

CLINICAL AND BIOCHEMICAL RATIONALE FOR THE PROVISION OF DENTAL CARE TO PATIENTS WITH METABOLIC SYNDROME

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Abstract: The practice of a dentist is often associated with the treatment of patients with a history of severe somatic diseases. The relevance of the problem is determined by the fact that today somatic pathology occurs in 30% of dental patients. Currently, the number of patients suffering from chronic kidney diseases, increases to 5-8% per year, and the growth rate of patients in 2008 was 14.7% [5, 10]. According to the data provided by the registry of the dialysis society, in our country the treatment of patients with end-stage chronic renal failure conducted. Development of dialysis program transplantation, increasing the provision of the population with quality hemodialysis care have led over the past 30-40 years to a decrease in morbidity and mortality among patients with metabolic syndrome. Existing methods of renal replacement therapy, the use of modern pharmacological preparations, control of anemia, arterial hypertension, disorders of phosphorus-calcium metabolism, diet modification allow to prolong the life of patients for an indefinitely long period and achieve a certain level of medical and social rehabilitation.

Key words: clinical and biochemical rationale, dental care, patients, patients with metabolic syndrome, periodontal disease, a high prevalence of oral tissue diseases.

Relevance of the problem: The practice of a dentist is often associated with the treatment of patients with a history of severe somatic diseases. The urgency of the problem is determined by the fact that today somatic pathology occurs in 30% of

dental patients. Today one of the urgent problems of modern dentistry is the impact of systemic disorders characteristic of the metabolic syndrome on the organs and tissues of the oral cavity [6]. According to the Health Organization, the prevalence of periodontal disease among the population aged 33-44 years is about 65-98%. The study of periodontal status in people of different ages showed its clinical stability only in 4-5% of the population aged 24 to 44 years. The frequent combination of visceral obesity, disorders of carbohydrate and lipid metabolism, respiratory disorders during sleep, arterial hypertension, the presence of a close pathogenetic relationship between them served as the basis for isolating an independent syndrome - "metabolic" [1,8]. It is a possible when central obesity is combined with any two of the following: elevated triglycerides, reduced high-density lipoprotein cholesterol, elevated blood pressure, elevated fasting plasma glucose. It should be noted that there is still insufficient data to study the mechanism of development of clinical and biochemical disorders in dental diseases with metabolic syndrome, which indicates the need for detailed clinical and laboratory studies on this issue.

The studies of the state of the oral cavity in patients with metabolic syndrome have revealed a high prevalence of oral tissue diseases and, as a result, a significant need for dental care [2,17]. Over the past few decades, a lot of new data has been obtained on the pathogenesis of dental pathology and the role of pathogenic bacteria, which led to the emergence of new methods of diagnosis and treatment. They suggest an association between systemic factors and disease severity. Risk assessment is an integral part of the diagnosis and treatment of diseases of the oral cavity. Obviously, patients with concomitant systemic diseases have a significantly higher risk and severity of periodontitis. Such factors largely influence the development and course of the disease [5,18]. In the literature, there are a few work that determine the features of the state of the oral cavity in patients

with metabolic syndrome [9]. Also, in domestic practice, there is no program for providing dental care to patients with metabolic syndrome.

The purpose of this study: To study the prevalence of dental diseases and determine the need for dental care in patients with metabolic disease and propose therapeutic and preventive measures based on clinical and biochemical studies.

To achieve this goal, the following tasks will be set:

1. A comprehensive dental examination of patients with metabolic syndrome will be carried out and an algorithm for examination and provision of dental care to them will be developed;

2. The impact of lipid, carbohydrate and protein metabolism disorders on the rate of secretion and the composition of mixed saliva in patients with metabolic syndrome will be evaluated.

3. A clinical and laboratory assessment of the state of the hemostasis system, blood lipid spectrum, and carbohydrate metabolism indicators in dental patients against the background of metabolic syndrome will be given;

4. The effect of metabolic diseases components on the state of oral tissues and indicators of mixed saliva in patients will be evaluated.

5. Evidence-based recommendations for the provision of dental care to patients with metabolic diseases will be proposed and tested.

