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The condition of the mucous membrane of the prosthetic area and the results of a questionnaire survey in patients with diabetes mellitus

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Abstract

At recent decades there has been a steady increase the incidence and prevalence of diabetes mellitus in many countries around the world, which has allowed foreign authors to qualify these processes as a new non-communicable epidemic of the 21st century and to address it as a medical and social problem. It is noted that the reasons for the increasing incidence of diabetes mellitus are growing in the population structure of people with hereditary predisposition to it, rising in the average life expectancy of people, the intensification of the pace of life, the deterioration of the ecological and social situation, the population nutrition, which leads to increase in the number of people with obesity and chronic cardiovascular diseases (hypertension, atherosclerosis), that are also risk factors. Clinical following of patients with diabetes mellitus, both the first and second type, showed them a pronounced dental pathology, which manifests itself in the form of biochemical and morphofunctional disorders in the mucous membrane of the oral cavity and alveolar bone, dry and burning mouth, cracks of the red border lips. Reducing salivation leads to a compensatory increase the large salivary glands. The processes of hyposalivation significantly complicate the prosthetic of patients with diabetes mellitus in case of complete teeth of loss. It is proved that the formation of pathological process in the area of the prosthetic area are involved the autonomic and central nervous system. A block of "psychogenic intolerance of the denture" or false inflammation is formed very often, when there are only subjective sensations of burning and loss of sensitivity. Adaptation of the epithelium (keratinization) of the mucous membrane of the prosthetic area to the prosthesis occurs, on average, a year later, but inflammatory processes decrease its timing. Moreover, the keratinization degree of the epithelium is directly dependent on the hygienic condition of the inner surface of the plate prosthesis: the higher is its contamination, the lower is the keratinization index. The most significant cause that reduces adaptation to removable dentures is the inflammation that develops in the prosthetic area.

Keywords: Diabetes mellitus, complete removable dentures, mucous membrane of the prosthetic area, denture hygiene, questionnaire

Introduction

There has been a steady increase in the incidence and prevalence of diabetes mellitus in many countries around the world through recent decades, which has allowed foreign authors to qualify these processes as a new epidemic of non-communicable nature in the 21st century and a social problem^[1, 2]. Type 2 diabetes accounts for 90% from all diabetes in the world. This problem is also acute in Ukraine, where there is an increase this pathology and about 70% of patients are ill the chronic diabetes mellitus, regardless of its type. 44 312 patients with diabetes are registered in the Ivano-Frankivsk region. 5668 of these patients need insulin^[3]. It is noted that the main reasons for increasing the incidence of diabetes mellitus are growth in the population structure the people who have hereditary predisposition to it, the rising of the average life expectancy and the intensification of the pace of life, the deterioration of the ecological and social situation, the nature of nutrition of the population, which leads to an increase in the number of people with obesity and chronic cardiovascular diseases (hypertension, atherosclerosis), which are also risk factors. Clinical following of patients with diabetes mellitus, both the first and second type, showed them a pronounced dental pathology, which manifests itself as biochemical and morphofunctional disorders in the mucous membrane of the oral cavity and alveolar bone. These changes are noted by the patients themselves and are the first complaint with which these patients go to doctors^[4]. The first and most common symptoms in patients with diabetes mellitus are dryness and burning mouth, cracks in the red border lips. Reducing salivation leads to a compensatory increase in the large

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salivary glands. Clinical following patients who suffering from diabetes, ascertain the fact that diabetes 2-3 times increases the risk of diseases of periodontal tissues, mucous membranes of the oral cavity, as well as greatly affects the intensity and degree of destruction of periodontal disease, which is accompanied by teeth loss and leads to prosthetics use. The processes of hyposalivation significantly complicate the prosthetics of patients with diabetes mellitus in case of complete teeth loss. It is proved that in the formation of pathological process in the prosthetic area are involving the autonomic and central nervous system [5]. Very often, a block of "psychogenic intolerance to the denture" or false inflammation is formed, when there are only subjective sensations of burning and loss of sensitivity.

