Methods for the Study of Parodontal Diseases in Women

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ABSTRACT

Periodontal diseases , being the cause of most cases of tooth loss, are a focus of chronic infection with a negative impact on the health of the body and the quality of life in general. According to the majority of researchers, the primary role in the development of periodontal pathology is assigned to the microbial factor [3,13]. The complex of periodontopathogenic bacteria that are detected in periodontitis includes such microorganisms as: Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola, Prevotella intermedia and Aggregatibacter actinomycetemcomitans [15,7]. Qualitative analysis of these pathogens is particularly important both for diagnosis and for assessing the risk of developing the disease. The most specific and highly sensitive method shown for this study is PCR (polymerase chain reaction).

| Keywords: | Health, periodontal diseases |

Introduction. Numerous studies have established that a decrease in the concentration of estrogens leads to osteoporosis in the bones of the skeleton, characterized by a decrease in bone mass and a decrease in its density, which may also be a risk factor for the progression of periodontal diseases [6,8,7]. According to research results, the most common dental disease among women in the menopausal period is periodontitis, which according to a number of studies is found in 80% of women [4,2]. Periodontal diseases, being the cause of most cases of tooth loss, are a focus of chronic infection with a negative impact on the health of the body and the quality of life in general. According to the majority of researchers, the primary role in the development of periodontal pathology is assigned to the microbial factor [3,13]. The complex of periodontopathogenic bacteria that are detected in periodontitis includes such microorganisms as: Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola, Prevotella intermedia and Aggregatibacter actinomycetemcomitans [15,7]. Qualitative

analysis of these pathogens is particularly important both for diagnosis and for assessing the risk of developing the disease. The most specific and highly sensitive method shown for this study is PCR (polymerase chain reaction). Despite the large complex of means used to improve the condition of oral tissues, treatment is not always successful. This is due to the fact that the treatment does not take into account hormonal disorders, which also affect the progression of dental diseases. According to some authors, the use of hormone replacement therapy by patients during perimenopause, the purpose of which is to reduce bone loss, prevent osteoporosis and improve dental status, is an effective method of treating menopausal symptoms in the oral cavity [7.5]. However, a number of researchers refute the positivet effect of HRT on periodontal tissues and question the validity of hormone replacement therapy, both for preventive and therapeutic purposes [7,13]. An urgent task of modern dentistry is the early identification, prevention and elimination of factors contributing to the imbalance of physiological processes in

periodontal tissues in women in the menopausal period. In this regard, the purpose of our scientific research is justified.

Definition and classification: Coding according to ICD-10 N95.1 - Menopause and menopausal condition in a woman. The menopausal period is a physiological process in the life of every woman. During this period, there is a gradual decrease, and then a complete cessation of ovarian function [3]. There are four periods in menopause: premenopause, perimenopause, menopause and postmenopause.

Premenopause is a period characterized by an irregular menstrual cycle, hormonal fluctuations, the appearance of the first menopausal symptoms, which lasts from two to six years [7].

Perimenopause is the period of maximum clinical manifestations, which covers the time interval of premenopause and two years of postmenopause.

Menopause is the complete cessation of menstruation for more than 12 months, the date is set retrospectively. This is a natural process associated with genetically determined depletion of the follicular reserve [2,3]. The diagnostic criterion of menopause is amenorrhea on the background of hypoestrogenemia (a decrease in the level of estradiol less than 30 pg/ml) and a high concentration of follicle-stimulating hormone in the blood (more than 40 IU/l) [8]. There are premature (up to 40 years), early (40-45 years), timely (46-54 years) and late menopause (over 55 years) [5,4].

Postmenopause is the transition from menopause to the complete cessation of ovarian function, which lasts until the end of a woman's life (more than 30% of the female population is in the postmenopausal period). This period is characterized by an increased frequency of diseases associated with estrogen deficiency.

Etiology and pathogenesis

Due to the increased life expectancy of women, much attention is paid to the postmenopausal period. A third of a woman's life falls on this period. At this time, in addition to age-related changes in the reproductive system, general involutional processes occur in a woman's body [4,9]. This is due to complex neuro -hormonal disorders, including age-related disorders of the central nervous system, hypothalamus, pituitary gland, as well as ovaries, adrenal cortex, thyroid gland and a number of other endocrine glands.

