PATHOGENETIC TREATMENT AND PREVENTION DESTRUCTIVE INFLAMMATION IN WOMEN'S ORAL CAVITY TISSUES DUE TO OSTEOPOROSIS DURING THE PERIOD OF MENOPAUSE

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Abstract

Osteoporosis with its multifaceted effects on the body is a problem for all doctors, including dentists. This disease is a common disease not only in Europe and America but also in Asia. It is known that the violation of the structure and function of the alveolar process in general osteoporosis has an extremely negative effect on periodontal tissues. Materials and methods: During the research period, 150 menopausal and postmenopausal women aged 45-55 years old, aged 45-55, with osteoporosis based on osteoporosis, were conducted in 2020-2022 on the basis of the Department of Therapeutic Dentistry of the Bukhara State Medical Institute. women without osteoporosis were examined. Women between the ages of 45 and 55 are considered to be at high risk for osteoporosis during menopause. Conclusions: Thus, in women patients with generalized periodontitis on the basis of osteoporosis during menopause, clinical features are observed - significant gum recession and bone tissue resorption. Mixed periodontopathogenic flora identified in periodontal pockets. Changes in markers of bone remodelling in the direction of resorptive processes, a decrease in the concentration of osteocalcin. Morphological gum was characterized by increased serotonin expression.

Keywords: *osteoporosis, menopausal period, dentistry.*

INTRODUCTION

It should be noted that the rate of timely diagnosis and treatment in systemic osteoporosis remains low. Each of the existing methods of systematic diagnosis is aimed at determining the structure or function of bone tissue. It should be remembered that in clinical practice comprehensive examination of patients is carried out relatively rarely. In addition, in 50% of cases, osteoporosis appears without obvious symptoms [2, 8, 10, 13]. Thus, in modern dentistry, studying the effects of general osteoporosis on the organs of the oral cavity, preventing the complications of the disease remains an urgent problem [1, 4, 7, 12].

The analysis of literature sources showed that the effects of general osteoporosis occurring during menopause on the organs and tissues of the oral cavity, treatment of dental diseases and their prevention are poorly studied [3, 6, 12].

Conducting a number of scientific and research works dedicated to the study of this problem testifies to the effect of osteoporosis in women during menopause on the organs and tissues of the oral cavity and the imperfection of the

traditional method of treatment of complications of the disease [1, 5, 9, 11].

Purpose of the study: It is to determine the effect of general osteoporosis in menopausal women on organs and tissues of the oral cavity, early diagnosis and setting the perspective of the end of dental diseases.

Tasks of the research:

Study and evaluation of changes in bone metabolism in menopausal women related to the formation of dental hard tissue diseases

Determination of the effect of drugs used in the treatment of osteoporosis in women during menopause on periodontal tissues.

Evaluation of risk factors leading to alveolar bone resorption by the densitometric study of bone hardness, mandibular bone density in this contingent.

Comparative study and assessment of microbial landscape and oral fluid immune factors in pathological pockets depending on the degree of periodontal tissue inflammation in menopausal women.

To determine the level of knowledge of oral hygiene in women belonging to this contingent.

Development of an algorithm for primary and secondary prevention of dental hard tissue and oral cavity organs in menopause osteoporosis in women.

Development of an individual approach to preventive treatment for women with generalized osteoporosis during menopause.

MATERIALS AND METHODS

During the research period, 150 menopausal and postmenopausal women aged 45-55 years old, aged 45-55, with osteoporosis based on osteoporosis, were conducted in 2020-2022 on the basis of the Department of Therapeutic Dentistry of the Bukhara State Medical Institute. women without osteoporosis were examined. Women between the ages of 45 and 55 are considered to be at high risk for osteoporosis during menopause. Age levels of women based on osteoporosis during menopause are compiled according to the WHO classification (Table 2.1). 64 (42.6%) age group from 45 to 47 years, 44 (29.3%) age group from 48 to 51 years, and 42 women from 52-55 years (28.1%) study was within the range of the observation group. The control group consisted of 32 periodontitis patients with regular ovulatory menstrual cycles aged 25-35 years. A total of 182 women were examined during the study.

Table 1 Age levels of women in the study

Age of patients	Observation group	
	Number of groups	%
45-47 age	64	42,6
48-51 age	44	29,3
52-55 age	42	28,1
Total	150	100

All women included in the study, who did not have known systemic diseases and harmful habits, were divided into 4 observation groups.

Table 2 Age levels of examined female patients in study groups.

	Research groups				
	Observation group				Control group
	I-group	II-group	III-group	IV-group	
Number of groups	44	30	41	35	32
Age of group	45,73±3,3	42,48±1,3	53,45±2,4	48,94±3,6	25,05±10,3
Total	150				32

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 was 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.).

