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**SECRETORY CAPACITY OF PAROTID GLANDS IN PATIENTS WITH
TYPE 2 DIABETES MELLITUS**

**СЕКРЕТОРНА СПРОМОЖНІСТЬ ПРИВУШНИХ ЗАЛОЗ У ХВОРИХ НА
ЦУКРОВИЙ ДІАБЕТ ТИПУ 2**

The article presents data on the secretory activity of parotid glands of 51 patients, suffering from diabetes mellitus type 2, moderate severity of subcompensated and decompensated stages (29 and 22 patients, respectively). Results of the study revealed a reduction in gland's functional status and reduction of compensatory capacity, especially in patients with decompensated stage of diabetes. Daily instillation of "Lizomukoyid" to the ductal system of the parotid glands during 10 days allowed greatly increase production of parotid secretion and to increase the total amount of oral fluid.

Key words: diabetes mellitus type 2, parotid salivary glands, oral fluid, parotid secretion.

У статті представлені дані з вивчення секреторної активності привушних слинних залоз у 51 хворого, який страждає на цукровий діабет типу 2 середнього ступеня тяжкості з субкомпенсованою і декомпенсованою стадіями (29 і 22 пацієнтів, відповідно). Результати дослідження дозволили виявити зниження їх функціонального стану і зменшення компенсаторних можливостей, особливо у пацієнтів з декомпенсованою стадією діабету. Щоденні інстиляції в протокову систему привушних залоз «Лізомукоїда» протягом 10 днів дозволило в значній мірі підвищити продукцію паротидного секрету і збільшити загальну кількість ротової рідини.

Ключові слова: цукровий діабет типу 2, привушні слинні залози, ротова рідина, паротидний секрет.

Diabetes is one of the most common endocrine diseases in the world. There is 1 100 000 sick people only in Ukraine and, unfortunately, there is the same number of people that still do not know about their disease [12, p.69]. There is significant amount of monographs and periodical publications devoted to consideration of the connection between somatic disorders and changes in the status of the oral cavity associated with pathology of hemodynamics, metabolism, immunological and neurohumoral disorders of the body [10, p.31, 6, p.20].

Typically and quiet often, the first manifestation of diabetes mellitus appears as a changes in the mouth. It may appear as dryness and edema of the oral mucosa, hyposalivation that promotes deterioration of hygienic condition of the mouth, the destruction of dental hard tissues, periodontal tissues and disbalance of the of the ratio of the components of oral fluid [5, p.9, 3, p.581]. Particularly, the functional activity of major

salivary glands, including the parotid gland, is one of the main oral structures that are the first to be affected and to indicate the presence of the disease [2, p.171, 11, p.158].

Reduction of the functional activity of the salivary glands, reduction of the secretion, changes in viscosity, specific weight of oral fluid and pH lead to deterioration of the physiological process of the mouth cleaning, metabolic disorders, causing the development of inflammatory-degenerative diseases [7, p.126].

In particular, increase of salivary glands in patients with diabetes mellitus is observed and it is interpreted as a manifestation of compensatory activity due to the presence of structural components of insulin-like substances. Hyposalivation thus develops progressively as the disease progresses [4, p.696, 1, p.49], but there are very little researches done on this matter that makes it very important to keep studying and obtaining new scientific evidences in this direction.

The goal of the research - to study the secretory capacity of the parotid glands in patients with type 2 diabetes and to identify possibilities for correction of the disruptions.

Materials and methods of the research. To achieve the goal we examined 51 patients with diabetes mellitus type 2 of medium severity of subcompensated and decompensated stage of the disease (29 and 22 patients, respectively) aged 38 to 57 years. The control group consisted of 25 somatically healthy patients of the same age.

All patients underwent general clinical oral examination and oral fluid sampling was performed in the morning on an empty stomach for 5 minutes without further stimulation and additionally, after stimulation; also saliva from both parotid glands was obtained in 30 minutes period. For this purpose plastic catheters were used (Fig. 1), and the procedure was performed during the initial examination after parotid glands stimulation and treatment measures.

