Quality of Life and Depression in Postmenopausal Women with Osteoporosis

Postmenopozal Osteoporozda Yaşam Kalitesi ve Depresyon

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Summary

Objective: This study was planned to evaluate depression level and quality of life in postmenopausal women with osteoporosis.
Materials and Methods: Sociodemographic characteristics were gathered using a sociodemographic information form. The depression level was evaluated by Hamilton Depression Rating Scale (HAM-D), health related quality of life was evaluated by Assessment of Health Related Quality of Life in Osteoporosis (ECOS-16) and the severity of the pain was measured by visual analogue scale (VAS).
Results: We observed that HAM-D scores and the VAS scores were higher in patients with osteoporosis (p<0.001, for both). ECOS-16 scores were greater in women with postmenopausal osteoporosis than in healthy controls (p< 0.001), further ECOS-16 scores was negatively correlated with bone mineral density in femoral neck and lumbar region (r=-0.405, p<0.001, r=0.404, p<0.001).
Conclusion: It is possible to conclude that quality of life and psychological status may be impaired in osteoporosis. Postmenopausal women may need not only drug treatment but also psychological support in the management of osteoporosis. *Turk J Phys Med Rehab 2007;53:61-4.*
Key Words: Postmenopausal osteoporosis, depression, quality of life

Özet

Amaç: Bu çalışma, menopoz sonrası dönemde osteoporoz tanısı almış kadınlarda depresyon ve yaşam kalitesinin değerlendirilmesi amacı ile planlandı.
Gereç ve Yöntem: Sosyodemografik özellikler bir sosyodemografik bilgi formu ile derlendi. Depresyon düzeyi Hamilton Depresyon Ölçeği (HDÖ), yaşam kalitesi Osteoporozda Sağlıkla İlgili Yaşam Kalitesi Ölçeği (ECOS-16), ağrı şiddeti Görsel Analog Skala (GAS) ile değerlendirildi.
Bulgular: Osteoporozu olan hastalarda sağlıklı kontrollere göre depresyon düzeyi ve ağrı şiddetinin yüksek, yaşam kalitesinin düşük olduğu saptandı (p<0,001, hepsi için). Ayrıca ECOS-16 skoru femoral ve lumbar kemik mineral dansitesi değerleri ile negatif korelasyon gösteriyordu (r=-0,405, p<0,001, r=0,404, p<0,001).
Sonuç: Osteoporozda yaşam kalitesi ve psikolojik durumun bozulduğu sonucuna varıldı. Postmenopozal dönemdeki kadınlar sadece ilaç tedavisine değil aynı zamanda psikolojik destek tedavisine de ihtiyaç duyabilirler. *Türk Fiz Tıp Rehab Derg 2007;53:61-4.*
Anahtar Kelimeler: Postmenopozal osteoporoz, depresyon, yaşam kalitesi

Introduction

Osteoporosis is the most prevalent metabolic bone disease characterized by bone fragility and increased risk of bone fracture (1). Factors influencing bone resorption range from nutrition and lifestyle, to certain medical disorders. The most important cause of this condition in women is the bone loss that occurs after the menopause as a result of the withdrawal of estrogen secretion (2). Patients with osteoporosis often have some problems in their life activities such as taking a shower, preparing meals, gardening, walking stairs, visiting friends and attending social activities. Increased risk of bone fracture, physical deformity, and pain may affect interpersonal relationships and the performance of social roles, thereby disturbing the psychological status in osteoporosis (3). Pain and disability may also influence life quality and lead to psychological disturbances.

Major depression has been repeatedly reported to be associated with low bone mineral density (BMD) of the spine and hip (4,5); excessive activity of the hypothalamic-pituitary-adrenocortical axis has consistently demonstrated in major

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depressive disorder (6) whereas depressive symptoms have been reported in patients with osteoporosis especially in postmenopausal period (7,8). Panza et al. (9) reported that depression has frequently been associated with osteoporosis. However the nature of this link, and whether it is direct or indirect, remains to be explored.

The aim of the study was to evaluate the impact of osteoporosis on the patients' quality of life and psychological status.

