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🔓 **Research Article**

ASSESSMENT OF CLINICAL AND MORPHOLOGICAL CHANGES IN THE ORAL ORGANS AND TISSUES IN POST-MENOPAUSE WOMEN

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ABSTRACT

During menopause, irreversible changes in the hormonal function of the ovaries occur, the concentration of estrogens decreases.

It is during this period that a progressive increase in various diseases is noted [8]. The study of the dental status in menopausal women has proven the existence of a relationship between a decrease in estrogen concentration and a sharp increase in dental diseases [4]. Because the oral mucosa and salivary glands contain estrogen receptors, changes in hormonal levels can be seen directly in the mouth. Leimola-Virtanen et al confirmed the presence of estrogen mRNA and immunoreactive protein in the oral mucosa and salivary glands, which also confirms its biological role [11].

Thus, the climacteric period is characterized by a disorder of metabolism and function in the tissues of the oral cavity [6]. As a result, tooth loss, periodontal disease, increased bone resorption of the alveolar processes are observed.

KEYWORDS

Menopause, generalized periodontitis, postmenopausal period, diseases of the oral mucosa.

INTRODUCTION

The purpose of the study: to study the clinical and microbiological manifestations and mechanisms of development of dental diseases in postmenopausal women.

MATERIAL AND METHODS

We examined 40 postmenopausal women with various diseases of the oral cavity. The control group of patients were women who are not in the postmenopausal period with dental diseases.

RESULTS AND DISCUSSIONS

All participants of the study underwent a comprehensive examination: hygienic and periodontal indices (OHI-S hygiene index, PI periodontal index), pH of mixed saliva was measured, sialometry was performed according to the method of M.M. Pozharitskaya, studied the microflora of the oral cavity by PCR (polymerase chain reaction).

When collecting anamnesis, it was revealed that most often women of group I complained of bleeding gums (13.3%) and bad breath (6.7%). Group II patients complained of bleeding gums (66%), bad breath (43.9%), exposure of the roots of the teeth (15.3%), tooth mobility (16.1%), and 40% of women had complaints of dry mouth. While 26.7% of postmenopausal women taking HRT complained of bleeding gums, 18.1% complained of dry mouth and bad breath.

According to the results of the survey, postmenopausal women taking HRT 2.3 times less complained of bleeding gums (27.7%) and dry mouth (17.1%) compared with women not taking HRT (63%; 40% respectively). 18.1% of women taking HRT noted bad breath, which is 2.5 times less than women not taking HRT (43.9%), but 3 times more than in the control group (5.8%). Postmenopausal women, regardless of whether they take HRT or not, were 3 times more likely to have a white coating on the tongue (18.1%,

15.3%, respectively) than women in the control group (6.7%). Burning sensation in the oral cavity was noted by 5.7% of women in group II and 3.9% in group III.

Attention was also paid to the TMJ, noting the symmetry of the face and movements of the mandible when opening the mouth, pain when moving the mandible, and the range of vertical and lateral movements of the mandible. In 22.6% of group I 49, in 40% of group II and 45.7% of group III women, a deviation was observed, manifested by a displacement of the lower jaw to the side at the beginning and a return to the midline in the middle of opening the mouth by 2 mm. None of the subjects had limited range of vertical and lateral movements. 2.9% - group I, 14.3% - group II and 11.5% - group III sometimes noted clicks during the movement of the lower jaw.

When examining the oral cavity, such non-carious lesions of the teeth as erosion were noted, which were detected in 2.8% of women in group II. Wedge-shaped defects were noted in 17.1% of group I, 54.3% of group II and 62.8% of group III women. Pathological tooth wear was detected in 17.1% of group II and 14.2% of group III women, but there were no significant differences between the groups ($p > 0.05$).

The clinical examination included the determination of the KPU index, the OHI-S hygiene index, the periodontal index PI, the measurement of the pH of the mixed saliva, sialometry, and the assessment of the microflora of the oral cavity by PCR (polymerase chain reaction).

In the study of the intensity of tooth decay by caries, it was found that in group I, the average value of the KPU index = 13.58 ± 6.35 (moderate level of caries intensity), in group II, KPU = 18.8 ± 6.17 (very high level of caries intensity) , and in group III, the KPU index = 16.45 ± 6.2 (high level of caries intensity).

When examining the level of oral hygiene, it was found that the OHI-S hygiene index, which takes into account both the amount of plaque and tartar, in group I was 1.83 ± 1.1, in group II - 2.89 ± 0.89, in group III - 3.24 ± 1.6. A statistically significant difference was found between groups I and II, groups II and III ($p < 0.05$), and between groups I and III there were no significant differences in relation to the values of group parameters ($p > 0.05$).

To determine the severity of periodontal disease, the periodontal index PI was used, which showed that its value in women who do not take HRT is 2.31±1.29, which corresponds to the average degree of periodontal pathology and is 2 times more than in women taking HRT and 5 times more than in the control group. In women taking HRT, the value of the periodontal index PI is 1.16±0.75, which corresponds to the initial and mild degree of periodontal pathology, and in the control group - 0.46±0.56.

An objective examination of patients showed increased saliva viscosity, combined with foaminess in 51.4% of women not taking HRT, and in 25.7% of women taking HRT.

