

## **A Modern Approach to the Diagnosis of Dental Diseases in Menopausal Women**

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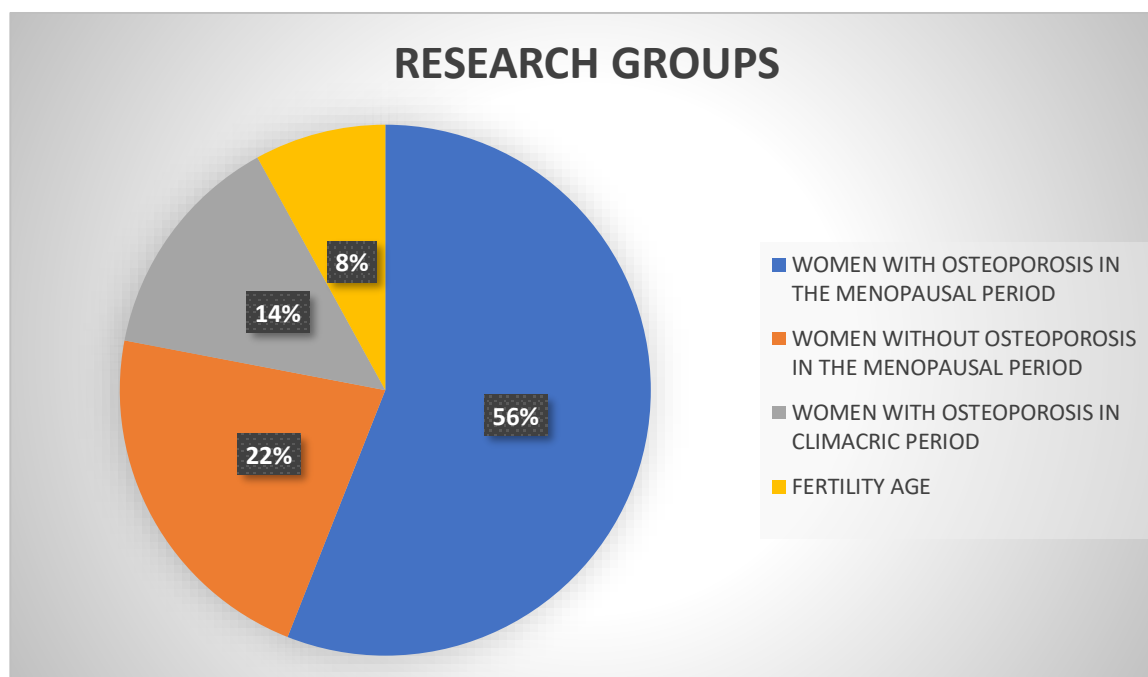
**Relevance of the topic:** It is known that systemic disorders in the human body necessarily leave an imprint on the clinical manifestations, course, outcome of lesions of the hard tissues of the teeth, periodontal tissues, oral mucosa, which leads to multiple loss of teeth, facial pain, disorders in the temporomandibular joint ( TMJ), other severe lesions in people of young and working age. (Grinin V.M. et al., 2001, 2004; Maksimovsky Yu.M., Mitronini A.V., 2014; Afanasiev I.A., 2017). Therefore, the study of the relationship between pathological changes in the dentition and damage to organs and systems of the body in various systemic diseases is one of the urgent problems of dentistry (Atrushkevich V.G., 2008, 2010; Kuzmina E.M., Yanushevich O.O., 2016; Pavlov N. B., Sabgaida T. P., 2011; Orekhova L. Yu., 2014; Emelyanova V. A., Demidov A. A., 2015; Naumova V. N. et al., 2016). The effectiveness of prevention, early diagnosis and treatment of dental diseases in patients with somatic pathology depends on the doctor's understanding of the features of the occurrence and development of background conditions, the mechanisms of their influence on the organs and tissues of the oral cavity (Admakin O.I., Kozlitina Yu.A., 2011; Leontiev V. K. et al., 2014; Lobeiko V. V. et al., 2015).

The problem of menopausal disorders in women is relevant in all countries of the world. Menopause is a physiological process in the life of every woman, manifested by general involutional processes in the body, against the background of estrogen deficiency. The average age of menopause around the world ranges from 49 to 51 years, while there is a tendency to expand the age range of the physiological period (G.M. Savelyeva, G.T. Sukhikh, I.B. Manukhina, 2013). Much attention is paid to the relationship between menopause and pathology of other organs and systems (D.A. Schoenaker et al., 2014).

The study of dental status in women in menopause proved the existence of a relationship between a decrease in estrogen concentration and a sharp increase in dental diseases (M.M. Gulua, S.L. Sazanskaya, 2019). Since the oral mucosa contains estrogen receptors, hormonal changes can be manifested by the progression of dental diseases such as caries, gingivitis, periodontitis, as well as changes in the oral mucosa: burning, bad taste in the mouth, saliva viscosity, dry mouth (I.V. Shcherbakov et al., 2015; D. Deepa, G. Jain, 2016).

