

STRUCTURAL CHANGES IN ORAL FLUID SALIVA IN DIABETIC PATIENTS

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Relevance. Saliva (oral fluid) is the environment in which all the organs of the oral cavity are located throughout life, and which is the most important factor in maintaining homeostasis in it. Saliva is involved: 1) in the process of mineralization and demineralization of tooth enamel; 2) in maintaining the homeostasis of mineral components in it: the mineralizing function of saliva, due to which the mineralization of teeth is carried out, the enamel matures after eruption, the optimal composition of the enamel is maintained, and it is restored after damage and disease; the protective function of protecting the organs of the oral cavity from the harmful effects of environmental factors; 3) the cleansing role of saliva, consisting in the constant mechanical and chemical cleansing of the oral cavity from food residues, microflora, detritus, etc. Salivation is influenced by many factors, and therefore it is very unstable and vulnerable. A decrease in saliva secretion is an unfavorable factor, since a decrease in saliva flow leads to a deterioration in the mechanical and chemical cleansing of the oral cavity. Self-cleaning of the oral cavity also worsens with an increase in saliva viscosity. The mineralizing function of saliva plays a major role in the pathogenesis of dental caries. This function largely depends on the saturation of saliva with calcium and phosphates. Saliva serves as the main route of calcium and phosphorus intake into the tooth enamel. Saliva is known to exhibit mineralizing properties if the mineralizing components (calcium and phosphorus) are in a supersaturated state. The intensity of dental caries is negatively correlated with indicators of the mineral metabolism of the oral fluid, such as total calcium and inorganic phosphates. Changes in the biochemistry of saliva play an important role in the pathogenesis of caries. Saliva is a mixture of secretions from the parotid, submandibular, sublingual and small salivary glands. In healthy people, the daily production of saliva is usually between 0.5 and 1.5 liters. Saliva contains 99% water, a number of electrolytes (for example, sodium, potassium, calcium, bicarbonate, phosphate) and organic components (immunoglobulins, proteins, enzymes, mucins). In addition to retaining tissues and absorbing food, saliva cleanses the oral cavity, makes it possible to chew and swallow food, maintain a neutral pH, and prevents tooth demineralization [2.4.6.8.10.12.14.16.18.20.22.24.26.27].

The manifestation of dental complications in children. The nature of changes in the oral cavity in children with diabetes depends on the course and duration of the disease. The intensity of caries damage in children with diabetes is no more pronounced than in healthy children, while even complications do not contribute to its development. The oral environment of sick children does not contain additional factors that reduce the resistance of hard tooth tissues to caries, but the regenerative abilities of the oral mucosa are reduced. The mutual aggravation of the course of periodontal diseases and diabetes leads to the formation of complex pathogenetic relationships in the body, and it is rarely possible to identify primary etiological factors. In this regard, the proven method of traditional therapy aimed at etiopathic and pathogenetic treatment is often not effective enough in this group of patients, as evidenced by the high prevalence of complications associated with early tooth loss and worsening of periodontal diseases. The high prevalence of type I diabetes in children with the need for regular blood collection for tests, as well as an increase in the number of vector-borne diseases determine the relevance of research aimed at the feasibility of introducing promising, non-invasive diagnostic methods. From this perspective, the oral fluid is an interesting object to study. Through the flow of macro- and micronutrients, inhaled air, water, and oral fluid, the macroorganism communicates with the external environment. Bioregulators, intermediates and end products of metabolism entering the oral fluid from the internal environment ensure its integrative and homeostatic function, and proteins,

lipids, carbohydrates, enzymes, hormones, and minerals entering from the salivary glands, blood serum, and oral tissues make it possible to determine their biological activity even at minimal concentrations. Systematizing the data, it is necessary to highlight the advantages of salivodiagnosis over routine methods of laboratory blood analysis: high information content, simplicity and convenience of taking an unlimited amount of material under physiological conditions, painlessness, accessibility, atraumatism, safety of obtaining for the health of the patient and medical staff, the study of indicators during screening examinations, monitoring and use of rapid analyzes for self-control by the examinees, economic expediency.

A comprehensive study of oral fluid has shown that it can be considered as a plasma transudate, which contains a similar range of immunoglobulins, thereby making it possible to test specific antibodies in it. Lysozyme is an indicator of the immune defense of the oral cavity, acts as an aggregating agent, breaking the bonds between the components of the cell wall of Gram-positive bacteria and promoting bacterial autolysis. Pathological changes occurring in the oral cavity against the background of diabetes are represented by multiple dental diseases (caries, periodontal diseases, candidal stomatitis, angular cheilitis, etc.), detected in 88.0% of cases. Thus, dental caries and periodontal diseases are observed in 52.0- 90.0% of cases. Therefore, the increase in the prevalence and progression of these dental diseases in pregnant women with diabetes is the most urgent problem of diagnosis, prevention and treatment of this pathology. The prevalence of major dental diseases such as caries and periodontal diseases in pregnant women with diabetes remains quite high, and their course leads to rapid progression and development of complications. Among the numerous complications of diabetes mellitus, diabetic macro- and microangiopathies, neuropathies, nephropathies, and visual disturbances are more often considered, with pathogenesis based on disorders of carbohydrate, fat, protein, and other types of metabolism[1.3.5.7.9.11.13.15.17.19.21.23.25.27].

Dental manifestations of this disease are noted in the vast majority of patients, and some dental specialists indicate 100% damage to the organs and tissues of the oral cavity. Dental manifestations of diabetes can be a direct consequence of the weakening or loss of specific effects of insulin, as well as various metabolic disorders. It is important to emphasize that inflammatory processes in children suffering from diabetes usually occur with frequent exacerbations. The literature notes a parallelism in the course of periodontal pathology and diabetes. Thus, when the course of the underlying disease worsens, inflammatory processes in periodontal tissues worsen. The compensated course of diabetes has a positive effect on the duration of remission of the inflammatory process in periodontitis. At the same time, insufficient attention is paid to improving the dental health of children with diabetes, as well as therapeutic and preventive measures aimed at preserving teeth and preventing exacerbations of the inflammatory process in periodontal tissues. Most studies show that circulating proinflammatory mediators are elevated in people with diabetes and periodontitis, especially TNF-alpha, CRP, and mediators of oxidative stress. These pro-inflammatory mediators can affect the control of diabetes. Oral hygiene education should be provided to all patients with ADD as part of their general educational program. The risk of periodontal disease is increased, and if left untreated, periodontitis has a negative effect on metabolic control, and may also increase the risk of complications from diabetes, such as cardiovascular and renal diseases. Patients should be informed that successful periodontal therapy may have a positive effect on their metabolic control and diabetes complications.

Conclusion. The study of the presence of periodontal diseases should be an integral part of visiting a doctor for the treatment of diabetes. People with diabetes should be asked about any signs and symptoms of periodontitis, including bleeding gums while brushing or eating, loose teeth, tooth spacing or tooth spread, bad breath and/or abscesses in the gums, or suppuration of the gums. And if a positive medical history is revealed, an operative periodontal examination should be recommended before the scheduled annual examination. In case of a negative medical history, people with diabetes should be advised to check for the above symptoms, and if a positive sign appears, visit their dentist.

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