

PREVENTION OF DENTAL CARIES IN ADOLESCENTS DUE TO ENVIRONMENTAL POLLUTION AROUND A MANUFACTURING PLANT

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Summary. A dental examination was carried out on 255 adolescents (13-14 years old in age group I, 15-16 years old in age group II, 125 and 130 people, respectively). In addition, all observed adolescents were divided into two groups depending on the use of caries prevention measures: the main group was under the control of the “Maximum Program” and the “Minimum Program,” which included a balanced diet and oral hygiene twice a day. The “maximum program” also includes the consumption of calcium citrate and amino acids with group III methionine. This treatment and prophylactic complex has an adaptive, antioxidant, antidote and immunosuppressive effect. It is logical to neutralize ecotoxicants - heavy metals in the area where teenagers live. It has been established that the level of Fe and Zn in the environment of the adolescents in question is at a dangerous level, and Cd is moderately harmful, and it has also been found that it provokes and enhances glycolytic processes in the oral cavity. The harmful effects of toxicants on the oral cavity, as well as on the body of adolescents as a whole, are clearly noted during the mineralization of the flat bones of the adolescent skeleton. Concrete densitometry revealed indicators, in particular, BUA. They showed a weakening of skeletal mineralization. This indirectly refers to problems in the hard tissues of teeth. At the same time, the effectiveness of caries prevention was 59-62%, which is a very positive indicator. The results obtained indicate the need to prevent dental health in young adolescents living in areas with a very difficult technogenic environment due to metallurgical enterprises located in the Asaka district of the Andijan region.

Introduction. In general, the high level of prevalence and intensity of dental caries in the world's population, especially in children and adolescents, as well as the tendency to increase these indicators in recent years have exacerbated the problem of effective prevention of damage to hard dental tissues. teeth in household dentistry*1,2+. This problem is multifaceted, associated with a number of known factors of demineralization of enamel and dentin, and specific links in the chain of its pathogenesis have been identified. The introduction of the most effective comprehensive measures to preserve the integrity of dental tissues in the clinic is the basis of primary dental prevention. However, the results obtained cannot fully satisfy scientific and practical preventive dentistry [3,5,6]. After all, different groups of adolescents and adults have their own specific conditions for the etiology and pathogenesis of dental caries, which cannot be ignored. This implies the ineffectiveness of preventive measures in cariesology, even with the conscientious implementation of generally accepted preventive measures. According to leading specialists in preventive dentistry, an individual, population-based, regional approach to complex measures for the prevention of dental caries in their healthy tissues is necessary [2,3,5]. Thus, many years of experience in the prevention of dental caries around the world and in Uzbekistan have shown that measures based on the prevention of dental caries have not shown much effect. Therefore E.V. Borovsky and others create a minimal program for the glycolytic theory. However, its implementation does not ensure complete elimination of the conditions that provoke the process of demineralization of hard dental tissues, and requires auxiliary preventive measures. These measures can become the basis for the implementation of a

maximum regional, population-based and individual program in preventive dentistry *1,4,6+. Among the factors of demineralization of hard dental tissues in adolescents, a special place is occupied by environmental pollution by environmental components, including man-made waste. In this regard, scientific research and clinical observations in the industrial centers of Uzbekistan (Asaka, Andijan, etc.) complement the understanding of the nature of dental demineralization, justifying the possibility of timely adoption of effective measures.

Purpose of the research. The goal is to increase the effectiveness of primary dental prevention in adolescents living in conditions of environmental pollution (air, soil, water) in the Andijan region.

Materials and methods of the research. Pollution by waste from metallurgical enterprises in the area of permanent residence of the majority of the population, especially adolescents, is a well-known problem that attracts the attention of not only ecologists and social experts, but also, first of all, clinicians. Indeed, due to excessive exposure to ecotoxicants, the development of the body of adolescents has varying degrees of impairment of sensitive systems and organs, including the skeleton. Thus, we trained a group of teenagers aged 13-16 years (255 people in total) to complete tasks for three years to achieve their goal. The teenagers were divided into two approximately the same age groups: from thirteen to fourteen years old - 125, from 15 to 16 years old - 130 people, that is, the first and second age groups. In addition, for the implementation of preventive measures, the first and second age groups were divided into main (maximum program) and control (minimum program) groups, each age subgroup of about 60 people. Well-known epidemiological research methods were used to objectively assess the results of active preventive measures in school educational institutions for adolescents (indicators of the prevalence and intensity of dental caries in temporary and mixed dentition, calculation of the increase in the intensity of caries over a three-year observation period). In addition, the state of mineral metabolism, which is directly related to the skeleton and hard tissues of the teeth, the study of calcium concentration in the dynamics of observations using a biochemical study of the oral fluid of adolescents (Karakashov Vychev and inorganic phosphorus Boltz-Luc) was assessed using the method. The state of mineralization of bone structures in adolescents of the experimental and control groups was assessed using ultrasound densitometry of the heel bone with an assessment of bone mineral density (BMD) using the Sonost-2000 device. As part of the implementation of the maximum program, all adolescents in the main group were prescribed the bioflavonoid drug calcium citrate daily for three years according to the instructions. The feasibility of its use is related to its pharmacological activity as an immunoprotector, antioxidant, biostimulant and adaptogen. In addition, iron, zinc and cadmium (which are also cariogenic factors) were used to block ecotoxicants. Adolescents of the main group were prescribed 50-72 g of fresh cheese (it contains the amino acid methionine with the active antidote of the SN group) and one tablespoon of black currant (bioflavonoids) daily during a three-year observation period. Digital processing of research results data was carried out using generally accepted methods of mathematical analysis.