**Purpose of the study:** Improving the efficiency of diagnosing dental diseases in women with osteoporosis in the perimenopausal period.

**Materials and methods:** The object of the study were 84 patients in the perimenopausal period who applied to the gynecology department of the clinic for the period from 2021 to 2021. by 2022, which are divided into four groups, patients of the comparison group (20) and patients of the main group (52), 12 people without pathology of the oral mucosa served as controls. (Figure 1)



**Figure 1. Characteristics of the surveyed groups**

Examination of patients was carried out according to a single scheme, for each patient a dental outpatient card (043-U) was filled out and an individual chart of examination of a dental patient developed by us, where the results of dental, clinical and laboratory studies were noted.

Collecting an anamnesis of the life of patients with past and concomitant diseases (osteoporosis), the presence of bad habits (smoking, biting lips, cheeks), seasonality, eating irritating food, eating habits, mental stress, prosthetics, taking medications, changing toothpastes and other hygiene products, determination of the duration of the disease, allergic status, aggravated heredity, the presence and condition of crowns, prostheses, dissimilar metals, the selection of respondents to participate in the study; a survey of study participants was conducted; study of the dental and periodontal status of patients with an index assessment of oral hygiene and the condition of periodontal tissues; conducting sialometry and determining the pH of mixed saliva; obtaining material from the periodontal pocket and gingival sulcus for the diagnosis of oral microflora; statistical processing of the obtained results using various statistical methods.

A systematic assessment of bone mineral density was carried out according to the standard program on the Sonost device (South Korea, 2011). For measurements, the patient must be in a sitting position. Scan time is less than 15 seconds. The SONOST-3000 densitometer, located in the Department of Functional Diagnostics, allows you to detect changes in bone metabolism at an early preclinical stage without the use of X-rays, which makes the procedure as safe as possible for the patient, we used this method to conduct research on our patients. The device is capable of diagnosing changes in the microarchitectonics of bone tissue, characterized by a decrease in bone mass, at the early stages, which allows for timely treatment necessary to prevent the development of osteopenia and osteoporosis.

The result is given according to two main indicators:

T-score (main criterion). It means the degree of deviation from the norm (the state of the bones at the age of 20-29 years is taken as a guideline). At the same time, the value of the standard deviation

of the T-test - up to 0.1 - is normal; The value of standard deviations of the T-test - from 0.1 to 2.5 - osteopenia; The value of the standard deviation of the T-test - 2.5 and above - osteoporosis.

Z-score (additional criterion). Age, taking into account body weight, indicates a deviation from the norm. If the indicator is below 0, then preventive measures and additional examination are required.

At the first stage, a survey was conducted on paper. Using this method, respondents recorded subjective sensations related to the oral cavity: bleeding gums, dryness, burning of the oral mucosa, unpleasant odor and taste in the oral cavity. The questionnaire is a questionnaire of 7 questions to identify the symptoms of perimenopausal and menopausal period in the oral cavity.

The intensity of tooth decay by caries was determined using the KPU index. The OHI-S hygiene index was used to assess the level of oral hygiene. The prevalence and intensity of periodontal tissue diseases were determined using the periodontal index PI (Russel A.).

**Research results and their discussion:** Questioning of respondents is necessary for early identification of manifestations of the menopausal period in the oral cavity. In our study, the most common and main complaints among perimenopausal women were bleeding gums (I - 62%, II - 41%, III - 15%, IV - 68%;), dry mouth (I - 32%, II - 23%, III - 7%, IV - 49%;) and bad breath (I - 71%, II - 55%, III - 9%, IV - 77%;), which women complained about 2-3 times more often, did not suffer from osteoporosis. Postmenopausal women were 3 times more likely to have white coating on the tongue (17.1%, 14.3%, respectively) than women in the control group (5.7%). Burning sensation in the oral cavity was noted by 5.7% of women in group II and 2.9% in group III.

When examining the oral cavity, such non-carious lesions of the teeth as erosion were noted, which were detected in 6.3% of women in group I. Wedge-shaped defects were observed in 52% of group I, 19% of group II and 62.8% of group III women. Pathological tooth wear was detected in 18% of group II and 14.2% of group III women, but there were no significant differences between the groups ( $p > 0.05$ ).

