Машарипов Атабек Садуллаевич - ассистент
Матназаров Акбар Ботирбой ўғли - ассистент
Бухоро давлат тиббиёт институти (Бухоро, Ўзбекистон)
Тошкент Тиббиёт Академияси Ургенч Филиали (Ургенч, Ўзбекистон)

ҚАНДЛИ ДИАБЕТ БИЛАН ОҒРИГАН БЕМОРЛАРДА ЗАМОНАВИЙ СТОМАТОЛОГИК ТАДҚИҚОТЛАР УСЛУБЛАРИ ТАҲЛИЛИ

Аннотация. *Ушбу мақолада қандли диабет билан оғриган беморларда стоматологик касалликларни тарқалиш кўрсаткичлари, стоматологик касалликларнинг ташхислаш усуллари ҳамда стоматологик касалликларнинг келтириб чиқарувчи сабаблари батафсил кўрсатилган.*

***Калит сўзлар*:** *қандли диабет билан оғриган беморлар, стоматологик касалликлар, стоматологик текширув усуллари.*

Машарипов Атабек Садуллаевич - ассистент
Матназаров Акбар Ботирбой Ўғли - ассистент
Бухарский государственный медицинский институт (Бухара, Узбекистан)
Ургенчский Филиал Ташкентской Медицинской Академии (Ургенч, Узбекистан)

АНАЛИЗ МЕТОДОВ СОВРЕМЕННЫХ СТОМАТОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ У ПАЦИЕНТОВ С САХАРНЫМ ДИАБЕТОМ

Аннотация. *В данной статье подробно рассматриваются показания к распространению стоматологических заболеваний у пациентов с сахарным диабетом, методы диагностики стоматологических заболеваний и первопричины стоматологических заболеваний.*

Ключевые слова*: пациенты с сахарным диабетом, стоматологическими заболеваниями, методами стоматологического обследования.*

Masharipov Atabek Sadullaevich - assistant
Matnazarov Akbar Botirboy O'g'li - assistant
Bukhara state Medical University (Bukhara, Uzbekistan)
Urgench Branch Of The Tashkent Medical Academy (Urgench, Uzbekistan)

ANALYSIS OF MODERN DENTAL RESEARCH METHODS IN PATIENTS WITH DIABETES MELLITUS

Abstract. *This article discusses in detail the indications for the spread of dental diseases in patients with diabetes mellitus, methods for diagnosing dental diseases and the root causes of dental diseases.*

Key words. *patients with diabetes mellitus, dental diseases, and dental examination methods.*

Relevance. Efforts are currently underway to recognize oral health as an integral part of overall health. The oral cavity performs many functions in relation to daily life, such as eating, speaking, social contacts, and appearance. Dental caries is one of the most common human diseases and is a serious medical condition. The host's resistance and susceptibility, combined with lifestyle factors, alter the overall outcome. The determinants of caries include both biological and behavioral factors such as diseases and medications, hyposalivation and impaired salivation, protective functions, bacterial dysbiosis, diet, oral hygiene, educational level and socio-economic status. Interestingly, similar changes in small vessels can be found in the tissues of the oral cavity in both types of diabetes. Several studies have been conducted to assess the association of DM1 with dental caries. However, research results show that the majority of patients with DM1 have salivary gland dysfunction, as well as changes in the biochemical and microbiological parameters of saliva. On the other hand, antimicrobial protection of patients with diabetes may be stronger than that of non-diabetics [2.4.6.8.10.12.14]. Good metabolic control of diabetes is considered fundamental for preventing complications. Contradictory results have been reported in the relationship between the level of glycemic control in DM1 and dental caries. Accelerated teething with diabetes can occur in children younger than 1.5 years, while delayed teething can occur in older children. These findings are consistent with the "two-phase" effect of the diabetic condition on dental development.

Purpose of the study. Dental examination analysis of patients with diabetes improving learning.

