

The Use of Fluoride-Containing Lacquers in the Prevention and Treatment of Hypersensitivity of Teeth

Nilufar Akhrorovna Saidova¹, Elova Hanifa Rahmat kizi²

Abstract: Hypersensitivity of teeth is considered to be one of the most urgent problems of modern dentistry, as it is a common pathological condition. It is characterized by an acute painful reaction of the dentine tubules to thermal, chemical and tactile effects. According to various sources, the prevalence of dentine hypersensitivity in the adult population varies from 4 to 74%. So, in our country, 50-75% of the population have various forms of dental hypersensitivity. The etiological factors causing the sensitivity of the hard tissues of the teeth are very numerous, they can be divided into general and local. A special role in the development of hypersensitivity is assigned to non-carious lesions of the hard tissues of the teeth, as well as caries and periodontal diseases. To date, along with the study of the causes of hypersensitivity of teeth, new methods of diagnosis and prevention of this pathology have been improved and developed. However, it should be noted that not all are sufficiently effective.

Keywords: hypersensitivity, hard tooth tissues, fluoride-containing drugs, remineralizing therapy, "Bifluoride-12", "Fluocal".

Relevance. Hypersensitivity of the hard tissues of the teeth from the effects of temperature, chemical and mechanical stimuli is one of the urgent problems of modern dentistry. Hypersensitivity of the teeth most often develops against the background of carious lesions of the hard tissues of the teeth, non-carious lesions, periodontal diseases, in which there are defects in the tissues of the teeth, their thinning or demineralization. The mechanism of hypersensitivity development is based on the hydrodynamic theory. According to this theory, the stimulus that causes pain increases the flow of fluid from the dentine tubules, which in turn leads to a change in osmotic pressure and an increase in the activity of nerve endings. Microscopic examination of changes in the hard tissues of the tooth in this pathology can observe the presence of destructive changes in the hard tissues of the tooth, which indicate the processes of demineralization, the presence of cracks between enamel and dentin, as well as compensatory obliteration and hypermineralization of exposed dentin. Despite the high achievements of dental science and constant updating of dental tools, the problem of prevention and treatment of hypersensitivity of hard tissues teeth remains relevant. Since this pathology requires the determination of the most effective methods of treatment and prevention that could be used in the clinical practice of a dentist.

The purpose of the study. To assess the clinical effectiveness of the use of modern fluoride-containing lacquers for the prevention and treatment of hypersensitivity of hard tissues of teeth, with different etiology of occurrence.

Materials and methods. To date, there are many fluorinated lacquers from various manufacturers on the domestic market. Fluorolacids are used to treat focal demineralization of teeth in all age groups. There are such compositions of fluoride lacquers: "Carex" (1.8% fluoride), "Bifluoride-12", "Fluocal", etc. The caries-static mechanism of action of fluorolac is due to the fact that fluorine penetrates into the hydrate shell around apatite crystals within a day after applying the varnish, while reducing their solubility. Fluorine is part of the crystal lattice of enamel, reduces the rate of enamel demineralization with an increase in the rate of remineralization. In lacquers, the effect of high-concentration fluorides is prolonged as a result of the formation of a substance similar to CaF₂, which fills the pores and microchannels of enamel in places subject to demineralization, plaque, oral fluid. In this case, fluorine functions as a pH-controlled reservoir. To achieve this goal, the materials of scientific and medical resources on the subject under consideration were studied and analyzed due to the wide variety of drugs used to reduce the hypersensitivity of hard dental tissues. And based on the results obtained, drugs were selected to assess the clinical effectiveness of their use.

46 patients divided into 2 equal groups participated in this study. The age of the patients was in the range of 50-70 years. In the first group of patients, the drug "Bifluoride-12" was used. The preparation is a transparent fluoride varnish made of synthetic resins, with a content of sodium fluoride and calcium fluoride in a ratio that gives the maximum effect. Providing good thermal insulation, the drug leads to deep long-acting fluoridation. Due to its transparency, it is particularly suitable for local cosmetic fluoridation. In addition, it is effective in the treatment of hypersensitivity of the neck of the tooth and deep fluoridation. Before application, the bottle with varnish was shaken until the suspension was ready. The teeth were first cleaned with professional toothpaste (without fluoride). Using cotton pads, the teeth were isolated from saliva. The surface of the teeth was dried with air and a thin layer of varnish was applied to it using conventional applicators.

¹ PhD in Medicine, Assistant, Department of Therapeutic Dentistry, Bukhara State Medical Institute, Bukhara, Republic of Uzbekistan

² 1st year Master's degree student, Department of Therapeutic Dentistry, Bukhara State Medical Institute, Bukhara, Republic of Uzbekistan

Within 10 seconds, the fluorolac dried, creating a transparent thinnest film (without additional drying). After this procedure, the patient was advised not to eat for 2 hours and not to brush his teeth for 12 hours. Control examinations of patients were carried out at the beginning of the study (primary examination) and during the use of the remineralizing drug - after 1 and 2 weeks. The data obtained were recorded in a special survey card.

The drug "Fluocal" was chosen as the basis for the treatment of patients in the second group, which includes sodium fluoride and filler. Sodium fluoride is at least as active as fluoride compounds of heavy metals (for example, tin). "Fluocal", having absorbed all the specific properties of fluoride compounds, acts in two ways: 1. Its bacteriostatic effect significantly reduces the volume of microflora accumulating on the crown of the tooth. This property of the drug is extremely important when it comes to particularly dangerous lactobacilli that produce acids. 2. The bacteriostatic effect is complemented by the action of fluorine on enamel, causing changes in its crystal structure and significantly increasing its resistance to chemical influences. The second property is equally effective in contact with dentin and cement.

Before using this drug, all dental deposits were removed with a scaler. The teeth were isolated with cotton pads and dried with warm air, paying special attention to the occlusal and proximal surfaces. "Fluocal" was applied to the treated surfaces several times for 7-8 minutes, using a narrow strip of cotton wool soaked in a solution of "Fluocal". They left the cotton wool for 3 minutes without touching it and holding it with cotton rolls. The drug was applied to the interdental spaces, using a probe for this. After treatment, cotton wool was removed, offering the patient to rinse his mouth thoroughly several times. The procedure was repeated 2-3 times. Control examinations of patients were carried out at the beginning of the study (primary examination) and during the use of the remineralizing drug - after 1 and 2 weeks. The data obtained were recorded in a special survey card.

Results and discussion. The results of the study showed that in patients of the first group, when treated with a transparent fluoride varnish "Bifluoride-12" based on synthetic resins, there were notes about the speed of the procedure. However, after using it, you cannot brush your teeth, which caused some patients some inconvenience. During the study period, according to the control dental examinations, there were no cases of locally irritating and allergizing effects of varnish on the oral mucosa. Thus, repeated use of fluoride-containing varnish contributed to the fact that in 19 patients (83%) complaints about tooth sensitivity disappeared, and in 4 (17%) the symptoms of this pathology decreased. In patients of the second group, on whom the drug "Fluocal" was used, the presence of a noticeable pain response to stimuli was clinically determined in all patients before treatment. After treatment, dental hypersensitivity disappeared in 18 (78%) patients, and decreased in only 5 (22%). Also, we found that with repeated local application of the drug "Fluocal", the therapeutic effect is enhanced. The results of treatment of patients were evaluated using basic (survey, examination) and additional (thermodiagnostics) research methods.

Conclusions. Thus, our studies have shown that fluoride-containing varnishes occupy a special place in the prevention and reduction of symptoms of hypersensitivity of teeth.

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