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Special approaches of dental care providing to patients with diabetes mellitus

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Summary: Nowadays, diabetes mellitus is a one of the most common chronic disease among the population of many countries. Dental disease among that patients are characterized by resistance to standard methods of therapeutic intervention. Increasing of dental patients affected diabetes mellitus quantity and special approaches in dental care providing to them require to change dental care standards for patients with existing back-end disease (diabetes mellitus). Addressing the prevention and treatment of dental diseases among patients with diabetes mellitus may include a systemic integrated interdisciplinary approach.

Key words: diabetes mellitus, dental diseases, prevention, treatment

Nowadays, diabetes mellitus is a one of the most common chronic disease among the population of many countries. We know diabetes mellitus of two types - first and second types. Both are medical and social problem. It is noted that dental diseases lasting among the individuals affected by diabetes is a long and unfavourable in 47-98% of cases

observations. At the same time, dental disease among that patients are characterized by resistance to standard methods of therapeutic intervention.

Worldwide increasing of diabetes mellitus prevalence affected by following (according to the conclusion WHO experts) :

- improving of methods of diagnosis the diabetes mellitus;
- improving of access to health care for population;
- using of active detection of the disease among population (screening, check-up);
- improving of health care literacy among the population (particularly in early signs of diabetes mellitus) is one of the reasons for medical care seeking;
- modern methods of treatment significantly prolonged a life of patients with disease which leads to accumulation of diabetes mellitus affected individuals among the population;
- trend of life expectancy increasing in most countries; which causes an increasing of elderly people proportion with higher prevalence of diabetes mellitus [1,2].

Increasing of dental patients affected diabetes mellitus quantity and special approaches in dental care providing to them require to change dental care standards for patients with existing back-end disease (diabetes mellitus). For example, among patients with diabetes mellitus indicators of periodontal lesions essentially depend on the degree of carbohydrate metabolism compensation.

Compensated form of diabetes mellitus is accompanied by generalized periodontitis of medium severity in 83% cases, among 16% patients revealed a

severe generalized periodontitis. In cases of subcompensated and decompensated forms of diabetes mellitus 84% of patients have severe generalized periodontitis.

Individuals affected by diabetes mellitus have lesions of various organs and systems. The most common are different types of vascular lesions. Indeed, a leading role of chronic generalized periodontitis pathogenesis among patients is owned by diabetic angiopathy of parodontium, while the small periodontal vessel lesions are caused by dysproteinemia. Severe clinical symptoms of periodontal disease among patients with diabetes mellitus, especially during decompensation of disease, are explained to be caused by metabolic disturbances and intoxication, changing in vascular permeability, while fluid motion and proteins prevails between blood and tissues are affected.

Patients with diabetes mellitus have a decreased stability of capillary vessels' walls in oral cavity, while the intensity of changes depends on disease's duration. But still, according to most scientists and clinicists, periodontal pathology among patients with diabetes is a local manifestation of diabetic microangiopathy [3,4].

Pathological changes in oral mucosa may be manifested by complaining on dry mouth, burning and pain when eating, breach of taste sensitivity and poor odor from the mouth. Due to changes in metabolism the rheological properties of saliva became affected, xerostomia develops and even saliva can taste sweet, in oral cavity we can detect the signs of mucosal atrophy, tongue's papillas' atrophy, increasing of value of soft dental accretions and tartar.

As a rule, all outpatient dental treatments for patients with diabetes mellitus must be done in the morning

in order to don't disrupt their familiar mode (insulin, meal) or to reduce such infringements to an acceptable minimum.

Rarely, patients on insulin therapy in outpatient surgery or immediately after treatment may fall in hypoglycemia and even in hypoglycemic coma. Due to such possibility in the doctor's office are always needed the sweet liquids, glucose for injection, portable glucometers.

Usually, tactics of surgical interventions, including teeth's extractions, abscess incision, treatment of periodontal disease, preparing to dental implant are slightly different in different clinics and countries. For example, some specialists are sure that in the absence of emergency conditions surgery should only be undertaken in cases of a well compensated diabetes mellitus. This opinion is based on the fact that inflammatory (especially purulent) and disease processes in oral cavity exacerbate the course of diabetes mellitus. Well-known "diabetic" contraindication for surgery can only be revealed a ketonemia that first must be removed; glucose level optionally may be reduced to the "norm", but only to close to normal level.

