

Osteoporosis significantly reduces quality of life

Osteoporoz yaşam kalitesini anlamlı olarak azaltmaktadır

Özlem Altındağ¹, Neslihan Soran²

¹Department of Physical Medicine and Rehabilitation, Faculty of Medicine, University of Gaziantep, Gaziantep, Turkey

²Beyhekim State Hospital, Physical Medicine and Rehabilitation Clinic, Konya, Turkey

Abstract

The study was planned to investigate the quality of life in women with postmenopausal osteoporosis. Sixty-four patients with postmenopausal osteoporosis and 80 postmenopausal healthy women were included in the study. Quality of life was evaluated by QUALEFFO-41 and bone mineral density was measured using dual-X-ray absorptiometry. There were no significant differences between two groups with respect to age, and body mass index ($P>0.05$). QUALEFFO pain, QUALEFFO physical function household chores, QUALEFFO physical function mobility, QUALEFFO general health scores were significantly higher in patients, than in controls ($P<0.001$, for all). There were no significant differences QUALEFFO social activity and QUALEFFO mental function scores between patients and controls ($P>0.05$). We have shown that the quality of life was lower in osteoporotic patients than in controls. We thought that the life quality should be assessed in osteoporotic patients even before fracture occurrence.

Keywords: Fracture; postmenopausal osteoporosis; quality of life

Özet

Bu çalışma, postmenapozal osteoporozu olan hastalarda yaşam kalitesini değerlendirmek amacıyla planlandı. Postmenapozal osteoporozu olan 64 hasta ve postmenapozal dönemde olan 80 sağlıklı kadın dahil edildi. Yaşam kalitesi QUALEFFO-41, kemik mineral yoğunluğu dual enerji x-ray absorpsiyometri ile değerlendirildi. Hastalar ve kontrol grubu arasında yaş ve vücut kitle indeksi açısından fark yoktu ($P>0.05$). QUALEFFO ağrı, QUALEFFO fiziksel fonksiyon ev işleri, QUALEFFO fiziksel fonksiyon mobilite, QUALEFFO genel sağlık skoru, hasta grubunda sağlıklı kontrollere göre daha yüksekti ($P<0.001$, hepsi için). QUALEFFO sosyal aktivite ve QUALEFFO mental fonksiyon açısından iki grup arasında fark yoktu ($P>0.05$). Postmenapozal osteoporoz hastalarında yaşam kalitesi düzeyinin sağlıklı kontrollere göre daha yüksek olduğunu gördük. Postmenapozal osteoporozlu hastalarda kırık ortaya çıkmadan önce bile yaşam kalitesi olumsuz etkilenmektedir.

Anahtar kelimeler: Fraktür; postmenapozal osteoporoz; yaşam kalitesi

Introduction

Osteoporosis is the most commonly metabolic bone disease resulting in an increased risk for fracture (1). Elderly people are the fastest growing population in the world and osteoporosis is a major public health problem in especially among the elderly. Osteoporosis is responsible for about 2 million fractures annually, including hip, vertebral (spinal), wrist, and other fractures. One-half of postmenopausal women sustain an osteoporotic fracture in their lifetime (2). However, it may be too late for evaluation the life quality after the appearance of fracture. Assessing health-related quality of life has been considered an important marker of the clinical evolution of patients with osteoporosis. Physical, emotional, and psychological incapacity, combined with the pain can alter quality of life (3). We thought that it would be appropriate to assess the quality of life in patients with osteoporosis before the present of fracture. The fear of fracture among individuals with osteoporosis can lead to a

limitation of activities, which can greatly reduce quality of life. We believe that osteoporosis is as disabling as other chronic diseases. The Psychology of Chronic Physical Illness can cause social regression, isolation, feeling worthless in osteoporotic patients. Also fear of fall involves the mobility level which related to loss of independence and lack of confidence (4,5). Frailty has been associated with reduced activities, poorer mental health, and lower life satisfaction (6). Pain, functional loss, social isolation, emotional disturbances may negatively affect patients' general well-being. Kotz et al. (7) have been suggested that women with osteoporosis were at higher risk of developing problems with activities of daily living. They have reported that management of osteoporosis could be improved the patients' quality of life. The aim of our study was to evaluate the QOL in postmenopausal women without fracture.