The epithelium (keratinization) of the mucous membrane of the prosthetic area adapts to the prosthesis occurs, on average, a year later, but inflammatory processes decrease its timing. Moreover, the degree of keratinization of the epithelium is directly dependent on the hygienic condition of the inner surface of the plate prosthesis: the higher is its contamination, the lower is the keratinization index. The most significant cause that reduces adaptation to removable dentures is the inflammation that develops in the prosthetic area. In this case, the effects of prosthetic stomatitis are of a serious nature such as: impaired adaptation to removable plate dentures, poor fixation, balancing the prosthesis and impaired articulation of artificial teeth. Chronic inflammation and destructive changes in the tissues of the prosthetic area can have an adverse effect on the whole body, but the main negative factor is the refusal to use a removable denture [6].

The aim of our research was evaluated the condition of the mucous membrane of the prosthetic area in patients with diabetes mellitus for optimize prosthetics. The level of hygienic condition of prostheses was obtained during studies for unify the results. We conducted a questionnaire of patients to determine the regularity of care for prostheses in order to prevent complications of prosthetics refuse.

Materials and methods of research

There were examined 184 patients with full teeth loss at the Dental Clinic of the Department of Dentistry of Ivano-Frankivsk Medical University. 96 male and 73 female were following appropriately, ranging in age from 45 to 74 years. Among them, 104 persons with a verified diagnosis of type 2 diabetes mellitus who were offered prosthetics with complete removable dentures (Group I); Group II consisted of 80 patients without somatic pathology, who were also scheduled to produce complete removable dentures. Study groups are standardized for age and gender. Evaluated the condition of the mucous membrane the prosthetic area using the classification of Supple, which is important in practice for the clinic of prosthetics dentistry. The classification secretes 4 classes of oral mucosa. The first class creates favorable conditions for prosthetics of complete loss of teeth. The second class is characterized by atrophied mucous membrane, which with a thin stretched layer covers the cell process or part, a hard palate. This condition of the mucous membrane is often observed in the case of atrophy of the cellular process, which is regarded as less suitable for prosthetics of complete teeth loss. The fourth class is the cellular process and the cellular part are covered with movable mucous membranes that can become trapped and then the use of dentures becomes impossible. These are the least favorable conditions for prosthetics with designs of complete removable plate

dentures.

All patients were made the complete removable acrylic plastic dentures and were recommended the most tried and effective prosthesis care method, which was to wash the prostheses with running water after each meal and daily to clean with COREGA TABS GSK (TABS Cleanser) according to the procedure described in the instructions.

Results of the studies and discussion

The distribution of patients of the 1st group according to the state of the mucous membrane of the prosthetic area (the classification of Supple) have shown in Fig. 1.

Class I, in which the mucous membrane is somewhat mobile and create favorable conditions for prosthetics, was observed in 23 patients with diabetes mellitus, which in total percentage is 12%. Class II, characterized by atrophied mucosa, included 37 patients (35.58%). The loosened mucosa, which according to the Supple classification belongs to the III class, was examined in 30 persons of the 1st group (28.84%). Class IV patients, in which the cellular process and the cellular part are covered by moving lining of the mucous membrane, included 14 patients with diabetes mellitus (13.46%).

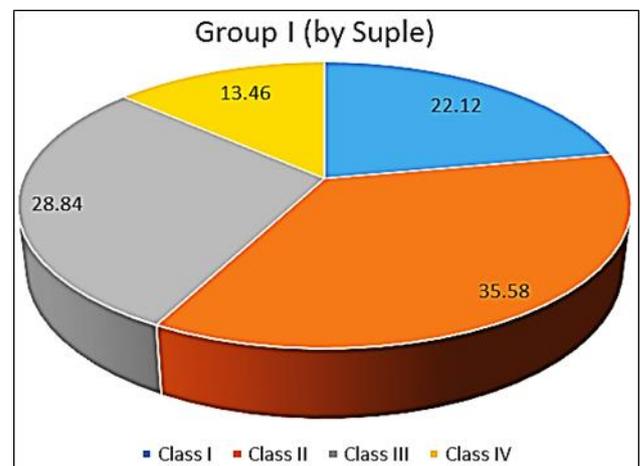


Fig 1: Distribution of patients of group I according to the condition of the mucous membrane of the prosthetic area by Supple

The distribution of patients according to the condition of the mucous membrane of the prosthetic area by Supple in the 2nd group, which included persons without endocrinological pathology, was as follows (Fig. 2).

