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Treatment and Prevention of Fluorosis in School-Age Children

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A B S T R A C T
Dental examinations of Indian children carried out several years ago showed that with an optimal fluoride content in drinking water, 55% of urban and 17% of rural children and adolescents aged 10-17 years had fluorosis of teeth of mild and moderate severity. At a concentration of 1.2-9.0 mg/l, the indicators increased to 71-100% with the predominance of severe forms of fluorosis. Modern dentistry has a wide range of effective methods of dental fluorosis therapy. However, for many patients of the Zhondor district of the Bukhara region, primarily schoolchildren, it remains a problem for now. Nowadays, when society attributes a beautiful healthy smile to the standard of success of respectable norms, this problem is becoming more and more urgent. In dentistry, the problem of fluoride is of great importance, since its compounds are widely used for the prevention of dental caries in the form of solutions, gels, toothpastes, tablet forms.

Dental fluorosis is widespread all over the world.

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In 1931, scientists proved that fluorosis occurs only when the chemical fluoride exceeds the required level, and later it became clear that this chemical element is not only associated with caries, periodontal diseases, but also plays a role in their origin. American scientist Dean (1931) first introduced the term "fluorosis" into medicine and found that caries is less common in patients with spotty fluorosis and that an artificial increase in the amount of fluoride in drinking water, where caries is common, can reduce the frequency and intensity of caries.

Fluorosis is observed as a result of excessive intake of fluoride compounds into the body (chronic fluoride intoxication) when its level in drinking water exceeds normal values. The daily need of the human body for fluoride is about 3.5 mg. This requirement is mainly met by fluoride supplied with drinking water 0.8-1.2 mg of fluoride in 1 liter of drinking water, sufficient to satisfy this need of the body (I.H. Khalilov et al., 2006).

Some neighboring countries of Uzbekistan (Kazakhstan, Turkmenistan, Afghanistan) are characterized by the presence of numerous foci of endemic fluorosis.

In China, India, Pakistan, Sri Lanka, dental fluorosis is becoming a pandemic, as it is present in hundreds of millions of people. At the same time, half of the population consuming water with a high content of fluoride suffers from severe forms of pathology. Dental examinations of Indian children carried out several years ago showed that with an optimal fluoride content in drinking water, 55% of urban and 17% of rural children and adolescents aged 10-17 years had fluorosis of teeth of mild and moderate severity. At a concentration of 1.2-9.0 mg/l, the indicators increased to 71-100% with the predominance of severe forms of fluorosis. Modern dentistry has a wide range of effective methods of dental fluorosis therapy. However, for many patients of the Zhondor district of the Bukhara region, primarily schoolchildren, it remains a problem for now. Nowadays, when society attributes a beautiful healthy smile to the standard

of success of respectable norms, this problem is becoming more and more urgent. In dentistry, the problem of fluoride is of great importance, since its compounds are widely used for the prevention of dental caries in the form of solutions, gels, toothpastes, tablet forms.

At the same time, excessive intake of fluorine compounds into the body either in natural conditions (with water, food, air), or as a result of the production of aluminum, fertilizers, polymers leads to the development of fluoride intoxication of the body. Uncontrolled excessive intake of fluoride-containing caries prevention agents in children can also lead to acute or chronic poisoning of the body. Therefore, the development of issues of prevention and treatment of fluorosis is becoming increasingly relevant.

It is known that with an excess of fluoride in drinking water entering the body in the first years of a child's life (during the formation of the dental system), dental fluorosis develops, which is the first external sign of fluoride intoxication of the body.

A number of studies by domestic and foreign authors are devoted to the problem of dental fluorosis. However, to date, the mechanism of development of fluoride intoxication has not been disclosed, the issues of metabolism and structural changes in the hard tissues of teeth in fluorosis have not been fully covered, the issues of diagnosis and differential diagnosis of various manifestations of the disease require further development. Treatment and prevention of dental fluorosis is still a difficult task, especially in areas where it is not possible to notice a water source with a high content of fluoride for various reasons.

Intensive development of science and technology in recent years has made it possible to apply a number of modern research methods to study the morphology and biochemistry of tooth tissues: radiosotope method, transmission and scanning electron microscopy, polarization microscopy, microrentgenospectral analysis, IR spectroscopy. Meanwhile, there are only isolated reports in the literature on the use of advanced research methods to study the morphology and biochemistry of tooth tissues in fluorosis. And this significantly slows down the development of effective methods of treatment and prevention of dental fluorosis, so necessary for practical dentistry.

In addition, the textbooks and monographs on the medical examination of the population and the organization of dental care did not adequately reflect the recommendations for health measures among children and adolescents living in an endemic focus of fluorosis.

Therefore, the search for new methodological approaches and ways to solve the problem aimed at preventing severe forms of fluorosis and the occurrence of enamel staining in patients with fluorosis in biogeochemical provinces is an urgent task of practical medicine. In the endemic focus of patients with various degrees of severity of fluorosis, the content of Ca, P, P was studied for the first time and the activity of enzymes in the oral fluid that maintain the constancy of oral homeoetasis was determined, which made it possible to identify a violation of oral homeostasis in patients with severe manifestations of dental fluorosis.

With the help of radioactive indicators, the change in the permeability of hard tissues of teeth at various degrees of severity of fluorosis was studied for the first time.

The structural relationships in the area of orthophosphate (PO4)3-,carbonate (CO3) have been studied for the first time by IR spectroscopy, polarization and electron microscopy2- and hydroxyl (OH)-groups in the enamel of teeth with fluorosis. The data obtained indicate a violation of the microstructure and the presence of biochemical changes in the hard tissues of teeth with fluorosis.

The layered distribution of Ca, P, F, K, Na, Mg, Cl in tooth enamel at various degrees of severity of fluorosis was studied for the first time using microrentgenospectral analysis. A statistically significant decrease in mass was revealed.% of Ca values in the outer layer of enamel and an increase in mass. % of the values of F in severe manifestations of fluorosis.

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