It has been established that the age of onset of natural menopause depends on genetic factors related to the region of residence, ethnicity, socio-economic status, lifestyle and culture [5]. An earlier age of natural menopause is associated with a reduced risk of breast cancer, ovarian cancer, and, conversely, with an increased risk of cardiovascular diseases, atherosclerosis, stroke and osteoporosis. It was found that mortality from all causes decreases by 2% with each increasing year of menopause [9]. The risk of death of women after menopause is 2-3 times higher in women than in men of the same age [5,4].

The tendency to a later onset of menopause with excess weight was revealed. This is due to the fact that overweight and obese women have higher levels of estrogen, which can lead to delayed menopause [11].

Most researchers believe that the extinction of ovarian function is genetically programmed. Over a lifetime, there is a gradual decrease in the number of follicles embedded in the ovaries. Thus, the function of the hypothalamic-pituitary system changes a second time, in response to a lack of estrogens.

Materials and methods. As an object, a study of 75 women aged 35 to 60 years is planned. The subject of the study will be clinical and laboratory-instrumental assessment of periodontal status, as well as the state of bone mineral density and blood circulation in periodontal tissues.

The work will use modern methods of collecting and processing materials, followed by statistical processing of the results.

Diagnosis of periodontal disease is based on clinical, consisting of a survey, examination of patients, assessment of dental and periodontal status (measurement of the depth of periodontal pockets, gum bleeding, periodontal and hygiene indices) and X-ray

examination, which determines the level of the alveolar bone [3,6]. However, conventional diagnostics is not able to detect highly sensitive patients who are at risk of disease progression [9]. As a result, it is necessary to establish effective markers that indicate the progression of periodontitis.

According to modern concepts, the development of periodontal diseases is accompanied by the appearance of a specific bacteriological flora. Produced by periodontopathogenic bacteria P. intermedia, T. forsythia, T. denticola, A. actinomycetemcomitans, P. gingivalis, exo- and endotoxins determine the duration of inflammation, leading to the destruction of gum tissue and alveolar process. The main types of diagnosis of periodontopathogens are microscopic, bacteriological and molecular - genetic. The microscopic method gives a general description of the microflora, not allowing bacteria to be determined to the species. The traditional microbiological method for the study of periodontal diseases, which consists in seeding microorganisms on special nutrient media, followed by their generic and species identification, has a number of disadvantages: it is limited to ascertaining an already irreversible process of tissue destruction, the duration of the study is 5-7 days, the need to use specific nutrient media and the creation of special conditions for their cultivation. Early detection of microorganisms, prevention of their prevalence to prevent inflammatory and destructive processes in periodontal tissues is an urgent task of modern dentistry. To date, the most accurate, modern diagnostic method is the molecular genetic method, in particular the polymerase chain reaction (PCR), which makes it possible to achieve a significant increase in low concentrations of certain nucleic acid (DNA) fragments in biological material.

Research results and discussion. In accordance with the purpose of the study and the tasks of the work, all patients participating in the study underwent a comprehensive examination, including the collection of anamnesis, the study of the clinical and radiological state of the oral cavity and periodontal tissues, as well as the study of the qualitative and quantitative composition of the microflora of periodontal pockets. Clinical examination of patients began with the collection of anamnesis. Particular attention was paid to the hereditary burden of periodontal disease, assessed the general health status of the patient, past and concomitant diseases, taking medications, clarified the presence of bad habits (smoking, abuse of carbohydrate foods, etc.). During the survey and history taking, patients were asked about complaints and their nature (bleeding gums, the nature of its occurrence: during meals or brushing teeth, dry mouth, increased sensitivity of teeth, impaired function of the dentoalveolar system).

During an external examination of patients, the configuration of the face, the color of the skin, the red border of the lips were assessed, and regional lymph nodes were palpated. And also studied the state of the temporomandibular joint, assessing the nature of the movement of the lower jaw, the presence of clicks and pain.

When examining the oral cavity, the location of the frenulums and cords, the depth of the vestibule were assessed, the tongue, palate, and tonsils were examined. The state of the oral mucosa, its color and degree of moisture were assessed. Pathological changes in the mucous membrane were revealed. When registering the dentition, carious, filled and extracted teeth were recorded, the presence of splinting structures, removable and non-removable orthopedic structures, and an index assessment of the state of periodontal tissues was performed. They also paid attention to the presence of non-carious lesions of the teeth: erosion, wedge-shaped defects, pathological abrasion of teeth. According to the results of the survey, postmenopausal women taking HRT 2.3 times less complained of bleeding gums (25.7%) and dry mouth (17.1%) compared with women not taking HRT (60%; 40% respectively). 17.1% of women taking HRT noted bad breath, which is 2.5 times less than women not taking HRT (42.9%), but 3 times more than in the control group (5.7%).

