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NONCARIOUS DISEASES OF DENTAL CARIES IN PATIENTS WITH DIABETES

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Abstract: Diabetes is not just a high level of "sugar" as many people imagine. This is a serious systemic disease that affects various organs and systems of the body, including the oral cavity. Inflammatory periodontal disease is one of the six most common complications of diabetes, along with damage to the kidneys, nervous system, and blood vessels. Understanding this fact should be taken into account not only by the dentist, but also by therapists, general practitioners, that is, everyone who is in primary contact with the patient, which allows for a comprehensive approach to his problem.

Key words: Effect of periodontal diseases on the course of diabetes, Relationship between oral biofilm and systemic diseases, Systemic approach to the problem of periodontitis and diabetes mellitus, Gestational diabetes mellitus

PERIODONTAL DISEASE IS A TYPICAL COMPLICATION OF DIABETES MELLITUS

Today, official medicine recognizes diabetes as a serious risk factor for severe and recurrent periodontitis. Violation of the microflora composition of the oral cavity with the activation of pathogenic and destructive microorganisms for the periodontium leads to its destruction and loss of the periodontal connection. At the same time, diabetes mellitus is one of the main risk factors and causes degenerative processes in the whole body. In addition, patients with diabetes usually take a lot of medications, some of which cause dry mouth, which in turn leads to an imbalance in the microflora.

Diabetes causes a number of complications, the type and degree of which depends on the duration of the disease, its severity and the age of the patient. Changes in glucose levels and poor blood circulation lead to a decrease in saliva production and, as a result, the development of xerostomia - dry mouth. This, in turn, is one of the links in the mechanism of the development of diseases such as caries and periodontal disease. Insufficiency of salivary glands occurs not only with diabetes, but also with diseases of the cardiovascular system, acute infections and autoimmune diseases.

It was found that the severity of oral diseases is directly related to the degree of xerostomia, and in almost 100% of cases, caries develops without sufficient hydration. A shift in the acid-base balance of saliva to the acidic side contributes to the development of periodontitis. Thus, when diabetes reduces the resistance of the body and causes periodontal disease, and when the increase in microflora activity

increases tissue insulin resistance, the patient finds himself in a vicious circle, which worsens the course of diabetes.

Thus, correcting xerostomia in a patient with diabetes mellitus is a joint task of a dentist and an endocrinologist. The situation is complicated by the lack of treatment for xerostomia, although there are symptomatic treatments, such as artificial saliva, are almost not available in pharmacies. Choosing the right toothpaste is important. It is strictly not recommended to use pastes based on medicinal herbs that cause dry mouth, as well as abrasive pastes. Pastes containing xylitol, potassium alginate and lemon complexes can be recommended to the patient. They do not increase saliva, but moisten the oral cavity and improve the patient's quality of life.

THE INFLUENCE OF PERIODONTAL DISEASES ON THE COURSE OF DIABETES

Periodontal diseases, in turn, affect glycemic control and the severity of diabetes mellitus. Due to chronic infection in periodontal tissues, the body constantly produces cytokines - substances whose function is to maintain a balance between necessary and pathological inflammation, as well as to limit damage to healthy tissues. However, the continuous release of pro-inflammatory cytokines may be associated with the development of tissue insulin resistance, which worsens the patient's glucose control.

In inflamed tissues, the level of inflammatory mediators increases - biologically active substances that cause and support all inflammatory events, but are associated with tissue damage. With any inflammation, capillary permeability increases, which in turn leads to the entry of inflammatory mediators, bacteria and their metabolic products into the general circulation.

Since inflammatory mediators play an important role in the development of tissue insulin resistance, it is logical to assume that eradicating bacterial periodontal infections can better control the course of diabetes mellitus. There are a number of studies that show that scaling with or without antibiotics has improved periodontal health in patients with diabetes, including:

reduce the depth of the periodontal pocket;

improve the attachment of the gums;

reduce bleeding gums.

In addition, studies have shown a positive effect of periodontitis treatment on the course of diabetes mellitus. Thus, Al-Mubarak and colleagues evaluated the effect of scaling with antibiotic therapy on blood glucose levels in patients with diabetes and chronic periodontitis, where they found that periodontal therapy in the form of root surface smoothing and additional antibiotic therapy improved glucose levels. proved to significantly reduce. hemoglobin, a biochemical indicator that reflects the average blood sugar level over a long period of time.

