IJCNP, Volume 2, Issue 10, 2024 ISSN: 2995-536X
https://medicaljournals.eu/index.php/IJCNP

INTERNATIONAL JOURNAL OF COGNITIVE NEUROSCIENCE AND PSYCHOLOGY

# CHANGES IN THE ORAL MUCOSA IN DIABETES MELLITUS

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**Abstract:** Diabetes is a serious medical and social problem of the 21st century. Over the past 5 years, the prevalence of this disease has increased by 6-10% per year. This disease also affects the condition of the oral cavity. With an increase in the level of glucose in the blood, the aggressiveness of pathogenic microorganisms increases and the body's immune defense decreases, which leads to the manifestation of chronic inflammatory processes. A patient with diabetes may complain of burning of the tongue and mucous membrane, and changes in taste sensations. Dryness of the oral cavity is also noted, which can lead to bad breath, candidiasis and even caries. Complications of diabetes lead to the development of periodontal disease. In addition, wound healing time increases due to injuries or surgical interventions.

If you take the medicines prescribed by the doctor on time and follow all the recommendations, the blood glucose level will return to normal values. Against the background of the compensated stage of diabetes, it is possible to maintain dental health by following the following rules.

**Key words**: Tooth brushing, soft toothbrush, dental floss, dental supervision.

Brush your teeth after every meal;

Use a soft-bristled toothbrush;

Flossing (dental floss) at least once a day;

it is necessary to undergo a dental examination and professional cleaning 2 times a year;

When wearing orthodontic appliances, you should immediately report to the dentist any damage to the soft tissues of the oral cavity caused by the arch or brace;

When using removable prostheses, they should be removed and cleaned daily;

After dental treatment, you must strictly follow the doctor's recommendations for tissue treatment

If you are prone to this bad habit, consult your doctor about ways to quit smoking.

Diabetes is a chronic disease characterized by an increase in glucose. With poor compensation of diabetes, that is, when individual normal glucose values are not reached, various complications can develop: changes in the retina (diabetic retinopathy), peripheral nervous system (diabetic neuropathy), kidneys (diabetic nephropathy), blood vessels (diabetic angiopathy) . Also, the decompensation of diabetes leads to a higher risk of gum and tooth diseases.

Why does diabetes cause gum and tooth problems?

With uncontrolled diabetes, the level of glucose in saliva can increase, the composition of saliva changes, which increases the risk of infection in the oral cavity and, therefore, the possibility of developing caries. If the patient already has gum or tooth disease, the growth of active bacteria accelerates pathological changes.

Dry mouth (xerotomy) is more common when glucose levels are high. Due to the decrease in saliva, the mucous membrane of the oral cavity dries out, it is easier to injure, wounds or wounds heal less often, inflammation can become chronic, and the possibility of bleeding increases. In this case, the normal (mineralization) function of saliva is disturbed, which, in turn, affects the functional state of the teeth.

These disturbances contribute to the development of gingival inflammation, the increase of bacterial infections and the deterioration of tissue recovery after dental treatment.

With decompensated diabetes, the risk of fungal infection of the oral cavity (fungus) also increases. Complications may occur when taking antibiotics and wearing prostheses (especially permanent ones). The reason for the rapid growth of the fungus is an increase in glucose levels, and the main symptom of the fungus is a burning sensation in the mouth.

Smokers with diabetes have a higher risk of developing periodontal disease and fungus. Such pathologies are recorded 20 times more often in them compared to non-smokers.

How to prevent oral diseases with diabetes?

For patients with diabetes, it is important to carefully monitor the health of the teeth and gums, to visit the dentist regularly (at least once every six months) for preventive examinations and professional hygiene, and if there are any pathological changes, it is very important to contact a specialist immediately. oral cavity for diagnosis and treatment.

With good compensation of the disease, the risk of developing oral cavity pathology and complications of therapeutic treatment are minimal. Therefore, it is very important to be monitored by an endocrinologist, follow all recommendations for treatment and regular examinations. If the level of glucose is high, it is a priority to normalize them before treating the teeth, it is recommended to discuss the treatment plan with an endocrinologist; The dentist also needs to know how well the patient is controlling sugar. If there are problems, it is better to delay non-urgent dental intervention until the glucose level normalizes. Acute infections (for example, abscess) are also treated immediately in this case.

If you are undergoing orthodontic treatment and part of the orthodontic brace has damaged your oral tissues, make an appointment with a specialist to take action. Since tissue recovery may be slower in patients with diabetes, the consultation is not only to solve the problem with braces or orthodontic brackets, but also recommendations for oral care in the current situation. will also be needed.

General recommendations for oral care with diabetes:

blood sugar control;

brush your teeth twice a day;

use a soft toothbrush and fluoride toothpaste;

Use dental floss or interdental brushes to clean between the teeth;

Visit your dentist regularly for preventive examinations, professional oral hygiene and treatment;

if you smoke, quit this bad habit;

Maintain general health and immunity: eat right, do not neglect physical activity.

Features of solving dental problems in patients with diabetes in Rassvet

Dawn focuses on patients with systemic chronic diseases and comorbid diseases (two or more diseases that affect each other). Therefore, we recommend that patients with diabetes carefully monitor their oral health and consult a dentist in time to prevent and treat tooth and gum diseases. we recommend. And, on the contrary, when solving dental problems, we carefully collect the patient's medical history: if he has diabetes, we take this feature into account and create an individual plan for prevention and treatment.