RESULTS AND DISCUSSION

Questioning of respondents is necessary for the 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 a white coating on the tongue (17.1%, and 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 the 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 ± 5.15), and women in menopause have a high level of caries intensity (KPU index = 15.45 ± 5.2). Wherein a significant difference between groups of patients who 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 ± 0.99) was 1.3 times worse than in women without osteoporosis. (OHI-S=2.24 ± 1.4) and 1.7 times that the control group (OHI-S: 1.73 ± 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 ± 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 ± 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 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±0.33 and 6.94±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 ($p < 0.05$).

Patients with moderate and severe destructive-inflammation in oral cavity tissues against the background of osteoporosis during menopause were examined in the dynamics of treatment. Professional hygiene measures and standard treatment measures were carried out in the oral cavity.

In order to determine the most effective method of correcting mineral metabolism with drugs before periodontological treatment of patients with destructive-inflammation of oral cavity tissues against the background of osteoporosis during menopause, 40 women with osteoporosis during menopause were included. Female patients in this group were divided into 2 groups.

The main group consisted of 24 patients, during the period of preparation for periodontological treatment, they received 2 tablets "Teraflex-advans" every day for 6 months, "Stoma Dent ZD" gel for the treatment and prevention of periodontal tissue, and "Stomatidin" for 10 days. The control group consisted of 32 patients with periodontitis of normal childbearing age. The effectiveness of the treatment was determined according to the following criteria: index evaluation of periodontal condition, orthopantomography, Periotestometric data, markers of bone tissue remodeling in the oral cavity, microbiological. The effectiveness of treatment was studied 2 months after the start of therapy, 6 months and 12 months after the end of therapy (survey, clinical-laboratory studies).

Table 3. Main clinical indicators of periodontal status 2 months after treatment of generalized periodontitis in postmenopausal women with osteoporosis

Instructions	Before treatment n=44	Main group After treatment n=24	Comparison group n=20 after treatment
The degree of bleeding from the milk	2,44±0,08	1,081±0,07*	1,131±0,05*
PI	6,251±0,16	2,171±0,12*	1,921±0,15
Milk recovery, mm	4,88±0,07	4,74±0,16	4,921±0,15
PMA	52,321±1,79	14,191±1,08*	12,271±1,15*
Hygiene index (OHI-S)	2,121±0,03	1,581±0,06#	1,521±0,05*

Note: * - indicators have a reliable difference compared to the values before treatment (p<0.05).

After treatment, the values of indices describing inflammatory-destructive processes in the periodontium decreased statistically significantly, hygiene in the oral cavity improved, but the indicators of gum regeneration remained unchanged.

Stabilization of the pathological process when clinical remission of periodontal disease was achieved in all patients in orthopantomography was noted, as confirmed by the Fuchs index and cortical index indicators, which did not change statistically significantly compared to the data before the start of treatment in the compared groups (Table 4).

Table 4

Instructions	Before treatment n=44	Main group After treatment n=24	Comparison group n=20 after treatment
Fuchs index in the upper jaw	0,34±0,03	0,33±0,04	0,36+0,03
Fuchs index in the lower jaw	0,45±0,03	0,43±0,03	0,44±0,03
Cortical index	3,30±0,03	3,28±0,04	3,37±0,07

Note: * - indicators have a reliable difference compared to the values before treatment (p<0.05).

A statistically significant increase in the osteosynthesis marker - osteocalcin and bone resorption markers - C-terminal polypeptide type 1 collagen in the oral fluid of all patients with general periodontitis who took Teraflex advance (main group) was noted, but with the results before treatment no difference was observed in the comparison.

Re-examination was carried out 6 months after the beginning of periodontological treatment and osteoporosis correction processes. After 6 months, remission of moderate periodontitis was maintained in 83.3% of female patients in the comparison group and 88.9% of female patients in the main group, severe periodontitis remission was achieved in 75% of patients in the comparison group and 83.3% of patients in the main group.

Markers of bone resorption 2 months after oral fluid therapy in generalized periodontitis in postmenopausal women with osteoporosis

Instructions	Before treatment n=44	Main group After treatment n=24	Comparison group n=20 after treatment
Osteocalcin, ng/ml	17,25±0,45	21,8510,27 *#	17,88±0,54
CL, ng/ml	0,43+0,04	0,33±0,03* #	0,40±0,02

Note: * - indicators have a reliable difference with values before treatment (r<0.05); # - indicators in the main group have a reliable difference (r<0.05) with the values obtained in the patients of the comparison group.

It is necessary to mention that all female patients were motivated to receive treatment, which allowed to maintain the achieved level of hygiene in the oral cavity.

Monitoring of reliable markers provides valuable information about antiresorptive treatment long before the change and allows assessment of response to treatment 2 months after the start of complex therapy. It can be concluded that osteocalcin and C-terminal telopeptide collagen 1 can be used as markers for early evaluation of the effectiveness of general periodontitis treatment in postmenopausal women with osteoporosis.

