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THE EFFECT OF VITAMIN D ON THE SOMATIC CONDITION OF WOMEN DURING MENOPAUSE

Ochilova N.I.

1st year master's resident

Samarkand State Medical University, Samarkand, Uzbekistan

Department of Obstetrics and Gynecology №3

Scientific supervisor: Phd **G.N. Indiaminova**

Abstract: Menopause is a physiological stage in a woman's life, during which, in the context of general age-related changes in the body, involutionary processes occur in the reproductive system. This period is characterized by a gradual decline in reproductive function, and then the cessation of menstrual activity. The health status of premenopausal women will change significantly in comparison with the previous period and in connection with modern living conditions. In recent years, there has been an increase in the number of cases of pathological menopause, affecting approximately half of women in the general population. In the menopausal period, low estrogen and high follicle stimulating hormone (FSH) concentrations are observed due to the decrease or disappearance of ovarian follicles. This hormonal instability in menopausal period may cause a number of physical and psychological complaints such as vasomotor symptoms, genio-urinary symptoms, mood and sleep disturbance. These menopause related symptoms can negatively affect the individual's quality of life, work life and personal relations. And sometimes due to lack of vitamin D in the body, calcium and phosphorus metabolism is disturbed and several vasomotor symptoms occur. Vitamin D plays an important role in the body of women before menopause, during menopause and even after menopause.

Key words: Menopause, menopause related symptoms, vitamin D, esterogen, vasomotor symptoms.

Аннотация: Менопауза – физиологический этап в жизни женщины, во время которого на фоне общих возрастных изменений в организме происходят инволюционные процессы в репродуктивной системе. Этот период характеризуется постепенным снижением репродуктивной функции, а затем прекращением менструальной активности. Состояние здоровья женщин в пременопаузе существенно изменится по сравнению с предыдущим периодом и в связи с современными условиями жизни. В период менопаузы наблюдаются низкие концентрации эстрогенов и высокие концентрации фолликулостимулирующего гормона (ФСГ) вследствие уменьшения или исчезновения фолликулов яичников. Эта гормональная нестабильность в период менопаузы может вызывать ряд физических и психологических жалоб, таких как вазомоторные симптомы, мочеполовые симптомы, нарушения настроения и сна. Эти симптомы, связанные с менопаузой, могут негативно повлиять на качество жизни человека, трудовую жизнь и личные отношения. А иногда из-за недостатка витамина Д в организме нарушается кальциевый и фосфорный обмен и возникают некоторые вазомоторные симптомы.

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Витамин D играет важную роль в организме женщин до менопаузы, во время менопаузы и даже после менопаузы.

Ключевые слова: Менопауза, симптомы менопаузы, витамин D, эстрогены, вазомоторные симптомы.

Aim: Analise the relationship between menopausal symptoms and serum vitamin D levels.

Material and methods: We analyzed 74 menopausal women aged between 44-55 years among menopause symptoms by using Menopause Rating Scale (MRS) questionnaire. Patients were divided into three groups according to their serum 25-OH vitamin D levels; sufficient (>30 ng/mL), insufficient (20-30 ng/mL), deficient (<20 ng/mL), then compared. Serum vitamin D cut-off level was determined for menopausal symptoms. The correlations between symptoms and vitamin D status were calculated.

score was 22,97±2,71 in Vitamin D deficiency group and significantly higher than others (p<0,001). In deficiency group, somatic, psyhcological and urogenital subscale scores were higher than other groups (p<0,001, p=0,007 and p=0,0367, respectively). Evaluation of the correlations among independent variables revealed a negative relationship between vitamin D level and MRS scores. The threshold value at which serum vitamin D causes severe MRS scores in those with sufficient levels was calculated as 25.31 ng/ml. The area under the ROC curve was 0,876 (95% CI, 0,702-1,00, p=0.003).