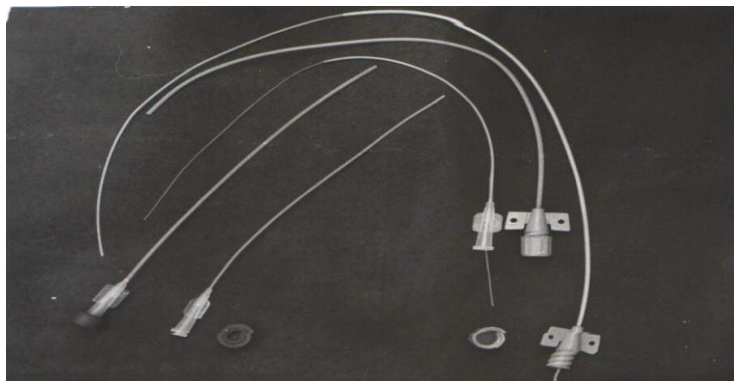


Figure 1 - Plastic catheters for obtaining saliva from the parotid glands

At the time of our previous studying we found reduction the total number of oral fluid in patients with diabetes mellitus type 2 [8, p.23]. Taking this into account, we decided to further explore the functional activity of the parotid glands and we found a significant reduction in the number of saliva produced by parotid gland, that prompted us to seek possibilities to enhance its secretory capacity. For this purpose, all patients were prescribed "Lizomukoyid" rinses during 10 days, 3-4 times a day. However, repeated study allowed us to establish that such treatment has insignificant changes on total amount of salivation by all salivary glands, and parotid gland in particular. Therefore, additional studying was

performed in one month time - "Lizomukoyid" was instilled directly into the ducts of parotid glands during 10 days period.

The obtained data was processed using variation-statistical analysis and reliability of differences was assessed using the criteria editor "Microsoft Excel" [9, p.320]. Considering the fact that little difference in the amount of saliva secreted by both glands was obtained, we present the averages rate.

Results of the research and discussion. In the control group, the average number of oral liquid per 1 minute was $0,66 \pm 0,02$ ml and it increased to $0,84 \pm 0,04$ ml after stimulation. The functional activity of the parotid gland in 30 minutes was $1,72 \pm 0,08$ and $1,98 \pm 0,05$, respectively. There was tendency towards increasing of the salivation speed and increase in amount of the saliva secreted by parotid glands after "Lizomukoyid" rinses and "Lizomukoyid" instillations directly into the ducts of parotid glands.

Studying salivation speed revealed that the amount of unstimulated saliva in patients with type 2 diabetes decreased by 2.0x (subcompensated stage) and by 2.2 times in decompensated stages of the disease. Amount of saliva produced by parotid gland was decreased by 1.3 and 1.7 times, respectively. The speed of salivation and the amount of the saliva produced has increased insignificantly after the stimulation.

After application of "Lizomukoyid" rinses within 10 days, amount of oral fluid in patients with subcompensated and decompensated stages was increased 1.4 and 1.3 times, respectively. Also, we found a slight increase in the functional activity of the parotid glands in all groups, but control group showed more tangible increase.

In the end of the research, both groups of patients with decompensated and subcompensated stages of type 2 diabetes, after course of "Lizomukoyid" instillation in the ductal system of the parotid glands, showed significant increase in total number of oral fluid compared with the second group (especially comparing to reference value). Comparing to the initial studying, secretory function of parotid glands has increased 1.4 times in patients with subcompensated diabetes and 1.3 times with decompensated diabetes, indicating direct potentiating influence of "Lizomukoyid" on the secretory components of the parotid gland.

Conclusion. The functional activity of the parotid glands in patients with type 2 diabetes is reduced and depends on the stage of the disease. Reduction of the function is more severe in decompensation stage. Compensatory ability of the gland is significantly higher in subcompensated stage of diabetes. Daily instillation of the "Lizomukoyid" in the ductal system of the parotid glands within 10 days can increase its secretory function by 1.4 times in patients with subcompensated stage of diabetes and 1.2 times in patients with decompensated stages of type 2 diabetes of moderate severity, leading to an increase in the total number of the oral fluid.

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