American Journal of Medicine and Medical Sciences 2023, 13(3): 232-235
DOI: 10.5923/j.ajmms.20231303.09

An Integrated Approach to the Treatment of Periodontitis in Women with Osteoporosis in the Menopausal Period

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Abstract The prevalence of osteoporosis in perimenopausal and postmenopausal women is comparable to the epidemic of the 21st century. Although there is not enough information about the pathogenesis of the disease, the available data already allow the development of treatment principles and preventive measures in women of this contingent. The article provides information on the pathogenesis, clinical manifestations, principles of treatment and prevention of osteoporosis in the elderly in general.

Keywords Generalized osteoporosis, Dentistry, Risk factors

1. Introduction

Today, in order to raise medical services to a new level, reduce disability caused by complications of osteoporosis, targeted reforms are being carried out in the country on early diagnosis and treatment of osteoporosis, and preventive measures. in this regard, to raise the quality of medical services to a new level, especially to improve the level of modern medical services for the diagnosis and treatment of osteoporosis in the perimenopausal period and the use of modern technologies in quality care, to reduce disability and mortality. in women, it is important to diagnose the disease and develop new approaches to treatment.

2. Purpose of the Study

To evaluate the risk factors causing generalized osteoporosis and the treatment of generalized periodontitis in women with osteoporosis in the menopausal period.

3. Materials and Methods of Research

112 women with widespread osteoporosis were examined in the Bukhara city CARMEN hospital. More than half of the examined patients (57.9%) were rural women, the rest (42.1%) lived permanently in the city. (Figure 1). Patients answered the questions of the questionnaire, anamnesis was collected, various clinical and laboratory studies were performed. Based on the analysis of patients, risk factors for the development of generalized osteoporosis were identified. Also anthropometric research methods, clinical research methods, functional tests, laboratory research methods: general clinical methods, instrumental research methods were also carried out: x-ray studies in 2 projections, ultrasound examination of internal organs, encephalography, osteodensometric methods of examination.

Received: Feb. 23, 2023; Accepted: Mar. 8, 2023; Published: Mar. 15, 2023
Published online at http://journal.sapub.org/ajmms

4. Results and Analysis

All perimenopausal women participating in the study were divided into 5 groups. Group 1: women in the perimenopausal period, 58 women were diagnosed with general osteoporosis, mean age 43.48+4.3 years; 2nd group: women of the perimenopausal period, in which 34 women were not diagnosed with general osteoporosis, mean age 41.28+3.08 years; group 3: healthy women of the perimenopausal period, 18 people, mean age 40.1+4.13 years; Group 4: menopausal women, 12 women, mean age 51.12 + 1.8 years. The overall health and well-being of middle-aged women has become a major public health concern around the world. More than 80% of the women experience physical or psychological symptoms in the years when they approach menopause, with various distresses and disturbances in their lives, leading to a decrease in the quality of life.

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, 2 tablets "Teraflex-advans" were prescribed daily for 6 months, "Stomadent ^{ZD}" for the treatment and prevention of periodontal tissue, and "Stomadium" rinse for 10 days. The comparison group consisted of 20 patients who received "Calcium ^{D3} Nikomed" and "metrogyl denta" for 12 months. 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).

Regression analysis of subjective and objective symptoms of the disease showed that 2 months after the onset of the disease, remission of moderate periodontitis against the background of osteoporosis was noted in all patients, and remission of severe periodontitis was observed in 91.7% of patients in group A (r>0.05) (1- table).

Table 1. Main clinical indicators of periodontal status 2 months after treatment of generalized periodontitis in postmenopausal women with osteoporosis

Indications	Before	treatment n=44	Main group
The degree of bleeding from the gym	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
Gym 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 (r<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.

In orthopantomography, stabilization of the pathological process was noted when clinical remission of periodontal disease was achieved in all patients, 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 2).

Table 2. Indicators of bone tissue status 2 months after treatment of general periodontitis in postmenopausal women with osteoporosis

Indications Main group	Before treatment n=44	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*

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. 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.

Table 3. Indicators of mineral density in skeletal bone tissue according to the results of densitometry 6 months after the treatment of general periodontitis in patients with osteoporosis during menopause

Indications	Before treatment n=44	After treatment n=24	Comparison group n=20 after treatment
TL1-4	- 3,44±0,23	- 3,25±0,15*	- 3,40±0,39
T neck	- 1,17±0,14	- 1,15±0,27	- 1,22±0,24
T total hip	- 1,22±0,13	- 1,20±0,29	- 1,19±0,25

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 values in the comparison group.

Table 3 presents the results of analysis of bone mineral density of skeletal bone tissue based on densitometry results 6 months after treatment for general periodontitis in menopausal women with osteoporosis.

As can be seen from the data presented in Table 3, after 6 months of treatment, MPK did not change in the proximal section of the spine and hip in patients who received only Calcium D3 Nikomed drug, which indicates that Calcium D3 Nikomed drug allows to stop the process of active loss of bone mass. For 6 months and in the group of women who received the drug Teraflex advance, a statistically significant increase of MPK in the spine by about 5.5% was noted. The obtained data confirm the high antiresorptive potential of the complex treatment method.