Materials and Methods

This study was conducted at the Physical Medicine and Rehabilitation Outpatients Clinic of Harran University, Sanliurfa, Southeastern Turkey. A

Correspondence: Özlem Altındağ, Department of Physical Medicine and Rehabilitation, Faculty of Medicine, University of Gaziantep, Gaziantep, Turkey
Tel:+ 90 533 6253049 ozaltindag@yahoo.com



consecutive sixty-four outpatients diagnosed with postmenopausal osteoporosis were included in the study. Eighty healthy controls matched for age, sex and geographical area also were included in the study as controls. All the patients which meeting our including criteria were included in a study period. The patients were between the ages of 45-65 and the controls were between the ages of 45-65 years old.

Exclusion criteria were determined as malignancy, acute infection, chronic obstructive pulmonary disease, use of corticosteroid medications, history of chronic, renal, hepatic or gastrointestinal diseases and traumatic lumbar compression fracture, menopausal period before age of 40, diagnosis of other metabolic bone or inflammatory diseases, and active drug or alcohol abuse.

Socio-demographic data form prepared by investigators to collect socio-demographic information considering the aim of the study was used. All participants in both patient and control groups were investigated in terms of the drug used, including vitamins, iron, clopidogrel, use of smoking and alcohol, daily consumption of coffee and tea, educational status, number of pregnancies, ages of menopause and menarche, and total duration of lactation.

Bone mineral density (BMD) of lumbar and femoral neck regions were measured by dual-energy X-ray absorptiometry as g/cm², and T and Z scores were also recorded. In diagnosing osteoporosis, T-score was defined to be -2.5 as lumbar BMD value below standard deviation (SD) and 0.759 g/cm² for BMD under the criteria by World Health Organization (WHO) (6). Body mass index (BMI; weight/height²) was obtained through height and weight measurements by using a wall-mounted ruler and a digital scale. Routine hematologic and biochemical parameters were determined in patients and controls. Controls were neither cigarette smokers nor alcohol consumers. All subjects were informed about the study.

Markers of bone formation and resorption osteocalcin, C-telopeptid, calcitonin and parathormon were measured in patients. Osteocalcin was measured using a two-site immunoradiometric assay (kit DSL-7600, Diagnostics Systems Laboratories, Inc., Webster, TX). C-Telopeptid was measured using an enzyme-linked immunosorbent assay (Osteomark, Ostex International, Inc., Seattle, WA). Calcitonin and parathormon were measured by radioimmunoassay.

QUALEFFO assessment is performed on patient's first visit by one of our physiotherapists, biochemical parameters were performed in patient's serum. Patient's informed consent was obtained before assessment.

Evaluation of Quality of Life

QUALEFFO consists of 41 questions and seven subscales including pain, physical function activities of daily life, physical function household chores, physical function mobility, social activity, general health status and mental function (8).

Statistical analyses

Statistical analyses were performed using Statistical Package for Social Sciences (SPSS), version 16.0. Collected data was analyzed using both descriptive and analytical approaches. Results of descriptive statistics were expressed as percentages, as the arithmetic mean \pm standard deviation for variables. The differences between the means of the variables of two groups were compared using independent Student's *t*-test. Pearson's correlation test was used for analyses of correlations between clinical parameters.

Results

Demographic data and clinical variables are shown in Table 1. The mean age of the patients and controls were 58.9 \pm 5.9 and 56.1 \pm 6.7 years respectively. The mean BMI were 29.9 \pm 4.5 and 34.7 \pm 6.3 in patients and controls respectively. There were no significant differences between patients and controls in respect to age and BMI. The mean lumbar BMD were 0.6 \pm 0.1 and 1.0 \pm 0.5 g/cm²; the mean femur BMD were 0.8 \pm 0.1 and 1.0 \pm 0.1 g/cm² in patients and controls. BMD values were lower in patients than in controls (P<0.001).