Introduction

Menopause is the cessation of menstrual cycles, occurring for most women between the ages of 44 and 55 years. During perimenopause, as estrogen levels decrease, women often experience hot flashes, night sweats, vaginal dryness, and mood swings [1,7]. While some women experience debilitating symptoms, others transition through this time with few complaints. Unless precipitated by surgery or illness, menopause is part of the natural aging process. As such, women should be reminded to consider this time as an opportunity to celebrate their beauty, strength, and vitality by recommitting to a healthy lifestyle [2]. Pathological menopause, expressed in climacteric syndrome, manifested due to estrogen deficiency, is accompanied by disorders of the neurovegetative system, endocrine-metabolic activity and psycho-emotional state in 70-75% of women. With the aging of the body and a decrease in the production of sex hormones, the deficiency of another important hormone known as vitamin D becomes important for postmenopausal women [3,11]. Vitamin D belongs to the group of fat-soluble vitamins. It is naturally presented only in a very limited amount of food, and synthesis in the human body is possible only under certain conditions, when the ultraviolet rays of sunlight hit the skin. Vitamin D, obtained from food and in the form of dietary supplements, as well as formed by exposure to the sun, is biologically inert. Adequate levels of vitamin D are especially important for the proper functioning of the endocrine system in the bone tissue. In addition to its role in calcium and bone homeostasis, vitamin D potentially regulates many other cellular functions. In this regard Vitamin D deficiency can cause many infectious, autoimmune and cardiovascular diseases [4]. It was also shown that Vitamin D has a protective impact against cardiovascular risks in women [5]. In addition, there are several data showing that there may be a relationship between vitamin D deficiency and hot flushes, irritability and genitourinary sypmtoms [6]. Therefore,

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we aimed to investigate whether there is a relationship between vitamin D levels and menopause related symptoms in menopausal women. This cross-sectional study consisted of 74 menopausal women who applied for routine gynecological examination to a family polyclinic. After obtaining the local ethical approval and written informed consent of each patient, demographic characteristics, medical histories, physical and gynecological examination findings including body mass index (BMI), time since menopause of subjects were recorded. Menopause was defined as not having menstruel bleeding more than a year. Patients' serum follicule stimulating hormone (FSH), estradiol (E2), calcium (Ca), 25-OH vitamin D levels were measured. Menopausal symptoms of all patients were evaluated using Meopause Rating Scale (MRS) questionnaire validated for Uzbek-speaking populations. The MRS includes 10 items assigning a score of 0-4 for the severity of the symptom (0, absent; 1, mild; 2, moderate; 3, severe; 4, very severe). This questionnaire is divided into three domains; somatic subscale including hot flushes, heart discomfort, sleep problems, muscle and joint discomfort (items 1-3,10); psychological subscale including depressive mood, irritability, anxiety, physical and mental exhaustion (items 4-7); urogenital subscale including sexual problems, bladder problems, vaginal dryness (items 8-10). Total MRS score is the sum of the scores obtained in each subscale. The values above 8 for somatic score, 6 for psychological score, 3 for urogenital score and 16 for total MRS score were defined as severe scores [10]. The study included menopausal women aged between 45-55 years. The subjects were divided into three groups according to their serum 25-OH vitamin D levels; sufficient (>30 ng/mL), insufficient (20-30 ng/mL), deficient (<20 ng/mL) and then compared among the parameters mentioned.

Results

The mean age of the patients was 50,8 years (range, 44 to 65 years). Mean time since menopause for patients was 2,1 years (range, 1 to 4,5 years). Vitamin D deficiency was detected in 37,8% (28/74) of the participants. Serum 25-OH Vitamin D levels of 22 women were ≥30 ng/mL, sufficient. The Vitamin D levels of the remaining 24 patients were insufficient, between 20- 30 ng/mL. There were no differences among age, BMI, time since menopause and laboratory characterictics between groups. The total MRS score was 20,17±2,21 in Vitamin D deficiency group and significantly higher than others (p=0,0012). Besides that, in deficiency group, somatic, psyhcological and urogenital subscale scores were higher than other groups (p=0,011, p=0,0068 and p=0,036, respectively). According to analysis, psychological scores of the deficiency group (8,02±2,87 and 9,42±5,15) were significantly different from the other groups. Urogenital subcale and total scores of deficiency group (n=20) were similar to insufficiency group (n=18), significantly higher than sufficieny group. Anxiety, physical and mental exhaution, sexual problems and dryness of vagina scores of patients

were similar between groups. Besides that, there were significantly differences among groups according to the remaining parameters of MRS questionnaire. Evaluation of the correlations among independent variables revealed a negative relationship between vitamin D level and MRS scores.

Discussion

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In the present study, we demonstrated a relationship between serum vitamin D levels and menopause-related symptoms in postmenopausal population. We were able to show a significant negative correlation between vitamin D levels and MRS total/subscale scores. Our results also represented that symptoms such as hot flushes, heart discomfort, depressive mood, irritability, bladder problems and joint and muscular discomfort in menopausal period were significantly severe in women with vitamin D deficiency. We also calculated a 25-OH vitamin D cutoff for women complaining from menopause related symptoms despite having sufficient vitamin D levels.

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