The Effectiveness of Wedge-Shaped Dental Defects with the Combined Use of Hydroxyapatite and Fluoride-Containing Drugs and Measures for Their Prevention In Undergrowth

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Relevance. Currently, there is a significant increase in the prevalence of non-carious lesions of the teeth, leading to a significant loss of enamel and dentin, hypersensitivity and aesthetic defect. The most common type of non-carious pathology is CDZ, which makes up 37.5%[2.4]. The structure of non-carious lesions of the teeth is getting younger every year. So today, CDZ occur at the age of 20 years, and sometimes in adolescents. Previously, it was believed that this is pathology of people over forty years old [1.3].

The causes of wedge-shaped defects in the hard tissues of the teeth can be local (exogenous) and general (endogenous) factors. Local factors include the intake of acid-containing products and medicines, the use of abrasive toothpastes and hard toothbrushes or their irrational use. Common factors include somatic pathology, mainly endocrine diseases.

There are a number of predisposing factors and possible causes of the development of CDZ, such as local violation of oral hygiene [6.8.9.11], periodontal diseases, malocclusion, concomitant dental diseases, etc. The current environmental situation and the radioactive background, along with local and internal disorders, contribute to the development of this pathology [7.10.12].

The development of CDZ is based on the processes of violation of the mineralization of the hard tissues of the tooth. The mineralization of enamel depends on a number of factors, including the trace element composition of the oral fluid.

The current methods of prevention and treatment of CDZ are symptomatic and pathogenetic in nature, aimed at increasing the mineralization and strengthening of the hard tissues of the tooth, as well as at removing the phenomena of hyperesthesia in CDZ. However, they do not fully take into account possible violations of the resistance of the hard tissues of the teeth [13.14.15]. There is no complexity in the issue of CDZ treatment. All this indicates the need for additional research on the use of an experimental model, improvement of methods for the prevention and treatment of wedge-shaped dental defects [5.11].

It is reliably known that most of the mineral part of the hard tissues of human and animal teeth consists of apatites, and the similarity of hydroxypatite used recently with TTZ is undeniable. On this basis, the use of hydroxyapatite-containing drugs for the prevention and treatment of CDZ can be considered theoretically justified.

Analyzing the above data (difficulties of prevention, insufficiency and low effectiveness of treatment), it can be considered justified to use the combined use of fluoro - and hydroxyapatite-containing drugs for the prevention and treatment of CDD.

The purpose of the work: to increase the effectiveness of prevention and complex treatment of wedge-shaped dental defects by the combined use of hydroxyapatite and fluoride-containing drugs.

Research objectives:

1. To determine the frequency, intensity and causes of wedge-shaped dental defects in young people.
2. To experimentally obtain a model of wedge-shaped dental defects, to study the possibility of combined use of fluoro - and hydroxyapatite-containing drugs for the prevention and treatment of wedge-shaped dental defects.
3. To evaluate the processes of de - and remineralization in patients with wedge-shaped dental defects based on the interpretation of test indicators and indices reflecting the state of TTZ.
4. To develop affordable and effective methods for the prevention and treatment of wedge-shaped dental defects based on the combined effect of hydroxyapatite and fluoride - containing drugs on the TTZ, and to offer them for implementation in practice.

The novelty of the study. For the first time, an experimental model of wedge-shaped dental defects has been proposed, on the basis of which it is possible to develop effective methods of prevention and treatment using ultramicroscopic hydroxyapatite. It has been experimentally proved that the methods of remineralizing therapy of hard dental tissues give different results depending on the duration of treatment and largely depend on the clinical course of this pathology. For the first time, based on the conducted experimental studies, schemes of preventive measures, complex pathogenetic treatment of wedge - shaped dental defects were developed and proposed, including local and general remineralizing therapy with the use of fluoro - and hydroxyapatite-containing drugs, macro-and microelements, and other biologically active substances that significantly increase the results of therapeutic measures.

The effectiveness of the use of hydroxyapatite - and fluoride-containing drugs during the complex remineralizing therapy of wedge-shaped dental defects has been proved. The developed experimental model of wedge-shaped dental defects provides ample opportunities to search for new effective methods of treating this pathology, in particular, on the basis of preparations containing ultramicroscopic hydroxyapatite, which penetrates deeply into the dentine tubules and promotes remineralization of hard tooth tissues. The new methods of treatment of wedge-shaped dental defects developed and successfully tested in clinical conditions make it possible to stabilize the processes of demineralization of hard dental tissues, eliminate dental hyperesthesia, increase their resistance to adverse factors, and improve the effectiveness of further reconstructive dental treatment.

The proposed new method has practically no contraindications, is quite easy to use, is easily tolerated by patients, does not give side effects and can be used not only as a treatment, but also for preventive purposes. The developed new methods of remineralizing therapy and prevention of wedge-shaped dental defects using hydroxyapatite-containing preparations in the form of therapeutic pads and fluoride-containing preparations by electrophoresis, deep fluoridation and as part of toothpastes are recommended for use in the practice of dentists in the treatment of this pathology.