The authors note that the state of homeostasis oral cavity with metabolic diseases has a number of features. The presence of microangiopathy and increased the glucose content in the oral fluid has a negative effect on periodontal tissues and reduce reparative function [7,8]. As well as hyperglycemia and “jumps” in blood glucose levels during the day often lead to suppression of salivation and a feeling of dryness in the oral cavity. The content of glucose in the oral fluid in periodontitis against the background of metabolic diseases. Decreased salivation against the background tissue glycation creates favorable conditions for the

development of dysbacteriosis in the oral cavity with the activation of periodontopathogenic and fungal microflora. Based on the research, it was established that with metabolic diseases in the oral cavity, a topographic redistribution of zones of functional microbial alkalosis occurs, due to violation of the ecological balance of the oral microflora and accompanied by an increase on average, 1.5 times the ammonia-producing activity of microbial plaque of the tongue. This is facilitated by a decrease in the rate of salivation, the reaction of mixed saliva and gingival fluids, dysbacteriosis. The severity of periodontal tissue damage is directly related to the degree of these disorders: the cause of increased formation of hard dental deposits on the background of acidosis in the oral cavity with periodontitis is local and long-term uncompensated increase in ammonia-producing activity of urease-positive microflora of dental plaque and plaque on the surface of the tongue. As a result of the study of the relationship of diseases periodontitis and metabolic diseases have established that there is a relationship not only in the form of "diabetes periodontitis", but also in the reverse order - "periodontitis-diabetes". According to studies, in severe periodontitis, the effectiveness of insulin, which is produced by the body, decreases [6].

Research material and methods used to perform this research work. 120 patients who applied for dental care at the basic regional dental clinic, aged 25 to 60 years, will be examined, including a control group of 20 practically healthy people. All patients of the main group will be divided into the following groups depending on the treatment:

The following research methods will be used:

- a) clinical and dental methods
- b) clinical and functional
- c) biochemical
- d) statistical methods.

Expected results of research work and its novelty.

As a result of a comprehensive dental examination, the frequency of occurrence of dental diseases in patients with metabolic diseases will be shown [11]. The existing pathological changes in the tissues of the oral cavity develop against the background of inadequate assessment by patients of their condition and the need for dental treatment, which aggravates the existing premorbid background in these patients. Damage to periodontal tissues is characterized by the predominance of dystrophic processes against the background of MS.

The practical significance of research work (for healthcare). The results of the study allow to increase the effectiveness of treatment and prevention of dental diseases by choosing the optimal options for a set of therapeutic and preventive measures for patients. Ways to use the obtained research results. The results of the work will be used in clinical practice for the treatment and prevention of dental diseases and the development of ways to prevent and treat. The main provisions of work will be reported and discussed at scientific and practical conferences, congresses, and congresses. Materials will be published, the main materials of this work will be used in the lecture course for masters and clinical residents.

In the adult population, metabolic syndrome is diagnosed from 10.0% in China to 24.0% in the United States, especially in postmenopausal women with a sedentary lifestyle and a predominance of a carbohydrate diet. Metabolic syndrome can be attributed to reversible conditions, since with appropriate timely treatment, it is possible to achieve the disappearance or reduction in the severity of its manifestations; on the other hand, the metabolic syndrome precedes the onset of diseases such as type 2 diabetes mellitus and atherosclerosis, the main causes of increased mortality in the population. Unfortunately, specific pharmacological agents for the treatment of metabolic syndromes are absent, and the effectiveness of a healthy lifestyle is underestimated by patients. With increasing age, the risk of

association of the metabolic syndrome with osteopenia or osteoporosis increases, manifested by a decrease in bone mineral density and a decrease in its volume [2,10,11]. Changes in the normal state of bone tissue are manifested in the maxillofacial region and greatly complicate the treatment of periodontal diseases, reduce the effectiveness of orthopedic treatment of dentition defects, which is reflected in many studies in the field of dentistry and maxillofacial surgery [10,12,13,14]. At the same time, the dental aspects of the metabolic syndrome are not well understood.

The combination of metabolic syndrome with osteopathy is almost not presented in the special literature, both in terms of the degree of influence on the state of the tissues and organs of the mouth, and in terms of the possibilities and features of the complex dental rehabilitation of patients with such a pathology, usually complicated by partial or complete absence. Factors of negative influence on the effectiveness of orthopedic treatment in patients with metabolic syndrome associated with osteopathy have not been studied. To date, the provision of dental care to patients with metabolic syndrome, especially when associated with osteopathy, is a new direction that has not previously been considered in the segment of providing specialized dental care to the population [5].