Sialometry according to the method of M.M. Pozharitskaya allows you to determine the amount of mixed unstimulated saliva. The greatest hyposalivation in the oral cavity was observed in women not taking HRT, and the average for the group was 2.1 ± 0.28 ml at a rate of 4.1 ml.

In the study of the pH of mixed saliva in women in group I, the average value reached 7.04±0.35, in group II, pH=6.48±0.33, and in group III, the average pH=6.94±0.36.

Analysis of samples of the contents of periodontal pockets showed that A. actinomycetemcomitans, a gram-negative non-motile facultative anaerobic coccobacillus, was found in 22.9% of women in group I, 51.4% in group II and 37.1% in group III. It was found that A. actinomycetemcomitans occurs 1.4 times more often in women who do not take HRT compared to women taking it and 2.2 times more often than in the control group. At the same time, a significant difference (p < 0.05) is observed only between groups I and II.

The frequency of occurrence of T. denticola, which is able to organize associations with other bacteria, especially with P. gingivalis and T. forsythia, is 37.1% in group I, 54.3% in group II and 51.4% in group III, but no significant difference (p > 0.05) between groups was found. T. forsythia, which most strongly promotes cell apoptosis, was found in 51.4% in group I, in 80% in group II, and in 45.7% in group III. A significant difference was found between groups I and II, II and III. Periodontopathogen P. gingivalis, as the most aggressive bacterium, was found in 11.4% of women in group I, 77.1% in group II and 28.6% in group III, respectively. It was shown that P. gingivalis occurs 6.7 times more often in group II

than in group I and 2.7 times more often than in group III.

P. intermedia was found in 11.3% of women in group I, in 74.3% in group II and in 25.7% in group III, respectively. P. intermedia is 6.6 times more common in group II than in group I and 2.9 times more common than in group III. At the same time, there is a significant difference between P. gingivalis and P. intermedia (p < 0.05) between groups I and II, II and III. There was no significant difference between the qualitative composition of the microflora of periodontal pockets in groups I and III (control and the group of women taking HRT) (p> 0.05).

Most often, in women not taking HRT, P. gingivalis, P. intermedia, and T. forsythia were detected, in contrast to women taking HRT. A. actinomycetemcomitans and T. denticola as part of the subgingival microflora were found regardless of the use of HRT and were detected in a smaller number of patients.

The study also revealed Epstein-Barr virus in 11.4% of women in group I, 20% in group II and 17.1% in group III. Herpes simplex virus was found in 17.1% of the women of group I, 25.7% of group II and 28.6% of group III. Candida albicans

was found in 5.7% of women of group I, 25.7% of group II and 20% of group III, and a significant difference was found between groups I and II, II and III (p < 0.05).

In all patients of the control group, in whom a periodontopathogen was detected, the amount was relatively low and did not exceed 105 units/ml.

Spearman's rank correlation method was used to identify the relationship between the degree of clinical indicators and the composition of the microflora of periodontal pockets.

The relationship between an increased number of A. actinomycetemcomitans in the contents of the periodontal pocket with a low level of oral hygiene according to the OHI-S index (r=0.503027) and with the severity of periodontitis (r=0.505208) was revealed. A negative correlation was observed with the pH of the mixed saliva (r=-0.456773).

T. denticola

No correlation was found between the amount of T. denticola in periodontal pockets and clinical parameters.

P. gingivalis

The content of P. gingivalis moderately correlated with the level of oral hygiene (r=0.469771). A negative relationship between the content of P. gingivalis and the pH of mixed saliva (r=-0.491576) was revealed.

T. forsythia

The amount of T. forsythia in the contents of periodontal pockets moderately correlated with the level of oral hygiene (r=0.376309), and to a greater extent with the severity of periodontitis (r=0.552702). A negative correlation was also found with the pH of the mixed saliva.

P. intermedia

The level of P. intermedia depended on the severity of periodontitis (r=0.416681).

According to the results of the study, a statistically significant relationship was revealed between oral hygiene and the severity of periodontitis with the quantitative composition of periodontopathogens of group II ($p < 0.05$).

Findings. Thus, the greater sensitivity of the above indices is associated with the peculiarities of the pathogenesis of menopause, namely with estrogen deficiency. The content of estrogen receptors on the oral mucosa plays a direct role in the development of dental diseases [9]. During menopause, the angioprotective effect of estrogens weakens, followed by damage to the structures of the hemomicrocirculatory bed. Also during this period, the production of osteoclasts increases, the production of osteoblasts decreases, the absorption of calcium in the intestine decreases, the lack of vitamin D, which leads to increased bone resorption.

Due to estrogen deficiency, there is a decrease in intestinal absorption of calcium in the body, which in turn leads to disturbances in the regulation of calcium-phosphate metabolism and increased calcium release not only into the blood serum, but also into saliva [6]. Therefore, a high concentration of calcium in the saliva of menopausal women can lead to faster plaque mineralization and, consequently, to an increase in stone formation, which has a direct impact on the progression of gingivitis and periodontitis [9;1]. Thus, the pathogenesis of menopause affects the state of all structures of the oral cavity.

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