The incidence of dental hard tissues with wedge-shaped defects in young people reaches 16.23%. Among students with wedge-shaped dental defects, 76.00% had a limited form of the first and second stages (enamel damage) and 24.00% had the third and fourth stages (dentin damage). In 68.00% of students, wedge-shaped dental defects were in the acute phase and in 32.00% in the stabilization phase. The causes of wedge-shaped defects of hard dental tissues are local exogenous (acids of beverages, juices, food, abrasives of tooth powders and pastes leading to demineralization) and general endogenous (diseases of the endocrine, gastrointestinal and vascular systems, accompanied by a violation of mineral metabolism) factors that negatively affect the resistance of enamel and dentin and lead to the appearance of defects in the form of a wedge.

The experimental model of wedge-shaped dental defects developed by us allowed us to establish the penetration of hydroxypatite into the hard tissues of the teeth and its interaction with dentin, to justify the possibility of using fluoro - and hydroxyapatite-containing drugs for the prevention and treatment of this pathology. Based on the interpretation of the indices reflecting the state of enamel and dentin before and after the use of various preventive and therapeutic measures to prevent and improve the effectiveness of treatment of wedge - shaped dental defects, it was found that the highest results were observed with the combined, consistent use of fluoro-and hydroxyapatite-containing drugs.

Measures for the prevention and treatment of wedge-shaped dental defects should include general and local remineralizing therapy using deep fluoridation of enamel and dentin-sealing liquids, therapeutic pads with hydroxyapatite in combination with the administration of drugs containing trace elements and vitamins inside.

1. In order to prevent non-carious dental lesions, including wedge-shaped dental defects, we recommend sanitizing the oral cavity, following the rules of oral hygiene, using soft brushes, hydroxyapatite - and fluoride-containing toothpastes such as "Periodontol", "8LsaR" for brushing teeth and applications. Applications should be carried out for fifteen minutes. After the procedures, rinse the oral cavity with water and do not eat for an hour. It is recommended to strictly limit the intake of acid-containing products.
2. Treatment of wedge-shaped dental defects, depending on the stage and phase of the disease, should be differentiated and include general and local remineralizing therapy. The course of general remineralizing therapy consists in prescribing 0.5 g of calcium glycerophosphate to patients inside three times a day; "Klamin" 1 tablet or "Fitalon" 30 drops 15 minutes before meals twice a day; "Alphabet" 3 tablets a day or "Vitrum" 1 tablet a day after breakfast for a month. It is recommended to conduct two courses of general remineralizing therapy with an interval of four months between them.
3. In the treatment of wedge-shaped dental defects of the first and second stages, general remineralizing therapy is prescribed and deep fluoridation of the enamel is carried out using an enamel-sealing liquid according to the method of A. Knappvost without filling defects in the hard tissues of the teeth.
4. In the treatment of wedge-shaped defects of enamel and dentin in the acute phase, local remineralizing therapy is as follows: after preparation and conditioning with 17% solution No. 2 of the defect bottom and walls, a temporary therapeutic pad is applied to the bottom of the cavity, consisting of 50% UMGA "Hydroxyapol" and 50% saline solution, 1.5-2 mm thick, the cavity is sealed with glass ionomer cement for a period of four weeks, and then three sessions of electrophoresis of 2% solution are carried out sodium fluoride. The treatment ends with filling the cavities with a compomer, if necessary, permanent orthopedic structures are made and fixed. It is recommended to undergo repeated examinations after six months, one and one and a half years and, based on them, prescribe appropriate treatment.

Hygiene and prevention classes in the department should be calculated on average for 15-20 people and placed near dental offices. Sinks are installed on two walls of the classroom. A mirror is attached above the sinks. On the third wall of the classroom, a cabinet with cells for storing individual hygiene products is mounted along its entire length. In the center of the classroom, furniture is placed for conducting oral hygiene lessons.

Conclusion. The cabinet is equipped with a screen for showing films. A stand of hygiene and prevention products is organized in the classroom, and memos on dental care are posted in a prominent place. The class is also used for carrying out sanitary and hygienic work. In the office there should be preparations for the prevention of caries, determining the condition of the oral cavity,

a table with a set of sterile instruments. To prevent the spread of infection, the principles of asepsis and antiseptics are observed in the office. The tasks of the hygiene and prevention cabinet are: - teaching children and parents the correct method of brushing their teeth; 12-monitoring the acquired skills; - training parents to control the skills acquired by the child; - advisory assistance on the choice of individual oral hygiene products; - education of the culture of communication "dentist-patient"; - implementation of therapeutic and preventive procedures (remtherapy) in the treatment of initial forms of caries, periodontal diseases, dental anomalies. Thus, in the office of hygiene and prevention, children are brought up at the level of knowledge, skill and skill.

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