Results and analyzes. Accelerated teething in children with DM indicates the presence of a dual component of mechanisms affecting the intra- and extraalveolar phases of eruption; while it has been

shown that the intraalveolar phase of eruption is primarily regulated by molecular signals generated by the dental follicle proper, extraalveolar eruption appears to be more dependent on root development and bone apposition. in the apical region of the erupting tooth. Despite this, the exact mechanisms responsible for teething are It remains unclear what recent discoveries have shown in mouse models. Increased teething occurs under the influence of colony stimulating factor-1, which increases the immunoreactivity of bone marrow mononuclears and cells to the growth hormone receptor and insulin-like growth factor-I. Gum inflammation and accelerated eruption were found. It is possible that an exaggerated inflammatory reaction to the bacterial flora of plaque in hyperglycemia associated with periodontal disease may lead to a decrease in the quality and quantity of surrounding bone, which leads to premature rejection of baby teeth in children with diabetes.

Poor soft tissue regeneration and delayed bone healing in patients with diabetes are known to have complications during oral surgery, which may be associated with delayed vascularization, decreased blood flow, decreased innate immunity and growth factors. Psychological stress can also affect the long-term healing of wounds of the oral mucosa in patients with diabetes. Salivary and gustatory dysfunction also occur in patients with diabetes, which is explained by lower salivary flow and pH, as well as the buffer system, but also by a higher glucose content compared with healthy children. Up to 80% of DM2 patients who do not have well-controlled blood glucose levels suffer from decreased parotid blood flow and decreased saliva production by this parotid gland. These data confirm a significant correlation between xerostomia and salivary glucose levels. However, while one study showed that there is no definitive association between diabetes and decreased salivation in the pediatric population, another study found that 50% of children with DM had hyposalivation (<0.7 ml/min). A higher incidence of Candida albicans (the most prominent type) is found in 43.1% of DM patients. The factor predisposing to oral candidiasis includes a high level of salivary glucose, low salivary secretion, impaired chemotaxis and phagocytosis defect due to a deficiency of polymorphonuclear leukocytes and a decrease in tissue resistance to infection. Patients with diabetes have a compromised protective mechanism of the oral cavity, therefore, it is believed that they are immunocompromised, moreover, those with poor metabolic control are more prone to the spread and recurrence of bacterial infection. Consequently, several studies have reported that diabetic patients are more prone to deep bacterial neck infection compared to patients without diabetes. When studying the severity of maxillofacial injuries, superinfections of odontogenic origin, sensitivity of microorganisms to antibiotics, and prolonged duration of hospitalization were observed in children with DM. Therefore, it is extremely important that the dentist works with the child's parents and a pediatric endocrinologist to obtain a detailed description of the child's diabetic status. Treatment monitoring and dentist recommendations should include the child's diabetic status and individual blood glucose levels. For example: the most significant independent predictor of poor diabetic status in children and adolescents is poor adherence to a healthy lifestyle with excessive consumption of sweets.

Several studies have examined the relationship between DM1 and oral health. There is evidence that DM1 plays a significant role in the occurrence and development of major dental diseases such as periodontitis and possibly dental caries. Previous studies have shown that adolescents with DM1 have more severe gum inflammation than healthy children of the same age, although their plaque levels are the same. Metabolic imbalances in tissues can reduce the resistance of the local immunity of the oral cavity of people with diabetes, and thus modify the initiation, development and progression of periodontal diseases. Moreover, it has been suggested that there is a bidirectional relationship between diabetes and periodontal disease, as the presence of periodontitis causes difficulties in controlling glycemia in patients with DM1. The researchers described a decrease in the rate of salivation in people with poorly controlled T1DM and the subsequent development of dental caries. Children with diabetes may be at a higher risk of developing caries than healthy children, mainly due to impaired metabolic control, hypofunction of the salivary glands, and high concentrations of glucose in their saliva. Dental caries is a complex and multifactorial chronic disease endemic to the world's population. Dental caries is still widespread in the United States. Conditions that begin in many people in early childhood and continue throughout their lives. Although the link between oral health and type 2 diabetes is well recognized, there is still limited evidence of a link between type 1 diabetes and oral health, even if various oral problems, including increased caries, have been reported. Dental caries remains one of the most common chronic diseases with a dietary and bacterial etiology [14]. Caries is characterized by an ecological shift in the dental biofilm environment due to frequent access to fermentable dietary carbohydrates, which leads to a transition from a balanced population of microorganisms with low cariogenicity to a microbiological population with high cariogenicity (more acidic and acidogenic) and an increase in the production of organic acids [15]. Acid production near dental structures leads to demineralization of enamel and dentin and can subsequently evolve into cavitation.