RELATIONSHIP BETWEEN ORAL BIOFILM AND SYSTEMIC DISEASE

Did you know that more than half of us are made up of different microbes and that human DNA cells make up just over 40% of our body's structure? This is a very important point - a person lives in close contact with many microbes and cannot exist without them. In fact, our body is a combination of DNA and the DNA of microorganisms.

In some cases, settling on any surface, microorganisms form a conglomerate, in which they are tightly connected to each other. This allows you to protect yourself from conditions that are harmful to them, including antiseptics and antibiotics. This conglomerate is called a biofilm and is present, for example, in teeth. Oral biofilms play an important role in the development of caries, gingivitis and periodontitis. More than 700 types of microorganisms constantly live in the oral cavity, resistance to antibacterial drugs is very high due to the uncontrolled use of antibiotics.

SYSTEMATIC APPROACH TO THE PROBLEM OF PERIODONTITIS AND DIABETES MELLITUS

In the human body, everything is interconnected, and it is wrong to consider periodontal pathology only as a disease of the oral cavity. The person is systemically ill. For example, in the conditions of D deficiency, it is impossible to fight almost any disease. And the deficiency is present everywhere, it is observed in 80% of the population of our country. The reasons for this are lack of sunlight, diseases of the digestive system, impaired vitamin D metabolism due to medication and obesity.

Vitamin D deficiency is associated with:

with a decrease in insulin secretion and the development of diabetes mellitus;

insufficient absorption of calcium, which is one of the main components of tooth enamel.

And we have not yet mentioned vitamin D as an immunocompetent hormone with anabolic, lipolytic and glycolytic effects. Speaking of glycation...

Understanding that inflammatory periodontal diseases disrupt glycemic control, we can draw an interesting conclusion: the role of this inflammation in the aging process is very high and has not been clearly evaluated. To understand how this happens, let's turn to physiology and the natural biochemical processes that occur in the body.

Thus, in biochemistry, there is a term such as glycation or glycation. This is a chemical reaction of the formation of glycoproteins as a result of the addition of sugar (carbohydrates) to proteins. When eating, carbohydrates are broken down into simple sugars, which bind proteins with the help of enzymes. This is a normal reaction called controlled glycation.

However, in some cases, glycation occurs without the necessary enzymes. As a result, glycoproteins are formed that are useless and sometimes harmful to the body. Uncontrolled glycation is the result of excessive consumption of carbohydrates, which can occur for the following reasons:

A. due to improper nutrition, they enter the body a lot;

B. impaired absorption of carbohydrates in diabetes.

We already know that periodontal disease interferes with adequate control of blood "sugar" levels and is therefore one of the factors of uncontrolled glycation.

Excessive glycation is a disaster for the body. One of the proteins most sensitive to glycation is collagen, whose function is to provide cell communication to maintain tissue resistance. As a result of excess glycated proteins, the skin matrix is destroyed. It loses elasticity and is covered with wrinkles. Collagen is present everywhere in the body, so processes related to its damage affect all human organs, be it joints, blood vessels or, say, the lens of the eye. This is how old age comes.

In 1990, the American gerontologist Finch introduced the term "negligent aging". This is a period of life with a near-zero aging rate, or the body almost never aging. In some animals, this period lasts for decades, and some of them, such as the Turritopsis nutricula jellyfish, are potentially immortal, but this is a matter of controversy.

In any case, humanity should strive not only to increase life expectancy, but also to expand the limits of middle age, not to weaken old age, but to approach the concept of insignificant aging. And in this concept, it is important not to make the patient sick, that is, to deal with the primary prevention of the disease. It fully applies to the prevention of periodontal diseases as a way to prevent systemic diseases and preserve the patient's quality of life.

GESTATIONAL DIABETES MELLITUS

When talking about diabetes, we must remember about a pathology such as gestational diabetes. Such diabetes appears during pregnancy, usually in the second half, and is limited by its duration. The reason for its development is an increase in the production of sex hormones and cortisol, which suppress the effect of insulin.

Despite the fact that gestational diabetes goes away on its own and can be corrected with diet, a number of changes occur in the body that affect the oral cavity. The high glucose content in the gingival fluid contributes to the rapid multiplication of microorganisms and the formation of dental plaque, and the microcirculation disorders characteristic of any type of diabetes cause inflammation and destructive changes.

Pregnant women with gestational diabetes have a higher risk of developing:

xerostomia;

violation of taste sensitivity;

oral candidiasis;

caries and tooth loss.

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