Materials and Methods

This study was conducted at the Physical Medicine and Rehabilitation Outpatients Clinic of Harran University, Sanliurfa, Southeastern Turkey. Of the total 75 consecutive women screened, 35 were excluded. Subjects were excluded if they had: (1) used any drug, or had any disease or condition known to affect bone; (2) taken corticosteroid medications during the previous 6 months; (3) had a history of chronic renal, hepatic, or gastrointestinal disease or traumatic lumbar compression fracture; (4) evidence of collapsed vertebra; (2) menopause before the age of 40; and (3) amenorrhea greater than 6 months. Exclusion criteria also included other bone diseases, rheumatoid arthritis and malignancy, having been treated with fluoride, recent treatment with specific therapy for osteoporosis, active drug or alcohol abuse, uncontrolled hypertension or heart failure, recurrent renal calculi. All patients were informed for the study.

A total of 40 postmenopausal women, at 45 to 70 years of age (mean age was 54.9±9.1 years) were included in the study. A detailed history was taken from each woman including number of pregnancies, age of menopause, and their weight and height measurements were recorded. BMD of the lumbar spine and femoral neck region were measured by dual-energy x-ray absorptiometry (Hologic QDR-4500 W). According to the World Health Organization (WHO) osteoporosis was defined as a lumbar BMD value more than 2.5 standard deviation (SD) below the T-score, corresponding to 0.759 g/cm^2 (10). All spinal scans were reviewed by an experienced radiologist for the evidence of vertebrae with collapse or focal sclerosis. Body mass index (BMI; weight/height^2) was obtained through height and weight measurements by using a wall-mounted ruler and a digital scale.

Control group consisted of 29 healthy individuals (mean age was 53.2±9.8). The controls were recruited from the family of those in the patient group. Routine hematological and biochemical parameters were determined in controls. None of the controls was a smoker or alcohol consumer. All subjects were informed about the study.

The perceived quality of life was assessed by Assessment of Health Related Quality of Life in Osteoporosis (ECOS-16) (11). The ECOS-16 was developed with the aim of measuring health related quality of life (HRQoL) in postmenopausal women with osteoporosis. The 16 items in the new questionnaire are divided qualitatively into four dimensions. The nature of the four dimensions also suggests that they can be further combined to produce two summary scores that would include Physical Function and Pain in one Physical score, and another one that would include fear of illness and psychosocial function in a mental score. These two summary scores could, in turn, be combined to provide an overall score for the questionnaire. However, although the 16 items can be classified qualitatively into four dimensions, this is a unidimensional questionnaire, according to the quantitative analysis. The score of each item ranges from 1 to 5. ECOS-16 generates a single summary score obtained from the arithmetic mean of the answered items, so the total score ranges from 1 (best HRQoL) to 5 (worst HRQoL).

The severity of depression was assessed using the Turkish version of the Hamilton Depression Rating Scale for Depression (HAM-D) (12). The patients were graded as having mild (14–27 points), moderate (28–41 points) or severe (42–53 points) depression according to score on HAM-D. Clinically, mild depression is defined as the presence of few, if any, symptoms in excess of those required to make the diagnosis and symptoms result in only minor impairment in social or occupational activities. Moderate depression is defined as that there are more symptoms compared to mild depression and impairment in social and occupational activities is of moderate degree. In severe depression, there are several symptoms, which markedly interfere with occupational functioning or with usual social activities.

Statistical analysis

Student's t test and correlation analyses were performed by using SPSS for Windows, Release 11.5 computer program (SPSS Inc, Chicago, IL) and $p<0.05$ was considered statistically significant.

Results

Characteristics of the study population are summarized in Table 1. There were no significant differences in age and body mass index between patients and controls.

The evaluation of the HAM-D scores revealed that some of the women affected by osteoporosis suffered from depressive symptoms (Table 2) (55.7% had mild and 18.3% had moderate depression). The mean VAS scores were greater in patients than in controls ($p<0.001$). ECOS-16 scores were greater in the patients than in those in the controls, further ECOS-16 scores were negatively correlated with femoral and lumbar BMD scores in the patient group ($r=-0.405$, $p<0.001$, $r=0.404$, $p<0.001$, respectively). No difference was found among the three sub dimensions (pain, daily activities and anxiety) of ECOS-16 in the patient group.

Discussion

Osteoporosis is the most prevalent metabolic bone disease and a major clinical and public health problem. As the population gets older, morbidity, mortality and financial costs attributed to osteoporosis are expected to rise (13). In the USA, about 21% of postmenopausal women have osteoporosis and about 16% have had a fracture (14).