Unbalanced diabetes is associated with significant cariogenic changes in the oral environment, including less resting and stimulated whole saliva, lower buffering capacity of saliva and acidic pH, higher concentration of glucose in saliva, higher concentration of albumin in saliva, high proportion of mutant streptococcus and yeast in saliva. Changes in the oral microflora of a diabetic subject with poor glycemic control can significantly affect the preva-

lence of gingivitis and caries. However, contrary to previous findings, lower caries experience has also been reported. No significant differences were described regarding caries experience between diabetic and non-diabetic type 1 children, even if the number of untreated dental caries was higher among diabetic children, reflecting lower dental attendance. A high susceptibility to caries was also noted in children and adolescents with type 1 diabetes mellitus with poor metabolic control. Poor metabolic control is defined as HbA1c levels exceeding the target range of HbA1c for all age groups < 7.5% (58 mmol/mol). Dietary habits are established in childhood and will persist into adulthood, being one of the pillars of human health. Many human diseases have their roots in the diet of individuals, of which dental caries is one of the most common infectious diseases. Diabetes is also considered the most common metabolic disorder in children. Several studies have been conducted to explore the relationship between these two diseases, which lead to different outcomes.

Modern scientists have assessed the relationship between diet and dental caries in children with DM1 and found that increasing age and frequent consumption of soft drinks and snacks can affect the development of dental caries in children. Plaque and diabetes induced changes in the concentration of albumin and glucose in saliva, which led to dental caries in diabetics. Baby bottle syndrome, now known as early childhood caries, is defined as the presence of 1 or more decayed teeth or missing teeth (as a result of dental caries) or filled tooth surfaces in any primary tooth between the ages of birth and 71 months. Dental caries is the single most common chronic childhood disease worldwide, 5 times more common than asthma, 7 times more common than hay fever, 4 times more common than childhood obesity, and 20 times more common than DM1. According to the American Academy of Pediatric Dentistry, it is now an international public danger in both developing and developed countries. This is an infectious disease that can begin after teething, usually about 6 months, and can progress rapidly, causing great pain and discomfort in the child. The actual cause is the interaction of microbes such as S. mutans with sugary foods or fermentable carbohydrates that produce lactic acid, which destroys tooth enamel, causing demineralization. If they are not treated, it will affect the health and quality of life of the child and can lead to serious social and economic consequences. In international and domestic practical recommendations on the management of patients with diabetes, little attention is paid to the relationship between diabetes mellitus and oral pathology. Although patients, having acquired the necessary knowledge, could more effectively observe oral hygiene, notice the first signs of pathological changes, and regularly seek professional dental care, which would preserve dental health and improve glycemic control. The symptoms of diseases of the oral cavity in patients with diabetes are quite diverse.

