



Evaluation of Physico-Chemical Parameters of Oral Fluid in Children with Cerebral Palsy

**Masharipov Aziz Umidovich., Saidov Akbar Axadovich,
Bulicheva Yelena Anatol`evna**

Bukhara State Medical Institute, The First St. Petersburg State Medical
University named after Academician I.P. Pavlov

***Relevance:** A number of scientific studies are being conducted all over the world aimed at developing early diagnosis and clinically sound treatment of dental caries, prevention of oral diseases in children. Of particular importance are measures aimed at the treatment of the clinical and functional state of the oral cavity and prevention, the development of a system for the prevention of risk factors of hereditary predisposition to caries in school-age children, the diagnosis and treatment of the disease, the development of a treatment system to reduce complications.*

The development of the medical system of our country aimed at adapting to the requirements of world standards, reducing dental caries and non-cariou diseases in children with cerebral palsy in hot climates are determined by a number of tasks, including by improving the efficiency, quality and continuity of medical care provided to the population in our country, as well as the formation of a system of medical standardization, the introduction of high-tech methods of diagnosis and treatment, dispensary care, support of a healthy lifestyle and disease prevention. These tasks make it possible to reduce caries and non-cariou dental diseases in different age groups in a hot climate, modern technologies in providing high-quality medical care to children with disabilities. Over the past 15-20 years, a wide range of scientific research has been carried out in the CIS countries to assess caries resistance in children with various degrees of cerebral palsy and the use of exo- and endogenous methods of fluoride use in preventive measures to prevent low resistance. The causes of the occurrence and development of cerebral palsy are studied by many domestic and foreign authors (Semenova A. A. et al., 2016). Despite the active work of various specialists, medical workers and parents, unfortunately, the number of sick children diagnosed with cerebral palsy is growing every year [12.14.16.18].

It is necessary to take into account all the factors causing the disease in order to solve the issue of achieving positive and long-term therapeutic effectiveness of fluorides in the prevention of dental caries in children with cerebral palsy (Pakhomov G. N., 2016; Antonova A. A., Strelnikova N. V., 2016; Leontiev V. K., 2018;). According to the authors, in the prevention of dental caries in children with cerebral palsy, the introduction of fluorides into the body by endogenous methods, in particular by fluoridation of water, milk, salt and food, leads to a decrease in caries by 40%. It is concluded that of all the above endogenous methods, water fluoridation is the cheapest and most acceptable method. (Davydov B.N. et al., 2012).

The aim of the study is to increase the effectiveness of comprehensive prevention and treatment of dental caries in children with cerebral palsy.

Objectives of the study: to study the dental status and prevalence of caries in children with cerebral palsy;



determination of some biochemical parameters of oral fluid in the diagnosis, treatment and prevention of dental caries in children with cerebral palsy;

evaluation of physico-chemical parameters of oral fluid in children with cerebral palsy;

pathogenetic analysis and development of early diagnosis, treatment and prevention of dental caries in children with cerebral palsy;

to study the clinical efficacy of the drug Kalmazin in the treatment of dental diseases and dental caries in children with cerebral palsy.

The introduction substantiates the relevance and relevance of the conducted research, the purpose and objectives, describes the object and subject of the study, shows the correspondence of the study to the priority directions of the development of science and technology of the republic, outlines the scientific novelty and practical results of the work, reveals the scientific and practical significance of the results obtained. The data on the implementation of the research results in the practice of healthcare are presented, information on publications and the structure of the dissertation is presented [25.27.29.31.33.35.37].

The first chapter of the dissertation "Modern approaches to the comprehensive prevention and treatment of dental caries in children with cerebral palsy" contains an analysis of modern literature. Today, in order to conduct scientific research on the treatment and improvement of the prevention of dental caries in the population, including children with cerebral palsy, in order to solve this problem in a scientifically based situation, a detailed analysis of new approaches in studying the prevalence, intensity of incidence of these diseases, possible and emerging risk factors for the development of dental caries has been carried out. The second chapter of the dissertation, entitled "General characteristics of the examined patients and the research methods used", provides information about the examined patients, a description of the preventive and therapeutic method for the prevention and treatment of oral diseases and dental caries in children with cerebral palsy, as well as research methods. For statistically significant changes, four main significance levels were adopted: high - $P < 0.001$, medium - $P < 0.01$, low (threshold) - $P < 0.05$, insignificant (unreliable) - $P > 0.05$. The third chapter of the dissertation "Analysis of dental diseases in children of age groups of cerebral palsy" is devoted to the study of diseases of the oral cavity and dental caries in children with cerebral palsy [1.3.5.7.9.11.13.15.17.19.21.23].