Osteoporosis is a disease leading to severe discomfort and/or disability, and affecting different aspects of personal life with a variety of undesirable consequences, such as chronic pain, reduced physical ability and reduced social activity (15).

The comorbidity of osteoporosis and depression is so common and the conditions are so interwoven that it is difficult to pinpoint which usually comes first or whether one causes the other (16). Osteoporosis may predispose to depression via limiting in social leisure activities (17).

Reginster et al. (18) reported that depression was contemplated an important psychological dimension associated with osteoporosis, and which should be considered in the management of patients with decreased bone mineral density. In

contrast there were various studies reporting that vulnerability to depression was not related with BMD in postmenopausal women with osteoporosis (19).

In the present study, we investigated the level of depressive symptoms in postmenopausal women with osteoporosis. Our results indicated that the level of depressive symptoms and mean VAS scores greater in the patient group than healthy controls. In addition, HRQoL was poorer in postmenopausal women with osteoporosis than in healthy women.

The physical, emotional and psychological disabilities and increased pain resulting from vertebral and non-vertebral fractures are outcomes of osteoporosis that can adversely influence health related quality of life. Adachi et al. (15) suggested that quality of life was negatively influenced by vertebral and non-vertebral fractures in patients with osteoporosis. Similarly, the study by Oleksik et al. (8) demonstrated that clinical and subclinical incident vertebral fractures both have an adverse impact on quality of life in postmenopausal women. Bianchi et al. (7) reported that depressive symptoms were observed in about 40% of osteoporotic patients.

Vertebral or non-vertebral fractures may impact on pain, social function, and general health perception domains, and may also cause great changes in body appearance in patients with osteoporosis (19). Higher depressive symptoms and poorer quality of life are expected in patients with fractures than in patients without fractures. Patients having fractures were not included in our study. Further studies are required to investigate quality of life and depression in patients with vertebral or non-vertebral osteoporotic fractures.

Table 1. The demographic data of patients with postmenopausal osteoporosis and healthy controls.

	Patients (Mean±SD)	Controls (Mean±SD)	p
Age (years)	54.9±9.1	53.2±9.8	0.5
Age of menopause (years)	43.5±4.0	41.5±4.2	0.07
Weight (kg)	68.8±15.0	75.0±15.0	0.1
Height (cm)	151.5±6.7	153.5±5.9	0.2
BMI (kg/m^2)	30.3±6.0	31.6±6.2	0.5
Number of pregnancies	6.1±1.5	5.7±1.3	0.2

BMI: Body Mass Index
The values represent the mean±SD, *Significance was defined as p<0.05

Aranha et al. (20) found poorer quality of life in patients with osteoporosis than in healthy women. Established osteoporosis, chronic pain, limitation of functional ability, and decrease in self-esteem can lead impairment in quality of life perception and development of depression in postmenopausal osteoporotic women (18), therefore it thought to be depressive symptoms might be a reaction to somatic symptoms and decreased physical activities.

Some studies provided stronger evidence to support association between menopause and depression (21). It is difficult to determine whether depressive symptoms observed in our patients were related to osteoporosis or menopause. We tried to control the effect of menopause on depressive symptoms by recruiting both the patient and control groups from postmenopausal period.

In conclusion, depression may be considered an important psychological dimension associated with osteoporosis, and which should be considered in the management of patients with decreased bone mineral density. This will help patients to develop more efficient strategies for accepting the disease and coping with it.

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Table 2. The clinical data of patients with postmenopausal osteoporosis and healthy controls.

	Patients (Mean±SD)	Controls (Mean±SD)	p
Lumbar BMD (g/cm^2)	0.83±1.5 (0.56-1.1)	1.05±1.1 (0.78-1.2)	<0.001
Femoral neck BMD (g/cm^2)	0.86±1.7 (0.51-1.2)	1.06±1.2 (0.7-1.2)	<0.001
Lumbar t score	-2.5±0.8	0.5±1.1	<0.001
Femoral neck t score	-1.3±1.2	0.8±1.0	<0.001
VAS (cm)	7.0±1.0	5.4±1.2	<0.001
HAM-D	21.1±5.3	12.0±5.5	<0.001
ECOS	2.8±0.3	2.4±0.5	<0.001

BMD: Bone Mineral Density, VAS: Visual Analogue Scale, HAM-D: The Hamilton Rating Scale for Depression
The values represent the mean±SD, *Significance was defined as p < 0.05

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