.53 ± 0.21 * 0.09 ± 0.007 2.44 ± 0.11 * 0 90.2	Comparisons (n = 19) 5.82 ± 0.09 1.57 ± 0.06 4.25 ± 0.18 0 68.5			
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Note: * - reliability of data between treatment groups (p <0.05)

Reduction of caries after using the drug "R.O.C.S. Medical Minerals" was 90.2% and 68.5% in the comparison group.

After using the drug "R.O.C.S. Medical Minerals"there was the greatest tendency for the TER test to decrease in relation to the initial inspection - by 27.8%. This was due to an increase in the acid resistance of the enamel before the fixation of removable and non-removable orthodontic appliances, which confirms the importance of this procedure (Table 3).

Table 3. Indicators of changes in the TER test in patients in the dynamics of treatment

TER test groups (%) TER test groups (%)	Initial Before treatment 1 month. 6 months 18 months				
Initial Before treatment 1 month. 6 months 18 months	Main (n = 19) 65.42 ± 0.62 49.21 ± 3.29 34.34 ± 0.18 36.93 ± 0.32 36.85 ± 0.66	Comparisons (n = 19) 58.32 ± 1.37 47.16 ± 0.58 32.89 ± 0.16 35.31 ± 0.13 31.73 ± 0.41			

Note: * - data reliability between treatment groups A and B (p <0.05)

The results of the study convincingly showed the relationship between the processes of remineralization of enamel from the used therapeutic and prophylactic agents (Fig. 1).

Fig. 1. The dynamics of indicators of clinical assessment of the state of hard tissues of the tooth using light-induced fluorescence in patients with fixed orthodontic appliances

So, after 6 months in patients using "R.O.C.S. Medical Minerals "and mouthguards, intact enamel was recorded in 83.3% of cases, which was significantly significant in relation to the data before treatment and the comparison group. Also, in the main group, there was no medium and deep caries, and caries in the white spot stage was recorded in 15.4% of cases, while superficial caries 1 - in 1.3% of cases, which is significantly low percentage in relation to the indicators of the comparison group.

Thus, the application of "R.O.C.S. Medical Minerals"and mouth guards, help to increase the resistance of hard tissues of teeth, stabilize the development of initial caries.

Good results after 6 months were achieved in 93.3% of children from the established group, which was reliable in relation to the indicators of the comparison group - 68.9%, respectively (Fig. 2).

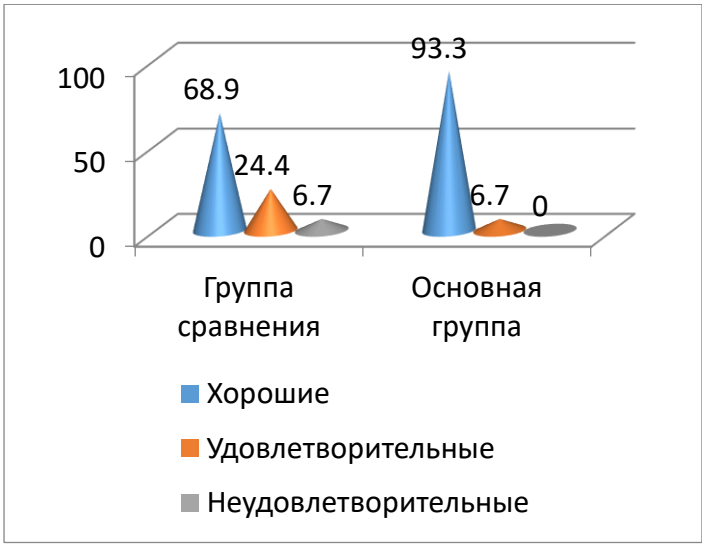

Fig. 2. The results of treatment

Thus, in spite of the introduction of a complex of treatment and prophylactic measures, the formation of new carious lesions inevitably took place, but in the main groups their number was 2.2 times less ($p < 0.05$) than in the comparison groups, which indicates its effectiveness use in patients on orthodontic treatment for the prevention and treatment of caries.