In postmenopausal women with osteoporosis, the

Fuchs bone index and the cortical index remained almost unchanged after 6 months of treatment in the comparison group of patients receiving Calcium D3 Nikomed. Among the main group of female patients with generalized periodontitis who received Teraflex Advance, the maxillary Fuchs index and cortical index improved statistically significantly compared to pretreatment values.

The positive dynamics of the radiological rate was matched by the change in markers of bone remodeling in the oral fluid (Table 4).

Table 4. Markers of bone resorption 6 months after oral fluid therapy in generalized periodontitis in postmenopausal women with osteoporosis

Indications	Before treatment n=44	After treatment n=24	Comparison group n=20 after treatment
Osteocalcin, ng/ml	17,25 ±0,45	22,53±0,45*#	19,15±0,48*
CL, ng/ml	0,43±0,04	0,27±0,02*#	0,34±0,03*

*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 values in the comparison group.*

Osteosynthesis marker - osteocalcin increased and bone tissue resorption marker - C-terminal telopeptide collagen type 1 decreased in the oral fluid of all patients with general periodontitis during menopause 6 months after the start of treatment. The positive dynamics of the levels of osteocalcin and C-terminal telopeptide collagen type 1 was more reliable in the group of patients receiving bisphosphonates.

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.

After 12 months of treatment, the clinical and instrumental examination of the periodontium showed that women with menopausal osteoporosis had generalized periodontitis, 20 (60%) patients who received only standard therapy of periodontitis and calcium supplements, and menopausal osteoporosis had generalized periodontitis on the background of bisphosphonates. Remission was noted in 24 (83.3%) patients (r<0.05). Remission of periodontal disease in female patients during the study was achieved against the background of stabilization of osteoporosis. In the indicated period of time, positive dynamics of the spine was observed in the group of women who received calcium preparations and bisphosphonates (Table 5).

Based on this, in women patients with general periodontitis based on osteoporosis during menopause, the use of Teraflex advance allows to achieve stabilization of bone tissue resorption in the entire skeleton, and to achieve a long remission of the disease in 83.3% of patients, improving the course of periodontal disease.

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 detected in periodontal pockets. Changes in markers of bone remodeling in the direction of resorptive processes, decrease in the concentration of osteocalcin. Morphological gum was characterized by increased serotonin expression. As noted, such changes of 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.

During the complex treatment, the patient received calcium preparations and Teraflex advance, remission of chronic periodontitis and stabilization of the course of osteoporosis was achieved, and the indicators of bone metabolism in the oral fluid were improved. Recurrence of periodontitis in female patients with general periodontitis against the background of menopause-based osteoporosis is associated with the exacerbation of bone resorption, an increase in the amount of crosslaps, and a decrease in osteocalcin in the oral fluid.

In order to monitor treatment, bone mineral density determination is usually performed at least 12-24 months after the start of treatment, and biochemical markers of bone resorption in oral fluid can be used to assess the effectiveness of treatment of general periodontitis against the background of osteoporosis during menopause.

The results of our study showed that Teraflex as an antiresorptive drug is effective in advanced menopause-related osteoporosis, while demonstrating the possibility of inducing sustained remission of periodontitis in this group of patients. In combination with dental treatment, the use of Teraflex advance is observed with clinical signs of periodontitis, clear positive dynamics of markers of bone tissue remodeling, activation of immune protection.

A general assessment of regression of general periodontitis clinical signs and changes in the results of special research methods in women patients with osteoporosis during menopause made it possible to determine the highest therapeutic effect in the combined use of drugs for osteoporosis and dental diseases. we studied that the drug causes general periodontitis in the mucous membrane of the oral cavity.

Teraflex advance, a special treatment method for general periodontitis, and the result of special treatment of periodontal tissue were tested in practice. It exhibits anti-inflammatory activity associated with the use of anti-inflammatory drugs, such as "Stomadent ^{ZD}", and also has radioprotective activity. Cardioprotective properties of "Stomadent ^{ZD}" are associated with increased regenerative supply due to antioxidant effect and improvement of blood circulation. Regenerative properties of "Stomadent ^{ZD}" are manifested in accelerated wound healing. Along with the treatment of several diseases, "Stomadent ^{ZD}" also treats periodontal diseases, erosive and ulcerative diseases of the mucous membrane of the oral cavity, and

purulent-inflammatory diseases of soft tissues with high activity.

As can be seen from the data, general periodontitis in women patients with osteoporosis during menopause with $^{Ca\ D3}$ nicomed and Metrogil denta drugs, the obtained clinical results are maintained after 6 months in 80% of patients, and for 3 months in 20% of patients, but special research methods results were reliably different, but not at baseline. The result of treatment with Teraflex advance and Stomadent ^{ZD} drug was maintained in 100% of patients after 1 year.

5. Conclusions

Thus, the use of Teraflex advance and Dentazol gel for general periodontitis in women with osteoporosis during menopause is highly effective and pathogenetically based, and highly effective in the treatment and prevention of the disease, so it can be recommended for wide use in clinical practice.

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