Thus, it has been shown that in patients with DM1, all clinical and laboratory parameters differ from those in individuals without somatic pathology. They have dryness and pasty appearance of the oral mucosa, hyposalivation, which increases the number of dental deposits, increases the intensity of lipid peroxidation, increases the overall fibrinolytic activity of saliva, and increases bleeding gums. Changes in oral fluid parameters are always detected with diabetes. One of the earliest and most frequent manifestations of diabetes is a violation of the secretory function of the salivary glands, leading to xerostomia, which is accompanied by complaints of dry mouth. It is assumed that diabetic complications of salivary gland function may be associated with an autoimmune process of degeneration of salivary-producing cells. The mucous membrane is shiny, hyperemic, and catarrhal inflammation invades almost the entire oral mucosa. The composition and properties of oral fluid in DM patients differ significantly from those in somatically healthy individuals in all indicators. This is especially true for enzymatic activity. There is almost always a violation of the acid-alkaline balance with a shift towards acidosis. One of the most significant signs of changes in oral fluid is also an increase in glucose levels, almost by an order of magnitude compared to healthy individuals. There is a direct relationship between the glucose content in the oral fluid and in the blood. Today, along with priority issues of a political and economic nature, improving the health status of the child population is one of the main tasks of the state. Children's health is the key to maintaining and strengthening the health of the country's population as a whole. Unfortunately, we have to state that the dental morbidity in children is progressing from year to year. Currently, dental caries, which has already become a serious public health problem, is the most common dental health condition among children and adults. Over the years, a significant amount of scientific research has been devoted to the issue of the incidence of dental caries in children, preschool and school age. Despite the development of prevention methods, the improvement of traditional methods and the use of modern atraumatic treatment technologies, the prevalence of dental caries remains high, and the high level of multiple caries among children is of particular concern. Motivation to regularly carry out hygiene measures in the oral cavity, conversations conducted with children and their parents, classroom teachers, about rational nutrition, namely, reducing the number and frequency of exposure to products containing sugars in the oral cavity, explaining the importance of using fluorides for dental health, contributed to improving the hygienic condition of the oral cavity of children during bite changes. The global program to prevent an increase in dental morbidity is based on the principles proclaimed by WHO and the FDI, the main stages of which are the health education of the population in the field of dentistry, the expansion of preventive dental services, and the

motivation of the population to maintain oral health [1.3.5.7.9.11.13.15].

The main purpose of prevention is to eliminate the causes of the occurrence and development of diseases, as well as to create conditions for increasing the body's resistance to the effects of adverse environmental factors. Hygienic education in dentistry plays a very important role, since the etiology and pathogenesis of dental caries and periodontal diseases are largely due to the negative habits of adolescents: eating large amounts of carbohydrate foods and sugars, and unwillingness to brush their teeth. In modern dentistry, the problem of the treatment and prevention of caries and its complications in children and adolescents is one of the most difficult and attracts the attention of many researchers. The lack of measures for dental medical examinations and preventive work with children and adolescents is a serious negative factor that leads to a sharp increase in the incidence of all types of dental pathology. Low level of sanitary and hygienic knowledge and skills, lack of motivation to participate in preventive programs, determine the increase in the prevalence and intensity of dental diseases, primarily in children and adolescents. In children with poor hygiene, the carious process is more active, and subcompensated and decompensated forms of caries are more common.

Conclusion. The prevalence of inflammatory periodontal diseases among children and adolescents remains quite high and reaches from 30 to 90% at various age periods. In most European countries, there has been a significant decrease in the prevalence of tooth decay among children and adolescents in the last two decades. The reasons for this phenomenon are diverse, but the most significant are: reducing sugar consumption, improving the quality of dental and oral care, the use of fluoride-containing toothpastes, improving the organization of dental services and the deployment of school prevention programs.

REFERENCES

1. Камалова Ф.Р. Показатели распространенности и интенсивности кариеса зубов у детей Бухарского региона // Tibbiyotda yangi kun. - Бухара, 2019. - №2(26). - С. 183-185 (14.00.00; №22).

2. Камалова Ф.Р., Бозоров М.Х. Роль профилактических стоматологических мероприятий у детей школьного возраста // Биология ва тиббиёт муаммолари. - Самарқанд, 2020. - № 6 (124). - С. 48-51 (14.00.00; №19).