According to increased tendency of patients with diabetes mellitus to catch the infections and to slower flow of reparative processes, even in the cases of well compensated diabetes a good advise after tooth extraction and other surgical procedures usually will be 5-7- day course of antibiotics. Particular attention and caution are required to outpatient surgery patients regularly in-taking insulin. Most preferably to perform the surgical manipulation in 1 hour after administration of needed insulin dose and eating out.

It is known that pathological manifestations on teeth and oral cavity are

often detected before clinical manifestation of diabetes mellitus, they are pretext for an appropriate examination and diagnosis of the disease. Therefore, at presence of such manifestations dentists strongly advise patients to consult with endocrinologist, and very often assumption of prediabetes or type 2 diabetes presence become confirmed.

For patients with diabetes mellitus clinical management a considerable attention is paid to preventive measures. All patients are advised to regularly (at least 2 times better than 3-4 times a year) visit a dentist, hygienists perform professional "tooth brushing." However, to regular services such measures are used only a fraction (about 20%) patients.

In Ukraine this group of patients deprived of the possibility of obtaining an adequate dental care. We have no elaborated system of organization and prophylactic measures.

Our studies in diabetic patients have shown poor hygienic condition of the oral cavity, the high prevalence of dental diseases that are depended on the type of disease, severity and duration of diabetes mellitus. Also, affected individuals have high prevalence of various lesions of periodontal tissues. All this shows a lack of preventive dental work with this group of patients of the planned rehabilitation of the oral cavity.

As a result, patients do not possess sufficient knowledge and skills in oral care, which leads to its poor condition and poor hygiene. Almost all patients need of hygiene education and training, the specifics of early detection of symptoms and signs of lesions of oral diabetes.

Usually dental care for patients with diabetes mellitus consists of emergency cases (pulpitis, exacerbation of gingivitis and periodontitis, etc.). Only 40% of patients in this group regularly visit their dentist. Their

negative attitude of dental procedures caused by fear of dentistry requires a certain perseverance by dental practitioner. Doctor must know features of mental and emotional state of patients, adequate approaches of motivation to personal hygiene of the oral cavity, modern treatment methods etc.

At the same time it should be noted that dentists are poorly oriented in diagnostics, clinical signs and basic tactics of dental diseases' treatment for patients with diabetes. Developed modern methods and approaches of dental care providing to these patients, prevention of emergency conditions arising are not found in practice and widespread usage. Lack of a comprehensive, integrated and systemic organization of dental care for patients with diabetes poses significant challenges for patients, making impossible to provide timely medical and preventive care in the early stages of the disease's process that leads to progression of inflammation in tissues of oral cavity. Underestimation of the general condition of the patient and its links with manifestations of diabetes mellitus in oral cavity, not knowing of treatment features of diabetes mellitus and its complications, wrong choice of tactics of treatment without careful planning of the upcoming dental treatment — are the most common mistakes missed by dentists in practice.

Therefore, during an outpatient dental procedures are important the following milestones:

- thorough and focused anamnesis taking;
- establishing the presence or absence of complications of diabetes;
- paying an attention to features of used treatment of diabetes mellitus by patient (insulin preparations, hypoglycemic tablet

preparations, diet, etc.);

- thorough and complete evaluation of the functional status of the patient;
- required to determine the level of glucose in the blood;
- assessment of personal oral hygiene;
- the right choice, if necessary, adequate analgesia (sedation or medical training without the use of epinephrine and adrenalin vasoconstrictors);
- careful planning of upcoming dental treatment;
- if necessary, consultation with an endocrinologist;
- constant monitoring and detailed recommendations to the patient after the conducted interference [5].

Patient assessment should begin with a careful and deliberate anamnesis' collection in order to identify the type of diabetes, duration of disease, determine the characteristics of current applied treatment to patient (medicines and their dosages, kind of diet etc.). Anamnesis data must be standardized.