CONCLUSION

Thus, in women patients with generalized periodontitis on the basis of osteoporosis during menopause, clinical features are observed - significant gum recession and bone tissue resorption. Mixed periodontopathogenic flora identified in periodontal pockets. Changes in markers of bone remodelling in the direction of resorptive processes, a decrease in the

concentration of osteocalcin. Morphological gum was characterized by increased serotonin expression. As noted, such changes of the mineral density of bone tissue and morphological indicators of gums were characteristic of female patients with general periodontitis against the background of menopause-based osteoporosis. The results of the study showed that the use of modern examination methods in the assessment of the dental status of postmenopausal women with osteoporosis helps to prevent complications of periodontal tissue and other dental diseases.

REFERENCES

Alekesheva, L. Z., Abdullaeva, M. A., Inoyatov, A. S., Jabborova, O. I., Nigmatullaeva, M. A., Kudratova, M. O., & Navruzova, U. O. (2021). Ways to solve the incidence of covid-19 as a global problem. Annals of the Romanian Society for Cell Biology, 25(4), 1873-1880. Retrieved from www.scopus.com

Amrulloevich, G. S., & Hasanovich, A. N. (2020). Improvement of diagnostic methods and treatment of parafunction of chewable muscles in pain syndromes of a high-lower jaund joint. Journal of Advanced Research in Dynamical and Control Systems, 12(7 Special Issue), 2102-2110. doi:10.5373/JARDCS/V12SP7/20202329

Amrulloevich, G. S., Ahadovich, S. A., & Anatolyevna, B. E. (2020). Clinical characteristics of the dentition in young men, the role of metalloproteinases and connective tissue markers in the development of temporomandibular joint pathology and their correction. European Journal of Molecular and Clinical Medicine, 7(3), 3804-3814. Retrieved from www.scopus.com

Dent E, Morley JE, Cruz-Jentoft AJ, et al. Physical Frailty: ICFSR International Clinical Practice Guidelines for Identification and Management. J. Nutr. Health Aging. 2019; 23(9):771-787. https://doi.org/https/doi.org/10.1007/s12603-019-1273-z.

Gielen E, Bergmann P, Bruyère O, et al. Osteoporosis in Frail Patients: A Consensus Paper of the Belgian Bone Club. Calcif. Tissue Int. 2017;101(2):111-131. https://doi.org/https/doi.org/10.1007/s00223-017-0266-3.

Ikhtiyarova, G. A., Dustova, N. K., Khasanova M. A., Suleymanova G. S., & Davlatov, S. S. (2021). Pathomorphological changes of the placenta in pregnant women infected with coronavirus COVID-19. International Journal of Pharmaceutical Research, 13(1), 1935-1942. doi: 10.31838/ijpr/2021.13.01.283

Kazakova N.N. The specifics of the diagnosis of chronic catarrhal gingivitis in patients with rheumatism// Turkish Journal of Physiotherapy and Rehabilitation, 32(3). Web of science. 2021. – P. 22969-22978. ISSN 2651-4451/ e-ISSN 2651- 446X

Kudratova, D. Sh, Ikhtiyarova, G.A., & Davlatov, S.S. (2021). Medical and social problems of the development of congenital malformations during a pandemic. International Journal of Pharmaceutical Research, 13(1), 756-760. doi: 10.31838/ijpr/2021.13.01.130

Oripova, F.Sh. Ikhtiyarova, G.A., & Davlatov, S.S. (2021). Pathomorphological characteristics of the vaginal mucosa in experimental notspecific vaginitis and various methods of treatment. International Journal of Pharmaceutical Research, 13(1), 761-765. doi:

10.31838/ijpr/2021.13.01.131

Qurbonov, N. A., Davlatov, S. S., Rakhmanov, K. E., & Zayniyev, A. F. (2021). Current trends in the management of Mirizzi syndrome: A review of literature. Annals of the Romanian Society for Cell Biology, 25(4), 1927-1932. Retrieved from www.scopus.com

Rajabov O. A. Conditioned Intolerance to Dental Materials Used for Therapeutic Treatment Eurasian Conference on Language. Antaliya, Turkey October 16-18. 2020.- P.23

Rajabov O.A. Clinical and functional changes in the oral cavity using ceramic metal dentures //Academicia An International Multidisciplinary Research Journal, Vol. 10 Issue 2, February 2020.- Impact Factor: SJIF 2020 = 7.13. P. 209-215.

Rajabov O.A., Inoyatov A. Sh. Comparative assessment of structural and functional changes in periodontal tissues during prosthetics with metal-ceramic and zirconium dentures //European Journal of molecular & Clinical Medicine" Volume 07, Issue 07, 2020.-P. 583-594. (Scopus)