At the same time, according to the signs of bleeding, periodontal pockets, bone tissue resorption, inflammatory periodontal diseases are less common in the group of patients with atherosclerosis of the carotid arteries. Ultrasound duplex scanning of the mental arteries in patients with atherosclerosis of the common carotid artery or external carotid artery reveals an increase in peripheral resistance to blood flow and a decrease in the elastic properties of the vessel wall, gingival colorimetry confirms the relationship between a decrease in gingival color and the degree of narrowing of the blood supplying great vessels. The author proposes to introduce the concept of "vascular alertness" for interaction with general therapists. At the

level of clinical, morphological and microbiological studies of Eliseeva A.F. showed that a combined lesion of the periodontium and the cardiovascular system, revealing a long-term chronic course and a severe degree of periodontitis in patients with coronary heart disease.

The upper jaw consists of the body of the jaw and four processes: frontal, palatine, zygomatic and alveolar. The body of the jaw contains a cavity, the maxillary sinus, cells of the ethmoid labyrinth [9]. The walls of the body of the upper jaw are shown in the larger parts of its surface with thin bone plates containing a small layer bone marrow substance. The body of the upper jaw connects with the body of the opposite bone of the same name along the midline with a bone suture. With the help of processes - palatine, frontal and zygomatic - the upper jaw is connected to the bones of the skull. In the alveolar process contains tooth sockets. On the anterior wall of the body of the upper jaw there is opening of the infraorbital canal (foramen infraorbitale) - the exit site of the vascular-nerve bundle. The lower jaw is an unpaired movable bone of the facial skull, consisting from the body, branch, angle. The body passes into the alveolar part, where the roots of the teeth are located.

The branch has two processes - condylar, ending with the head of the lower jaw, and coronary. On the inner surface of the branch of the lower jaw there is a hole (foramen mandibulare), which is the beginning of the mandibular canal, where neurovascular bundle (inferior alveolar artery, vein and nerve). At the level premolars from the vestibular side, the mandibular canal opens mental foramen (foramen mentale), from which the artery, vein and nerve emerge. The upper jaw, the lower jaw contains a large amount of bone marrow centered in the body of the jaw. The lower jaw is involved in many functions: chewing, sound production, speech, swallowing, etc. Patients are interviewed about the correction of nutrition and oral care, recommend using toothpastes containing calcium phosphate, then

applications twice a day, use rinses, brushes and dental floss. For oral administration may prescribe drugs aimed at maintaining mineral metabolism, immunological reactivity and non-specific resistance of the organism. As a rule, these are complexes of vitamins and minerals, such as Vitrum, Centrum, calcium preparations, as well as various nutritional supplements based on seaweed. Dental treatment is started 3-4 weeks after the correction of the drinking regimen and diet, the course of remineralizing therapy and professional oral hygiene [8]. Dental treatment has a number of features, since a rapidly progressive process leads to the formation of multiple lesions with the capture of tubercles and the equator of the tooth. Defects often merge, forming gaps, there are many complicated forms of caries. It should be taken into account that the pain syndrome in these patients is not leading [7]. They complain about spalling of the walls of the teeth, frequent loss of fillings, rapid formation of white spots or defects on the teeth. When examined by a dentist that a large number of affected teeth, covered with white plaque, mushy, light, demineralized dentin, probing of such teeth most often painless. After cleaning the surface of the tooth, extraction of necrotic tissues, washing the tooth cavity with weak solutions of antiseptics (chlorhexidine 0.05%), and then - filling using medical materials, containing calcium and fluoride. Treatment is monitored once every three months and with stabilization of the process and a good level of hygiene, it is possible to replace therapeutic materials into composite materials with the best aesthetic and strength properties.

Defining importance in the development of dental diseases has a somatic pathology. It is known that a disease of the urinary system causes changes in the oral cavity. Researchers note high rates of dental morbidity, such as: periodontitis, non-carious lesions, premature loss of teeth, poor oral hygiene, dry mouth [3]. In the studies of Orekhovoy L.Yu. [4] raised the issue of changing the biochemical parameters of mixed saliva in patients on renal replacement therapy, developing

against the background of anemia, uremia, and disorders of phosphorus-calcium metabolism and fluid retention in the body [2]. In patients with the end stage of chronic renal failure, soft tissue lesions were identified, which are characterized by edema and degenerative changes without pronounced signs of inflammation.