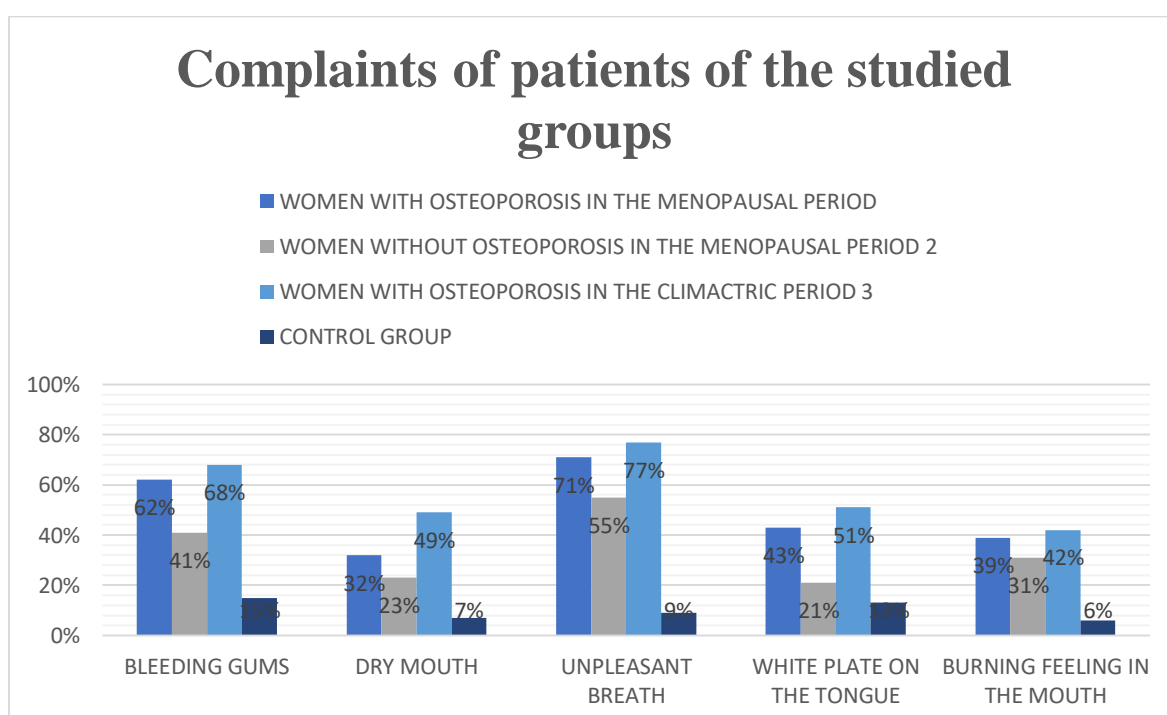
In the study of the intensity of tooth decay by caries, it was found that women in perimenopause have a very high level of caries intensity (KPU index =  $17.8 \pm 5.15$ ), and women in menopause have a high level of caries intensity (KPU index =  $15.45 \pm 5.2$ ). Wherein significant difference between groups of patients suffered from osteoporosis and without it ( $p > 0.05$ ).

A study of the hygienic status of women in menopause showed a low level of oral hygiene. OHI-S hygiene index in women with osteoporosis (OHI-S= $2.99 \pm 0.99$ ) was 1.3 times worse than in women without osteoporosis. (OHI-S= $2.24 \pm 1.4$ ) and 1.7 times than the control group (OHI-S:  $1.73 \pm 1.1$ ). Statistically significant differences were found between groups I and II and groups II and III ( $p < 0.05$ ). There were no statistically significant differences between groups I and II ( $p > 0.05$ ). To determine the severity of periodontal disease, the periodontal index PI was used, which showed that its value in women with osteoporosis is  $2.31 \pm 1.29$ , which corresponds to the average degree of periodontal pathology and is 2 more than in women who do not suffer from osteoporosis and 5 times more than in the control group. In women without osteoporosis in the perimenopausal period, the value of the periodontal index PI is  $1.16 \pm 0.75$ , which corresponds to the initial and mild degree of periodontal pathology, and in the control group -  $0.46 \pm 0.56$ .

An objective examination of patients showed increased saliva viscosity, combined with foaminess in 51.4% of women with osteoporosis and in 25.7% of women in groups II, IV.

Our studies have shown the dependence of changes in the condition of the periodontium of patients both on the duration of osteoporosis and on the state of the bone tissue of the jaws, where the phenomena of osteoporosis developed, changes in periodontal tissues were less significant.

To study the impact of osteoporosis on salivation and dental health, we measured the pH of mixed saliva in menstruating and postmenopausal women with and without osteoporosis. The results of the study demonstrated a shift in the pH of mixed saliva to the acid side in perimenopausal women with osteoporosis compared with perimenopausal women without bone changes. (pH:  $6.48 \pm 0.33$  and  $6.94 \pm 0.36$ , respectively), which stimulates the aggravation of pathological conditions from the organs and tissues of the mouth. A significant difference was found between groups I and II, groups II and III ( $p < 0.05$ ).



**Figure 2. Main complaints of the surveyed groups**

**Conclusions:** When comparing all groups among themselves, it was found that the dental and periodontal status is worse in women with osteoporosis in the perimenopausal and menopausal periods, in contrast to women without bone changes. It was found that women in groups 2 and 3 had less discomfort in the oral cavity compared to women with osteoporosis. The effect of general osteoporosis on the organs and tissues of the oral cavity in women in the perimenopausal period shows that the intensity and prevalence of caries in women, the level of oral hygiene, and the condition of periodontal tissues are several times higher than in healthy women. This is an important impetus for the development of dental education.

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