Results of the research and discussion. The original scheme for correcting the effects of excess ecotoxicants in the conditions of the metallurgical industrial region is based on data from a recent study of the sanitary service of the Andijan region. When analyzing indicators

of environmental pollution, activators and amplifiers of glycolytic reactions of dietary carbohydrates in the oral cavity in the natural environment, direct pollutants such as smoke, dust and pollution of the active area (industrial zone where iron, zinc and cadmium are found), it is necessary to pay attention to excess amount of substances. In addition to disrupting vital biochemical reactions in the oral cavity, they also disrupt the physiological development of important systems and organs of a teenager, causing various levels of disruption of the formation of the entire organism, including teeth. According to our observations, the prevalence of caries in adolescents averaged 73% with an intensity of 5.05 $\mu\text{m}\cdot\text{od}$. When we studied and analyzed the main densitometry indicators studied in adolescents of different ages for three years in the dynamics of preventive measures, it was revealed that there was a positive shift in the mineralization of bone structures as a result of their compression under the influence of the developed compiled preventive instructions (CPI). This was especially noticeable in the change in the numerical values of BUA, where the dynamics are more clear. Although changes in other indicators did not have significant values ((SOS, BQI, T-Score), statistical analysis using correlation showed more significant dynamics of bone mineral density (BMD) with intact teeth and a correlation with different levels of caries intensity. The level of calcium and inorganic phosphates in the oral fluid in adolescents receiving extended CPI was significant, which is clearly visible in children of the main group. Phosphates were found in the main group, which is also evidenced by an increase in the Ca/R ratio in both age groups. We clearly see this phenomenon and believe that it provides high-quality secondary mineralization of hard tissues of both temporary and permanent teeth. Analysis of the studied data shows that under the influence of three years of use of the CPI we developed, positive dynamics and an increase in intensity were observed in adolescents of both ages. dental caries in absolute values. Moreover, in the main group this figure was three times less than in the control group, and the effectiveness of caries prevention (EPC) was only 59.6% - 64.41%. Thus, a three-year study of the incidence of hard dental tissues in preschool children born and permanently residing in an area of intensive industrial development, under conditions of extreme exposure to waste from metallurgical enterprises and environmental pollution, revealed a high level of dental caries. It should be noted that, in addition to the known products of glycolysis of dietary carbohydrates, which have become direct factors in the demineralization of hard dental tissues, cariogenic metals (Fe, Zn va Cd) have a strong and dangerous effect. Because of this, air, soil and groundwater stimulate, activate and accelerate glycolytic processes in the oral cavity. These phenomena cannot be ignored in the rapidly developing areas of the industry - from the point of view of promoting the health of adolescents, as well as in preventive dentistry. And this is confirmed by the results of a three-year study of the effectiveness of the developed CPI as an integral part of the maximum program, which gives the right to confirm the feasibility of its use in such living conditions of adolescents.

Conclusions.

1. School-age teenagers permanently residing in an area of intensive industrial development are exposed to excess amounts of waste from metallurgical enterprises, which causes a high incidence of dental caries in terms of prevalence and intensity.

2. Intervention in the pathogenesis of demineralization of hard tissues by increasing and accelerating glycolytic reactions in the oral cavity with heavy metals (Fe, Zn, Cd) is not only a high level of contamination of the main natural environment of children, but has also been proven by the successful implementation of preventive measures through neutralization.

3. Three years of use of the CPI s developed by us (adaptogens, antidotes, antioxidants and immunocorrectors in the form of bioflavonoids, calcium citrate, methionine amino acids) in the maximum program will allow us to achieve a high preventive effect in the range of 60-62% for different age groups.

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