Postmenopausal women, regardless of whether they take HRT or not, were 3 times more likely to have a 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.

Conclusions. Over the past decade, the average life expectancy of women has increased significantly and, accordingly, most of it, namely 1/3 of life, falls on postmenopause. Women's health is a global health problem. The average age of menopause in our study in the group of women not taking HRT was 50.97±1.9, and in the group taking HRT - 51.12±1.8, which is consistent with the data of V.P. Smetnik and co-authors.

Undesirable symptoms noted by patients during this period are the result of a number of systemic processes occurring in the woman's body, namely due to the cessation of the endocrinological activity of the ovaries.

Questioning of respondents is necessary for early identification of manifestations of menopause in the oral cavity. In our study, the most common and main complaints among postmenopausal women were bleeding gums (II - 60%; III - 25.7%), dry mouth (II - 40%; III - 17.1%) and bad breath. (II - 42.9%; III - 17.1%). Previous studies have shown that burning mouth syndrome is considered one of the leading oral problems in menopausal women. And also xerostomia, as one of the main causes of oral discomfort, is a common finding among postmenopausal women and is directly related to changes in the quantity and/or quality of saliva. 57.5% of postmenopausal women in the study

Numerous studies have proven the need to select individual additional oral hygiene products, since the main etiological factor in the development of dental diseases is the pathogenic effect of the biofilm microflora, which is formed with poor-quality oral hygiene care. In our study, it was found that as additional means of oral hygiene, survey participants most often used rinses (I - 31.4%; II - 42.6%; III - 51.4%), flosses (I - 40%; II - 37%; III - 26.6%) and toothpicks (I - 28.5%; II - 66.7%; III - 60%), least of all an irrigator (I -

14.3%; II - 17, 1%; III - 14.3%) and interdental brushes (I - 0%; II - 5.7%; III - 2.8%) and none of the study participants used a tongue scraper.

In the work of Z.S. Budaichieva 53.1% of the participants used a rinse aid as an additional hygiene product, 44.9% - toothpicks, 23.6% - tongue scraper, 7.7% - floss, 6.4% - interdental brushes and only 4.4 % - irrigator. According to Z.S. Budaichieva and the results of our own research revealed that the majority of respondents do not use intradental hygiene products: interdental brushes and an irrigator [7]. This may be due to their low dental education and lack of awareness of the selection of individual hygiene products.

Our study showed that postmenopausal women not taking HRT had a very high level of caries intensity (KPU index = 17.8±5.15), and women taking HRT had a high level of caries intensity (KPU index = 15.45± 5.2). At the same time, there was no significant difference between the groups of patients taking HRT and not taking it. Previous studies on the effect of menopause on the intensity of dental caries found a statistically significant difference between menopausal women and women of reproductive age.

A study of the hygienic status of women in menopause showed a low level of oral hygiene. OHI-S hygiene index in women not taking HRT (OHI-S=2.99±0.99) was 2 times worse than in women taking HRT (OHI-S=2.24±1.4) and 1.7 times that of 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 III (p > 0.05). This is consistent with the data of other authors on the relationship of menopause with impaired oral hygiene. More than 80% of perimenopausal women have risk factors for osteoporosis [5,3]. Hormonal fluctuations that increase the level of bone resorption lead to a decrease in bone matrix and bone mineral content. As a result, bone density decreases, which tends to fracture. In turn, periodontitis is characterized not only by resorption of the alveolar bone, but also by inflammatory processes in the periodontium. Osteoporosis and periodontitis

are chronic, multifactorial diseases leading to bone loss that are exacerbated by local and systemic factors.

Our data showed that the periodontal status in postmenopausal women worsened and differed statistically significantly between the groups receiving and not taking HRT, reflecting the aggravation of the manifestation of the disease in group II by 2 times (PI: 2.31 ± 1.29 and 1.16 ± 0.75). This, in turn, may be associated with a sharp weakening of the angioprotective effect of estrogens and the formation of pathological types of microcirculation.

The data obtained are consistent with other authors. In his study, D. Deep found an average periodontal PI index in postmenopausal women, which was 4.34 and corresponded to severe periodontal disease.

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 [11,4]. 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 an increased release of calcium not only into the blood serum, but also into saliva. Therefore, a high concentration of calcium in the saliva of menopausal women may lead to more rapid mineralization of plaque and, consequently, an increase in stone formation, which has a direct impact on the progression of gingivitis and periodontitis. Thus, the pathogenesis of menopause affects the state of all structures of the oral cavity.

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