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## PREVENTION OF CANDIDIASIS IN PATIENTS USING REMOVABLE DENTURES

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### ABSTRACT

Despite innovations in orthopedic dentistry, removable dentures belong to the most popular orthopedic care category. Removable dentures are combined stimuli that affect the mucous membrane and neuro-receptor apparatus. Acrylic plastic prostheses, widely used in prosthetic dentistry, have a negative side mechanical, chemical-toxic, sensitizing, and thermal insulating effect on oral tissue and prosthetic impression area. This is often complicated by a violation of the biocenosis of the oral cavity, the growth of pathogenic microflora that releases toxins, especially an increase in the number of yeast colonies that irritate the oral mucosa and prosthetic stomatitis. It was observed 100 patients with oral candidiasis of various age groups from 45 to 65 years. Of these, 60 patients with removable plate prostheses; 40 patients with partially removable prostheses. Chronic forms of candidiasis were diagnosed in 40 patients and with exacerbation of chronic forms of candidiasis in 60 people. The number of untreated carious cavities and poor hygienic condition of the oral cavity directly affects the severity of candidiasis. Acute forms of candidiasis were observed mainly in patients with high DMF and PMA indices. The severity of candidiasis depends on the degree and duration of wearing dentures and hygienic conditions - the most severe forms of invasive candidiasis were observed in the presence of removable plate prostheses, the complete absence of teeth, and the use of a prosthesis for more than 10-15 years. A combined lesion of the oral mucosa and the red border of the lips was observed mainly in patients older than 60 years. The presence of candidiasis in the oral cavity in patients with removable plate prostheses leads to a statistically significant change in the indicators of local immunity of the oral cavity: an increase in the concentration of serum IgG and IgA and the values of the coefficient of the balance of local immunity factors.

**Keywords:** *Candidiasis, prosthesis, inflammation, prosthetic dentistry, biochemistry.*

### 1. INTRODUCTION

Despite innovations in orthopedic dentistry, the manufacture of removable dentures belongs to the category of the most popular types of orthopedic care. Removable dentures are combined stimuli that affect the mucous membrane and neuro-receptor apparatus. It is known that in 52% of cases, dentures are not fixed when chewing. Moreover, in 65% of patients using dentures, various diseases of the prosthetic impression area mucous membrane and pathological processes in supporting tissues develop (Sevbitov *et al.*, 2019; 2020).

According to the WHO (2020), one-fifth of the world's population suffers or has at least once suffered various forms of candidiasis (Sevbitov, Ershov, *et al.*, 2020). The worldwide increase in the incidence of the disease is primarily related to the fact that this infection is opportunistic, more than half of the world's population is a carrier of fungi of this kind, i.e., in most cases, it is an endogenous infection, which makes candidiasis different from other opportunistic mycoses (Enina *et al.*, 2019; Turgaeva *et al.*, 2020).

## 2. MATERIALS AND METHODS

### 2.1 Materials

It was observed 100 patients with oral candidiasis of various age groups from 45 to 65 years. Of these, 60 patients with removable plate prostheses; 40 patients with partially removable prostheses. Chronic forms of candidiasis were diagnosed in 40 patients and with exacerbation of chronic forms of candidiasis-60 people.

### 2.2 Methods

At the stage of clinical examination, all patients had their life history and diseases analyzed by examining the oral cavity of the patients. To identify carious cavities, general (examination, probing) and additional (X-ray, radiology) methods were used, and the localization of carious cavities, fillings, and extracted teeth was recorded. We paid attention to the nature of the existing injuries during a visual examination of the oral mucosa. To indicate changes in the mucous membrane color, moisture content, the severity of the vascular pattern, the presence of pathological elements, including primary and secondary, signs of keratinization, and inflammation. The intensity of dental caries damage was determined by calculating the DMF indices. The hygienic condition of the oral cavity was assessed by the Green-Vermillion index (1964). The prevalence of gum inflammation was determined using the PMA index in the Parma modification (1976), which is indicated in% and bleeding according to the Muleman method (1971).

The diagnosis of oral mucosal candidiasis is detected and confirmed based on clinical and laboratory signs.

The criterion for diagnosing oral candidiasis was the detection of 10–15 or more yeast cells insight.

#### 2.2.1 Laboratory research

All patients with oral candidiasis underwent the following laboratory tests:

Microscopy of the direct smear from the mucous membrane of the oral cavity to confirm the diagnosis of oral candidiasis. Yeast cells of a round or oval shape with characteristic daughter budding cells, as well as the accumulation of long filaments of the *pseudomycelium*, allow making a preliminary diagnosis (Araviyski R.A., Gorshkova G.A., 1995).