Patients with end-stage chronic renal failure treated with hemodialysis are characterized by inadequate assessment of their condition, poor oral hygiene, and destructive changes in hard tissues. The creation of prevention programs and their implementation should be based on data from epidemiological studies, the state of dental care for children, staffing opportunities when using the principles of target planning, etc. Considering the prevalence of this pathology and the duration of the course and treatment of chronic renal failure, there is a need to study the features of the course and treatment of dental diseases in order to improve the quality of life of patients at various stages of chronic renal failure before use of replacement therapy. The study of the features of the course of major dental diseases in the early stages of renal failure. Examination methods - the study of complaints, visual assessment of oral cavity organs, determination of indices, carrying out sialometry. Sialometry was performed on an empty stomach for 5 minutes. From the standpoint of nationwide planning, the tasks of an epidemiological study are to determine the prevalence and severity of diseases or their combination in the population of a region or country as a whole. For example, summarizing the experience of drinking water fluoridation in various countries showed that this caries prevention measure is appropriate only for areas with high or very high damage intensity. In areas with a low intensity of caries, its prevention is not a task of national importance. Preventive measures are planned for other diseases, for example, periodontal diseases, which are the most intensive for this region (according to epidemiological studies). In order to develop programs for the prevention of group exposure, epidemiological studies should be carried out in

more depth, taking into account age-related features of the development of pathology. For example, due to the high intensity of dental anomalies already at preschool age, their prevention should be prescribed from infancy and early childhood.

Thus, having established a number of principles and interdependent positions that determine the programming of prevention, one can come to understanding that the choice of a specific program cannot be standardized even for the same type of children's dental institutions. The reactivity of the dental pulp is significantly reduced, there are numerous denticles and petrifications, which complicates the outcome of endodontic treatment. Soft tissue lesions in patients with end-stage chronic renal failure are characterized by edema and dystrophic changes without pronounced signs of inflammation, which develop against the background of uremia, anemia, and impaired calcium-phosphorus metabolism. Carrying out hemodialysis increases the rate of salivation and improves the performance of the enzyme and ionic composition of saliva. The use of chewing gum, rinsing with water and an aqueous solution of microhydrin reduces the feeling of thirst. The use of an acid rinse, despite a more active stimulation of salivation, causes an increase in the level of calcium in saliva. The use of complex toothpastes for a month leads to an improvement in oral hygiene and the condition of periodontal tissues in patients with end-stage chronic renal failure receiving outpatient hemodialysis treatment.

REFERENCES

1. Abdullayeva, D., Abdusalomova, M., Khakimova, S., & Jurabekova, A. (2015). Research results and differential diagnosis of neurometabolic types of inheritance in children. *Journal of Problems of Biology and Medicine*, (4, 1 (85)), 10-14.

2. Amindzhanova Z.R. Clinical and situational analysis of the diagnosis and treatment of dental pathology in some dental diseases // Abstract of the thesis. diss. cand. honey. Sciences.- Dushanbe.- 2015.- 21p.
3. Зубайдуллаева М. А. К., Рахимбердиев Р. А. Карлес зубов у детей раннего возраста: эпидемиология, этиология, профилактика, лечение //Достижения науки и образования. – 2020. – №. 4 (58). – С. 79-87.
- 4.Зубайдуллаева М. А. К., Рахимбердиев Р. А., Шамсиев Р. А. Гигиенический уход за полостью рта у детей раннего возраста //Достижения науки и образования. – 2020. – №. 1 (55). – С. 88-94.
5. Botirovna S. J., Qizi Z. M. A., Qizi R. S. B. Dental periodontitis //Texas Journal of Medical Science. – 2021. – Т. 3. – С. 38-39.
6. Abduvakilov J. U. et al. ASSESSMENT OF WHETHER PATIENTS WITH METABOLIC SYNDROME NEED ORTHOPEDIC DENTAL CARE //Journal of Modern Educational Achievements. – 2023. – Т. 10. – №. 1. – С. 89-95.
7. Зубайдуллаева М. А. К., Рахимбердиев Р. А., Шамсиев Р. А. Гигиенический уход за полостью рта у детей раннего возраста //Достижения науки и образования. – 2020. – №. 1 (55). – С. 88-94.
8. Abduvakilov J. U. et al. METABOLIC SYNDROME IN DENTAL PRACTICE //Journal of Modern Educational Achievements. – 2023. – Т. 10. – №. 1. – С. 77-88.