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NECESSITY OF SURGICAL SANATION OF ORAL CAVITY IN PATIENTS WITH DIABETES TYPE 2 WITH SECRETORY ACTIVITY OF PAROTID SALIVARY GLANDS

Abstract. *The paper presents the results of the study of secretory activity of parotid salivary glands in 51 patients with type 2 diabetes mellitus with subcompensated (29 patients) and decompensated (22 persons) stages of the disease in the age of 38-69 years who needed surgical sanitation of the oral cavity. Degradation of functional activity and reduction of compensatory possibilities of parotid salivary glands are revealed. Daily instillation into the duct system of the parotid glands "Lizomyoid" during 10 days has allowed to significantly increase the production of parotid secretion and increase the total amount of oral fluid.*

Keywords: *diabetes mellitus type 2, parotid salivary glands, oral fluid.*

Introduction. In monographs, periodicals, a considerable number of scientific publications are devoted to the coverage of the issues of the relationship between general-somatic pathology and changes in the state of the organs of the oral cavity associated with hemodynamic disorders, metabolic processes, immunological and neurohumoral disorders in the body [4, 8, 15,]. Another exception is diabetes type 2 (DM) – one of the most common endocrine diseases, which is a global medical problem and poses a threat to human health [10]. Thus, in 2000, the number of patients with diabetes in the world amounted to 171 million people (2.8%), then in 2014 - 386 million, and by 2035, experts of the International Diabetic Federation predict an increase in the number of patients in the world by 55% - up to 592 million people [14]. A similar situation is typical for Ukraine, where today there are more than 1.3 million patients with type 2 diabetes [10].

Quite often, the first manifestations of diabetes indicate changes in the oral cavity. There is dryness and stickiness of the mucous membrane, hyposalivation, which contributes to the deterioration of the hygienic state of the oral cavity, the destruction of solid tissues of the tooth, periodontal, disturbed the ratio of components of the oral liquid [2, 9]. Of course, a special place in

the nature of the manifestations of these changes is deduced from the functional activity of large spleen glands, including parotid [3, 6]. In the sources of literature there is a large number of publications on the relationship and dependence of physical and chemical properties, the composition of oral liquid from the presence of dental pathology and associated somatic diseases [1, 17]. The reaction from the large salivary glands is an important indicator of the adaptive capacity of the organism to internal and external irritation factors [1, 11]. Reducing their functional activity, reducing secretion, changes in viscosity, specific gravity of the oral fluid, pH leads to a deterioration of the physiological process of oral cleansing, metabolic disorders, causing the development of inflammatory and dystrophic diseases [12].

In particular, in diabetes mellitus there is an increase in large salivary glands and is interpreted as a manifestation of compensatory activity due to the presence in their structural components of insulin-like substances. Hyposalivation at the same time develops gradually with the progression of the disease [5, 16], but research on the study of this issue is not enough, which determines the relevance of scientific developments in this direction.

Objective: to study the secretory activity of

parotid salivary glands in patients with diabetes mellitus requiring surgical sanitation of the oral cavity and possible ways of correction of the revealed violations.

Material and methods. We examined 51 patients with type 2 diabetes mellitus with subcompensated (29 patients) and decompensated (22 patients) stages of the disease in the age from 38 to 69 years. The control group consisted of 25 somatically healthy patients of the same age.

In all patients, a general-clinical dental examination was performed [9], and the oral liquid was taken in the morning on an empty stomach for 5 minutes without stimulation, and additionally after stimulation and parotid secretion from both glands for 30 minutes. The procedure was performed in the primary examination, after stimulation and treatment.

The previous studies conducted by us have shown a decrease in the total amount of oral fluid in patients with type 2 diabetes [13]. Taking into account this fact, we decided to further study the functional activity of the parotid salivary glands and established a significant reduction in the amount of parotid secretion, which prompted us to look for opportunities to increase their secretory capacity. To this end, all patients for 10 days appointed oral baths with "Lizomycoïd" 3-4 times a day. However, the repeated study of the parameters allowed to establish the insignificant influence of such a method of applying it to the

total salivation and the amount of parotid secretion. Therefore, an additional month, an attempt was made to examine the effect on their function of single-dose instillations "Lizomycoïd" during 10 days directly into the duct system of parotid glands (Table 1, 2).

The obtained digital data was processed using a variational-statistical analysis, and the reliability of the differences was assessed according to the Student's criterion using the editor of Microsoft Excel [7] and recognized them as reliable at $p < 0.05$. Given the insignificant difference in the amount of secretion obtained from the symmetric glands, we give the averaged data of this indicator.