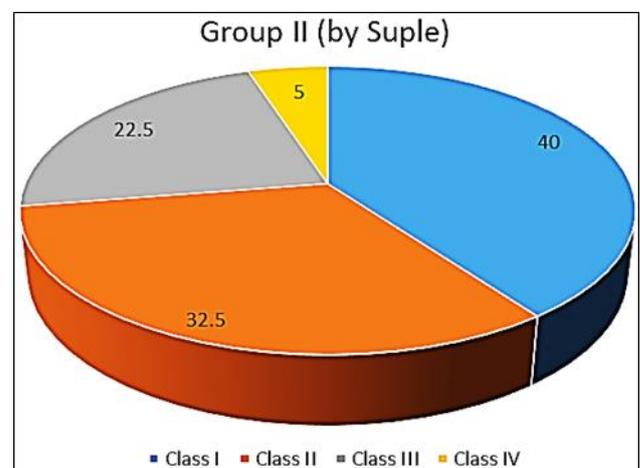


Fig 2: Distribution of patients of group II according to the condition of the mucous membrane of the prosthetic area by Supple

The largest amount of persons in 2nd group (40.00%) was pronounced a well cell process and a cell part covered with moderately mobile mucous membrane were observed; the anatomical folds of the mucous membrane on both jaws were far from the apex of the alveolar bone. This condition of the mucous membrane belongs to the Class I according to the supple classification and is characterized as the most favorable for prosthetics of complete loss of teeth. Atrophied mucosa, with a thin layer covering the hard palate and belonging to the Class II, was observed in 26 people (32.5%). Class III, which characterized by a loose mucous membrane, was observed in 18 patients without diabetes mellitus, accounting for 22.5% in percentage terms. Movable mucous membranes that are easily displaced on both jaws (Class IV) were observed in only 4 people in the 2nd group (5.00%).

The level of hygienic condition of dentures was unified the results obtained in the course of studies. We conducted a patient survey to identify individuals who do not regularly care for prostheses. According to the survey data, 42 individuals of the 1st group performed regular care of complete removable plate dentures, which in percentage equaled $40.38 \pm 4.83\%$. The percentage of persons in the 2nd group who regularly took care of removable structures was 1.08 times higher ($43.75 \pm 5.56\%$, $p < 0.01$) compare to the 1st group. 51 patients with diabetes mellitus indicated irregular care, which was $49.04 \pm 4.92\%$ as a percentage. The 2nd group of patients performed irregular prosthetic care contained the largest number of persons ($47.50 \pm 5.62\%$, $p < 0.01$). 11 patients of 1st group ($10.58 \pm 3.03\%$) were not cared for their dentures. 7 persons of the 2nd group admitted the lack of care for prostheses, which in percentage amounted to $8.75 \pm 3.18\%$, $p < 0.05$.

Conclusions

Thus, the largest percentage of people had a condition of the mucous membrane of the prosthetic area corresponded to the Class II and III by Supple which are characterized by decreasing suitability for prosthetics in the 1st group of patients who has diabetes mellitus. However, in the 2nd group of individuals without endocrinological pathology, the largest number of individuals who were examined had the mucous membrane of the prosthetic area which corresponds to the Class I by Supple classification, and is rated as the most favorable for prosthetics of complete loss of teeth. According to the data obtained, it can be concluded that disorders of all types of metabolism that inherent in diabetes mellitus contributed to pathological changes in the oral mucosa and significantly complicated prosthetics of complete loss of teeth in this category of patients.

Survey data indicated that both groups that were surveyed did not pay enough attention to the rules of denture hygiene. The largest percentage of both groups indicated irregular care of full removable plate prostheses, which can serve as a basis for the side complications in patients with diabetes mellitus.

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