The results of the study of the dental status of children of different ages with cerebral palsy showed that the jaw was not properly developed in 26 children (22.8%). The pathology was distributed by age as follows: a total of 375 children with cerebral palsy were examined, including 114 children with dental diseases and caries. We divided our dental examinations into groups: 34 (29.8%) patients with hemiparesis, 59 (51.7%) patients with hyperkinesism, 21 (18.5%) patients with atonic - astatic disease were examined and treated. As a control group, the study included 40 children aged 6-18 years with oral caries. In the remaining controlled children, $n=88$ (77.2%), the jaw was developed properly, no pathological anomalies were detected during the examination. Malocclusion was detected in 20 examined children (17.5%), in 16 cases (47%) in children aged 6 to 10 years. In all other cases, the bite was correct in 53% ($n = 18$). The results show that the condition of teeth in children with cerebral palsy worsens with age, which increases the need for their treatment. This pattern should be taken into account when financing and planning measures for the prevention of dental diseases, especially in school-age children. It should also be noted that it is not enough to cover children with cerebral palsy with medical examination, since from 6 to 12 years of age only 12 children were taken on dispensary registration, which is 9.5% of the examined children. With increasing age, the proportion of children from 12 to 16 years covered by medical examination, as well as the number of children registered at the dispensary, increases to 16.4% ($n=86$ of the number of examinations in this age group), and children from 16 to 18 years-



72.8% (n=217). Thus, it was found that with age in children with cerebral palsy, the replacement of teeth with permanent teeth occurred in full accordance with the age physiology of children, but also with age in children, the condition of teeth gradually worsened. The increase in the "satisfactory" and "unsatisfactory" condition of teeth in children occurred due to a decrease in the number and percentage of teeth in "good condition". As a result of the established regularity for medical examination, it should be taken into account when planning the financing of therapeutic and preventive measures, the allocation of full-time dentists for school internships is recommended to use, the use of children in this contingent [2.4.6.8.10.12.14.15.16.18.20.22.24.26.28.30.32.34.36].

Conclusions

1. It was found that the influence of somatic condition is directly related to the condition of teeth in children with cerebral palsy. Unlike children from the comparison group, they had complaints of dry lips (64.40%) and the condition of the oral mucosa (76.27%), bleeding from the gums (40.67%), itching and burning in the gums (28.81%), ($R < 0.05$). The prevalence and high intensity of caries (5.73 ± 2.45 and 84.74%) and periodontal diseases (2.09 ± 0.95 and 83.05%) were observed. The prevalence and intensity of caries and periodontal disease in children in the comparison group decreased by 4 ± 1.20 (73.33%) and 1.45 ± 0.63 (66.66%), respectively ($P < 0.05$).
2. When studying the biochemical parameters of the oral fluid content in children with cerebral palsy, an increase in the amount of magnesium (1.33 ± 0.39 mmol /l), an increase in TB - active products (0.42 ± 0.20 mmol /l), a decrease in the amount of calcium (1.94 ± 0.63 mmol /l) and protein (1.18 ± 0.54 g /l) in contrast to the comparison group, where the indicators of magnesium (0.84 ± 0.25 mmol/ L), TBA-active products (0.17 ± 0.20 mmol / L), calcium (2.23 ± 0.41 mmol /L) and protein (1.73 ± 0.67 G /L) ($p < 0.05$). Phosphorus values in both groups were within the normal range (5.27 ± 1.52 and 4.62 ± 1.96 mmol/L).
3. When studying the physico-chemical properties of oral fluid in children with cerebral palsy, an increase in kinematic viscosity (1.26 ± 0.49), a decrease in oral fluid secretion (0.27 ± 0.05 ml/min) and pH of oral fluid was 6.47 ± 0.38 were revealed. In the comparison group, the kinematic viscosity was 1.02 ± 0.10 , the fluid velocity in the oral cavity was 0.39 ± 0.06 ml/min and the pH of the fluid in the oral cavity was 7.05 ± 0.14 , i.e. they were within the normal range ($P < 0.05$).
4. An improvement in the condition of teeth, biochemical and physico-chemical parameters of oral fluid was revealed when using the drug Kalmazin, developed and pathogenetically justified in the comprehensive prevention and treatment of dental caries in children with cerebral palsy.
5. The clinical efficacy of Kalmazin in the treatment of dental diseases in children with cerebral palsy is superior to other drugs used; complaints decreased in children, the hygienic index of the oral cavity improved, the prevalence of periodontal diseases decreased, the secretion of oral fluid and pH of oral fluid increased, but there was a slight decrease in protein, calcium, kinematic viscosity, magnesium, phosphorus and TVA-active products.

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