Cultural diagnostics of scraping from the affected areas of the oral mucosa to identify the pathogen and determine the sensitivity to

antifungal preparations were carried out on the micro panel "Fungi test", USA. The serial microdilution method investigated yeast sensitivity to amphotericin B, ketoconazole, itraconazole, and fluconazole, nystatin clotrimazole in two concentrations (maximum and minimum), which allowed us to differentiate the fungi according to their sensitivity.

Assessment of parameters of local immunity of the oral cavity - secretory immunoglobulins (A, G).

## 3. RESULTS AND DISCUSSION

### 3.1 Results

The diagnosis of chronic atrophic candidiasis was made in 26 patients (26 %). Exacerbation of chronic atrophic candidiasis was diagnosed in 43 patients (43 %). The diagnosis of chronic hyperplastic candidiasis of the oral cavity was made to 13 (13 %) patients; 17 (13.3 %) patients who applied were diagnosed with exacerbation of chronic hyperplastic candidiasis. Pseudomembranous candidiasis of the oral cavity was diagnosed in 1 (1 %) patients.

The severity of candidiasis depends on the degree and duration of wearing dentures and hygienic conditions - the most severe forms of invasive candidiasis were observed in the presence of removable plate prostheses, the complete absence of teeth, and the use of a prosthesis for more than 10-15 years.

It should be noted that the combined lesion of the oral mucosa and the red border of the lips was observed mainly in patients older than 60 years.

The number of untreated carious cavities and poor hygienic condition of the oral cavity directly affects the severity of candidiasis. Acute forms of candidiasis were observed mainly in patients with high DMF and PMA indices.

As a result of the conducted enzyme immunoassay of the blood of patients with chronic forms of candidiasis, 80.5 % of patients have an increased content of immunoglobulins G in the blood serum, 9.4 % - a reduced content of immunoglobulins G, 7.7 % - a negative value of immunoglobulins G, 11.2 % - the content of immunoglobulins corresponded to normal values. In the examined patients with exacerbations of chronic forms of candidiasis, the results were obtained: 13.8 % - a reduced content of immunoglobulins G in the blood serum, 84.2 % - an increased content of immunoglobulins G, 8.6 % - the content of immunoglobulins corresponded to normal values. Most of the treated patients

diagnosed with chronic oral candidiasis have an increased content of immunoglobulin G.

### 3.2 Discussions

All patients with various forms of candidiasis of the oral mucosa are recommended to carry out the following treatment and follow the recommendations.

It is necessary to correct the pathological processes of the mucous membrane of the prosthetic impression area in the shortest possible time, detected at various stages of orthopedic treatment by applying physiotherapeutic methods (laser therapy, ozone therapy).

To accelerate the regeneration of prosthetic impression area tissues, the use of antioxidant and epithelial agents (TYCVEOLUM, thymol mixture with milk thistle oil, wikasol) is recommended; with long-term non-healing lesions, the use of plasma therapy (plasma lifting), immune correction (galavit, gepon) are recommended.

To stimulate the adaptation processes of prosthetic impression area tissues, it is necessary to consider the patient's general self-health and emotional attitude in complex dental treatment so that visits to the dentist are not perceived by stress, "hellish pain," or aversion.

Oral hygiene using soda rinses and toothpaste containing bicarbonate (blend-a-honey bicarbonate) or active oxygen (oxidizing).

The hygienic condition of removable laminar dentures is achieved by daily cleaning the denture with a gel paste and using tablets for cleaning. For a professional cleaning of removable dentures should use a special device in the clinic of the type "Microcline" (if necessary, every two weeks).

Diets with limited intake of flour products from white flour, starchy foods, sweets, and fizzy drinks.

### 4. CONCLUSIONS:

1. Removable plate prostheses have a negative effect on the oral mucosa, cause a decrease in its protective properties, which contributes to an increase in the intensity of candidiasis: 60% of patients with removable plate prostheses in the oral cavity had the maximum intensity of candidiasis.

2. The presence of candidiasis in the oral cavity in patients with removable plate prostheses leads to a statistically significant change in the indicators of local immunity of the oral cavity: an increase in the concentration of serum IgG and IgA

and the values of the coefficient of the balance of local immunity factors.

3. The quality of orthopedic treatment of patients with partial and complete edentulous and quality of removable dentures depends on many factors, as follows: tissue conditions of the prosthetic impression area;- level of health (psycho-emotional disorders, pathology of internal organs and systems);- design features of a removable denture;- materials used;- side effects of the prosthesis on the tissue of the prosthetic impression area;- oral hygiene of the patient and dentures;- aesthetic effect.

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