Thus, carrying out sanitary-educational work, individual and professional oral hygiene along with the use of "R.O.C.S. Medical Minerals "and kappa allowed to increase the resistance of the hard tissues of the teeth, stabilize the development of initial caries after 6 months of orthodontic treatment, as evidenced by the clinical evaluation.

REFERENCES:

1) Alexandrova L.L., Pustovoitova N.N., Yurchuk Yu.N. Diagnostics in therapeutic dentistry: a teaching aid. Minsk: BSMU, 2007.56 p.
2) Galiulina M.V., Ganzina I.V. Changes in the structural properties of saliva with changes in pH // Dentistry. - 2003. N 2.S. 22-44.
3) Kazeko L.A., Tikhonova S.M., Pustovoitova N.N. Modern approaches in the diagnosis of dental caries // Dental journal. 2007. N 4.P. 251-255.
4) Firla M. Biochemical rapid test designed to diagnose caries at the earliest stages of its development // New in Dentistry. - 2003. N 6.S. 26-30.
5) Safonova Yu.S. Methods of clinical and preclinical diagnosis of lesions of hard tissues of teeth // Dentistry News. - 2009. N 2.S. 59-62.
6) Shabanov A.N. Medical assistant's guide. M .: "Medicine", 1976. 487c.
7) Allen E, da Mata C, McKenna G, Burke F Minimal intervention dentistry and older patients. Part 1: Risk assessment and caries prevention // Dent Update. 2014. Vol. 41. P. 406-408.
8) Bennett T., Amaechi Emerging technologies for diagnosis of dental caries: The road so far // Journal of applied physics 2009. Vol. 14.P. 104-105.

9) Iain A. Pretty Caries detection and diagnosis: Novel technologies // Journal of dentistry 2006. Vol. 34. P. 727-739.
10) Mackenzie L., Banerjee A. The minimally invasive management of early occlusal caries: a practical guide // Prim Dent J. 2014. Vol. 3. P. 34-41.
11) Roulet JF, Zimmer S. Professional prevention in the practice of the dentist. M .: MEDpress-inform, 2010.368 p.
12) Peshko A.A. Minimally invasive interventions in dentistry: strategies and technologies // Modern Dentistry. - 2008. N 1.S. 15-18.
13) Gordeeva N.O., Egorova A.V., Magomedov T.B., Venatovskaya N.V. Methodology for reducing the risk of pathology of hard dental tissues during orthodontic treatment with fixed equipment // Saratov Journal of Medical Scientific Research. 2011. T. 7. No. 1. S. 230-233.
14) Shumilovich B.R., Suetenkov D.E. The state of mineral metabolism of enamel depending on the method of preparation of hard tooth tissues in the treatment of caries // Dentistry of children and prevention. 2008. T. 7. No. 3. S. 6-9.
15) Firsova I.V., Suytenkov D.E., Davydova N.V., Oleinikova N.M. Interrelation and interdependence of the level of dental health and environmental factors // Saratov Journal of Medical Scientific Research. 2011. T. 7. No. 1. S. 239-245.
16) Usachev V.V., Bahrakh L.P., Suchkov S.G., Suetenkov D.E. New method of 3d-ultrasound diagnostics: possibilities of application in dentistry // Saratov Journal of Medical Scientific Research. 2006. T. 2. No. 3. S. 70-73.
17) Akulovich A.V., Suetenkov D.E., Yalyshev R.K., Konovalova A.Yu., Novak M.O. Evaluation of the effectiveness of using hygiene products based on calcium hydroxyapatite to reduce the sensitivity of tooth enamel // Dentistry of children and prevention. 2015.Vol. 14. No. 4 (55). S. 41-44.
18) Firsova I.V., Suetenkov D.E., Egorova A.V., Magomedov T.E., Kharitonova T.P., Davydova N.V., Lebedeva S.I., Bakhmeteva E.A., Gritsenko E.A. Indicators of dental health in children and adolescents in Saratov and the Saratov region // Saratov Journal of Medical Scientific Research. 2013.Vol. 9.No. 3.P. 484-486.