Results of the research and their discussion. In the control group, the average amount of oral fluid per minute was 0.66 ± 0.02 ml and it increased to 0.84 ± 0.04 ml after stimulation. Functional activity of parotid glands for 30 min was 1.72 ± 0.08 and 1.98 ± 0.05 respectively.

They followed a natural tendency to increase the salivation rate and increase the amount of parotid secretion after the use of oral trays with Lizomycoïd, and especially after instillation into the duct system of parotid glands (Table 1, 2).

Study of the salivation rate allowed to establish that the amount of unstimulated oral fluid in patients with type 2 diabetes decreased by 2.0 times with subcompensated and 2.2 times in the decompensated stages of the disease. The amount of parotid secretion decreased by 1,3 and

Table 1

Total amount of oral fluid in patients with type 2 diabetes depending on the measures (M ± m)

Investigated contingent	Measures and amount of oral fluid (ml / min)			
	No stimulation	After stimulation	After oral baths with "Lizomycoïd"	After Instillations "Lizomycoïd"
Healthy (n=25)	0,66±0,02	0,84±0,04 $p_1 < 0,05$	0,72±0,03 $p_1 < 0,05$	0,75±0,03 $p_1 < 0,05$
Patients with subcompensated stage of disease (n=29)	0,33±0,02 $p_2 < 0,05$	0,36±0,02 $p_2 < 0,05$	0,43±0,02 $p_2 < 0,05$	0,54±0,02 $p_2 < 0,05$
Patients with decompensated stage of disease (n = 22)	0,29±0,03 $p_3 < 0,05$	0,31±0,02 $p_3 < 0,05$	0,41±0,03 $p_3 < 0,05$	0,52±0,03 $p_3 < 0,05$

Notes: p_1 - the probability of the difference between the control group's indicators depending on the measures; p_2 - probability of difference between the indices in patients with a subcompensated stage of the disease relative to the control group; p_3 - probability of difference between the indices in patients with decompensated stage of disease relative to the control group.

Table 2

Number of parotid secretion in patients with type 2 diabetes depending on events (M ± m)

Investigated contingent	Measures and amount of secrecy (ml)			
	No stimulation	After stimulation	After oral baths with "Lizomycoïd"	After Instillations "Lizomycoïd"
Healthy (n=25)	1,72±0,08	1,99±0,05 p ₁ <0,05	2,03±0,07 p ₁ <0,05	2,13±0,09 p ₁ <0,05
Patients with subcompensated stage of disease (n=29)	1,36±0,06 p ₂ <0,05	1,51±0,04 p ₂ <0,05	1,42±0,07 p ₂ <0,05	1,91±0,08 p ₂ <0,05
Patients with decompensated stage of disease (n = 22)	1,01±0,05 p ₃ <0,05	1,12±0,03 p ₃ <0,05	1,18±0,04 p ₃ <0,05	1,31±0,06 p ₃ <0,05

Notes: p₁ - the probability of the difference between the control group's performance depending on the measure; p₂ - probability of difference between the indices in patients with a subcompensated stage of the disease relative to the control group; p₃ - probability of difference between the indices in patients with decompensated stage of disease relative to the control group.

1,7 times, respectively. After stimulation, the salivation rate and the amount of parotid secretion increased slightly.

After applying the course of oral trays with "Lizomycoïd" within 10 days, the total amount of oral fluid in patients increased by 1.4 and 1.3 times in subcompensated and decompensated stages, respectively. A slight increase in functional activity of parotid glands was revealed, indicating an increase in parotid secretion in all observational groups, but this was more pronounced in the control group of the subjects.

In patients with subcompensated and decompensated stages of type 2 diabetes, after completing the course of instillation of "Lizomycoïd" into the duct system of parotid glands, the total amount of oral fluid significantly increased compared with those of the second group, and especially with rising values. The secretory function of the parotid glands, however, increased by 1.4 times in the patients with a subcompensated stage of diabetes, and in 1,3 - with decompensated, indicating a direct potentiating effect on the secretory components of the structure, as compared with the primary examination.

Conclusions. Functional activity of parotid salivary glands in patients with type 2 diabetes mellitus is reduced and depends on the stage of the disease and more pronounced in its decompensation. Compensatory capacity is much

higher in the subcompensated stage of diabetes.

Daily instillation into the duct system of the parotid glands "Lizomycoïd" during 10 days can increase their secretory function by 1.4 times in patients with subcompensated and 1.2 times with decompensated stages of diabetes mellitus type 2 of moderate severity, which leads to an increase in the total amount of oral fluid.

Prospects for further research. Continuation of the study of the issues regarding the possibility of increasing the secretory activity of large salivary glands in various nosological forms of general-somatic pathology, in particular, type 2 diabetes, will partially alleviate the disturbances of homeostasis in the oral cavity in such patients.

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