3. Камалова Ф.Р. Изучение стоматологического статуса у детей с сахарным диабетом в Бухарской области // Tibbiyotda yangi kun. – Бухара, 2020. - №1(29). - С. 216-218 (14.00.00; №22).

4. Камалова Ф.Р. Первичная профилактика стоматологических заболеваний у детей, страдающих с сахарным диабетом //Tibbiyotda yangi kun. – Бухара, 2020. - № 2(30). - С. 383-387 (14.00.00; №22).

5. Камалова Ф.Р. Значение цитокинового звена при стоматологических заболеваниях у детей с сахарным диабетом 1-типа // Доктор ахборотномаси. - Самарқанд, 2020. - №4 (97). – С. 19-22 (14.00.00; №20).

6. Камалова Ф.Р., Бозоров М.Х. Изменение микрофлоры и неспецифических факторов защиты полости рта у детей при воспалительных заболеваниях челюстно-лицевой области // Доктор ахборотномаси. - Самарқанд, 2020. - №4 (97). - С. 22-25 (14.00.00; №20).

7. Камалова Ф.Р., Эшонкулов Г.Т. Диагностика и профилактика зубочелюстных аномалий и кариесогенной ситуации у детей, страдающих сахарным диабетом // Stomatologiya. - Ташкент, 2020. - № 4 (81). - С. 27-29 (14.00.00; №12).

8. Kamalova F.R. Diagnostic Value of Salivator Cytokines ln Dental Diseases ln Children With Diabetes Mellitus Type 1 // Evropean jornal of molecular & clinical medicine. – 2020. Vol. 7 - P. 2515-8260 (14.00.00; (3) Scopus).

9. Kamalova F. R., Eshonkulov G.T. Early Diagnosis And Prevention of Dentoalveolar Anomalies And Cariogenic Situation ln Children Suffering From Diabetes // Evropean jornal of molecular & clinical medicine. - 2020. Vol. 7 - P. 2515-8260 (14.00.00; (3) Scopus).

10. Kamalova F. R., Eshonkulov G.T., Radjabov A. A., Saidova M.A. The study of anomalies of maxillafacial system of children's age in the Bukhara region // ACADEMICIA: An International Multidisci plinary Research Journal. – India, 2019. - Vol. 9 - P. 63-67 (14. 00.00; SJIF = 6.152).

11. Kamalova F.R., Turaeva F.A., Afakova M. Sh.Eronov E.K., Eshonkulov G.T. The dynamics of the prevalence of diabetes and the study of dental status in children of the Bukhara region // ACADEMICIA: An International Multidisciplinary Research Journal. - India, 2019. - Vol. 9 - P.151-153. -(14.00.00; (23) SJIF = 6.152)

12. Kamalova F.R., Radjabov A.A., Turaeva F.N., Afakova M.Sh. Frequency of spread of a short frenum of the tongueand upper lip in preschool // AJMR- India, 2019. - Vol. 8. -P. 126-129 (14.00.00; SJIF = 6.053).

13. Kamalova F.R. Development and evaluation of the effectiveness of the dental dental examination program for children with diabetes in adverse envir-onmental conditions // ACADEMICIA: An International Multidisciplinary Research Journal. - India, 2020. - Vol. 10. - P. 64-66 (14.00.00; SJIF =7.13).

14. Kamalova F. R. Therapeutic and preventive mtasures of dental diseases in children with diabetes //ACADEMICIA: An International Multidisciplinary Research Journal. - India, 2020. - Vol. 10. - P. 1920-19 25 (14.00.00; SJIF =7.13).

15. Kamalova F.R. Prevention of dental anomalies and dental caries in children with diabetes // Middle European scientific bulletin. Czech Republic – 2020. - Vol. 5. - P. 92-93 (14.00.00; SJIF = 6.7