Assessment of psychophysiological state of patients with diabetes should be carried out necessarily in order to establish features of their psycho-emotional status. Dental care for patients affected by diabetes mellitus should be carried out in an active and close cooperation of experts - dentists and endocrinologists, as well in direct and active participation of patient with diabetes. It is needed to define the organizational principles of their creative and practical cooperation. A particularly important role is played by health education on oral health with an emphasis on methods of prevention and control of diseases of the gums

and teeth, teaching practical techniques of early diagnosis of symptoms and signs of lesions. Implementation of these and other measures will significantly increase the level of dental care to patients with diabetes, improve their quality of life.

Thus, it is believed that such cooperation is possible under the following conditions:

the right organized interaction with public health (endocrinological) services;

regular contacts with NGOs of people with diabetes;

a comprehensive joint behavioral training patients with diabetes mellitus at special organizations.

Addressing the prevention and treatment of dental diseases among patients with diabetes mellitus may include a systemic integrated interdisciplinary approach, which is based on the following principles:

- 1) The community of the risk factors of oral diseases and diabetes;
- 2) The generality of the mechanisms of complications development in cases of diabetes mellitus and periodontal diseases;
- 3) The need for close cooperation of experts in determining the tactics of treatment of dental diseases for that patients;
- 3) Co-education of patients with diabetes mellitus through the endocrinologist with specially adapted programs;
- 4) Combining methods of prevention and using of its various forms with the active participation of patients;
- 5) The relationship of science and practice [6,7,8].

Thus, a central place in described system is taken by an integrated multidisciplinary prevention of dental diseases among patients with diabetes mellitus. It is

conceptually considered as the interaction of all three groups of factors (endocrinologist - a dentist - diabetic patients), we represent .

REFERENCES

1. Artese H.P. Periodontal therapy and systemic inflammation in type 2 diabetes mellitus: a meta-analysis / H.P. Artese, A.M. Foz, M. de S. Rabelo, G.H. Gomes, M. Orlandi, J. Suvan, F. D'Aiuto, G.A. Romito // *PLoS One*. - 2015. - № 10(5). - P.e0128344
2. Schjetlein A.L. Periodontal status among patients with diabetes in Nuuk, Greenland / A.L. Schjetlein, M.E. Jørgensen, T. Lauritzen, M.L. Pedersen // *Int J Circumpolar Health*. - 2014. - №11 (73). - P.e26093. doi: 10.3402/ijch.v73.26093.
3. Ravindran R. Estimation of Salivary Glucose and Glycogen Content in Exfoliated Buccal Mucosal Cells of Patients with Type II Diabetes Mellitus / R. Ravindran, D.M. Gopinathan, S. Sukumaran // *J Clin Diagn Res*. - 2015. - № 9(5). - P. 89-93.
4. Penmetsa G.S. Comparison of the number of gingival blood vessels between type 2 diabetes mellitus and chronic periodontitis patients: An immunohistological study / G.S. Penmetsa, S. Baddam, R. Manyam, C.D. Dwarakanath // *J Indian Soc Periodontol*. - 2015. - № 19(2). - P. 164-168.
5. Gay I.C. The effect of periodontal therapy on glycaemic control in a Hispanic population with type 2 diabetes: a randomized controlled trial / I.C. Gay, D.T. Tran, A.C. Cavender, R. Weltman, J. Chang, E. Luckenbach, G.D. Tribble // *J Clin Periodontol*. - 2014. - № 41(7). - P. 673-680.
6. Sadeghi R. Oral health related quality of life in diabetic patients / R. Sadeghi, F. Taleghani, S. Farhadi // *J Dent Res Dent Clin Dent Prospects*. - 2014. - № 8(4). - P. 230-234.
7. Anders P.L. Dental students' attitudes toward diabetes counseling, monitoring, and screening / P.L. Anders, E.L. Davis, W.D. McCall Jr. // *J Dent Educ*. - 2014. - № 78(5). - P.763-769.
8. Giannobile W.V. Patient stratification for preventive care in dentistry / W.V. Giannobile, T.M. Braun, A.K. Caplis, L. Doucette-Stamm, G.W. Duff, K.S. Kornman // *J Dent Res*. - 2013. - № 92(8). - P. 694-701.