We believe in the power of a multidisciplinary approach, so we involve a group of specialists specializing in the patient's diagnosis and treatment processes, if necessary, send them for consultation and develop a step-by-step comprehensive treatment plan - in this case, both. dentist and endocrinologist. We always accompany the patient at all stages of recovery, improve and optimize the processes of controlling his disease.

Angiopathy plays a key role in the pathogenesis of periodontal diseases in patients with diabetes. Since periodontitis is largely characterized by various vascular diseases similar to diabetic angiopathy, it is not easy to prove the presence of the latter in periodontitis, so some authors claim it, others deny it. The triggering point of diabetic microangiopathies is a violation of carbohydrate metabolism, as well as a violation of glycosamine metabolism, which determines the functional and structural integrity of the vascular basement membrane.

Changes in blood vessels in diabetes have their own characteristics: the lumen of the vessel, as a rule, is not completely closed, but the vessel wall is always affected. Diabetic microangiopathy is based on plasmorrhagic processes. They boil down to the primary plasma damage of the basement membrane of microvessels, and then cause sclerosis and hyalinosis of the vessel walls. These changes have nothing to do with inflammation. Therefore, microcirculation disorders are primary against the background of already existing transcapillary exchange, increased permeability of periodontal connective tissue structures, hypoxia and decreased resistance of periodontal tissues to adverse factors. The microflora of the gingival crevice (endotoxins and enzymes of microorganisms) causes inflammation and destructive changes, and as a result, the overload of the periodontal tissue aggravates the situation.

It should also be noted that the high concentration of glucose in the gingival fluid in patients with diabetes promotes the growth of microbes and the rapid formation of tartar.

Morphological changes in the mucosa are not specific in patients with diabetes, although vascular lesions such as angiopathy with atrophy, sclerosis and inflammation are more common. According to some authors, the presence of an internal and diffuse inflammatory infiltrate with a mixture of plasma cells and mast cells indicates that these processes have an autoimmune nature in diabetes mellitus. A permanent morphological sign is diffuse or focal atrophy of the epithelium with signs of parakeratosis or keratosis, areas of epithelial hyperplasia and the formation of acantholytic tumors deeply embedded in the main tissue. In areas of acanthosis - focal or diffuse inflammatory infiltration (lymphoid cell). Microdefects surrounded by an inflammatory infiltrate are often noted on the mucous membrane of the oral cavity, sometimes they are chronic. Collagen fibers become coarser, irregular, cracked, thickened and loose areas, and atrophy of muscle tissue appears.

Morphological examination of the mucosa reveals atrophy and sclerosis, chronic productive inflammation, the development of round cell infiltration, an increase in the number of mast cells, plasma cells, eosinophils, macrophages, and the development of microangiopathy.

Changes in local immunity in the oral cavity play a role in the occurrence of periodontal tissue inflammation. Phagocytosis by monocyte-macrophages of oral microorganisms is disturbed. In patients with diabetes, the amount of lysozyme in saliva decreases by one and a half times compared to healthy people. In saliva, there is a decrease in immunoglobulin M and an increase in immunoglobulins A and G. A decrease in the content of lysozyme and an increase in the amount of IgA and IgG in patients with diabetes indicate an imbalance of non-specific (lysozyme) and specific (immunoglobulins) factors of local immunity of the oral cavity. The number of lymphocytes in the peripheral blood also decreases: T- and B-lymphocytes, theophylline-sensitive and resistant T-lymphocytes.

Rheoparodontography data show significant changes in hemodynamics of periodontal vessels. The most serious changes in the rheoparodontogram are observed in patients with long-term and severe diabetes mellitus. In them, the permeability of the precapillary bed, blood flow rate and oxygen transport to periodontal tissues decrease. Capillary resistance decreases and vascular permeability increases.

Changes in periodontal vessels in diabetes are so specific and characteristic that they are designated by a special term - "diabetic microangiopathy" or "diabetic periodontopathy". Against the background of hypoxia and a decrease in the resistance of periodontal tissues to the effects of local unfavorable factors, the role of microorganisms increases, and the high concentration of glucose in the gingival fluid in patients with diabetes contributes to the proliferation of microorganisms. tartar formation.

Clinical and radiological manifestations

The relationship between periodontal disease and diabetes has become the subject of many studies. The incidence of periodontal disease in diabetes is 51% to 98%. At the same time, diabetes mellitus is detected in 10% of patients with periodontitis. Often, the first diagnosis of diabetes mellitus is made by a dentist, because many patients with periodontitis often have an early stage.

Individual explanations for the reasons that determine the relationship between periodontitis and diabetes mellitus do not exclude each other, but diabetic angiopathy is the leader, which allows evaluating diabetic periodontitis as a set of individual symptoms. Some authors classify periodontal diseases as a group of so-called minor symptoms of diabetes mellitus.

It is believed that in children with diabetes, changes in periodontitis appear earlier than changes in the fundus. The opposite relationship was also established: purulent-inflammatory processes in the maxillofacial area aggravate the course of diabetes mellitus.

**Features of treatment**

There is little information on the treatment of periodontitis in patients with diabetes. Many authors use insulin preparations in the complex treatment of periodontitis. After plaque removal and gingival treatment, insulin electrophoresis was performed. After only 3 treatments, the swelling of the gums decreased, the purulent discharge from the periodontal pockets decreased, and the bleeding and burning sensation from the gums decreased. After 7 procedures, the gum pockets completely disappeared and the pathological mobility of the teeth of the 1st-2nd level decreased.

They emphasize the need to observe oral hygiene in order to prevent periodontal diseases and periodontitis complications in patients with diabetes.

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