The mean scores of QUALEFFO pain were 54.3 \pm 21.3 and 34.3 \pm 21.8, physical function household chores were 52.3 \pm 22.4 and 30.2 \pm 13.9, physical function mobility were 46.7 \pm 17.9 and 27.7 \pm 12.4, general health scores were 68.1 \pm 15.4 and 57.7 \pm 17.5; physical function activities of daily living were 31.1 \pm 17.8 and 17.1 \pm 13.4 in patients and controls, respectively. There were significant differences between patients and controls with regard to QUALEFFO pain; physical function household chores; physical function mobility; general health scores; physical function activities of daily living (P = 0.001 for all). The mean QUALEFFO total scores were 57.4 \pm 30.5 and 41.9 \pm 8.5 in patients and controls in respectively. QUALEFFO total score was higher in patients group than in controls (P<0.003). There were no significant differences QUALEFFO social activity and QUALEFFO mental function scores between patients and controls (P>0.05). Furthermore, VAS were positively correlated QUALEFFO physical function mobility and pain general health (P=0.001 r=0.421; P= 0.001 r=0.352, respectively) (Table 2).

Discussion

Osteoporosis is a bone disease characterized by increased bone fragility as a result of decrease in bone quality (9). This clinical condition starts asymptotically and progresses silent progression

Table 1. Demographical and clinical findings in patients with postmenopausal osteoporosis and healthy controls

	Osteoporosis Mean±SD (n=64)	Controls Mean±SD (n=80)	P
Age (years)	58.9 ± 5.9	56.1 ± 6.7	>0.05
BMI (kg/m ²)	29.9 ± 4.5	34.7 ± 6.3	>0.05
BMD (g/cm ² lumbar)	0.6 ± 0.1	1.0 ± 0.5	0.001
BMD(g/cm ² femur)			
	0.8 ± 0.1	1.0 ± 0.1	0.001
Coffee Drinking	1.2 ± 0.4	1.3 ± 0.4	>0.05
Age of Menarche	13.6 ± 0.7	13.4 ± 0.7	>0.05
Parathormone (pg/ml)	56.3 ± 18.1	59.5 ± 18.8	>0.05
C-telopeptid (ng/ml)	0.5 ± 0.2	0.3 ± 0.2	0.024
Calcitonin (pg/ml)	2.5 ± 1.1	2.5 ± 1.3	>0.05
Osteocalcin (ng/ml)	28.4 ± 9.9	22.3 ± 8.1	0.003
QUALEFFO pain	54.3 ± 21.3	34.3 ± 21.8	0.001
QUALEFFO physical function activities of daily living	31.1 ± 17.8	17.1 ± 13.4	0.001
QUALEFFO physical function household chores	52.3 ± 22.4	30.2 ± 13.9	0.001
QUALEFFO physical function mobility	46.7 ± 17.9	27.7 ± 12.4	0.001
QUALEFFO social activity	71.9 ± 16.2	68.7 ± 15.1	>0.05
QUALEFFO general health	68.1 ± 15.4	57.7 ± 17.5	0.001
QUALEFFO mental function	54.3 ± 9.6	55.4 ± 7.3	>0.05
QUALEFFO total	57.4 ± 30.5	41.9 ± 8.5	0.003

BMI: Body mass index, BMD: Bone mineral density, QUALEFFO: Quality of Life Questionnaire of the European Foundation for Osteoporosis-41 item

until it reveals an important problem such as a fracture. The morbidity of osteoporosis is mainly caused by fractures of the hip, vertebrae, and distal radius. When a fracture occurs, in addition to pain and disturbance of physical function, a fracture may decrease mobility and social interaction and cause emotional problems. All of these characteristics determine quality of life of patients.

Table 2. The subscales of QUALEFFO and relation between VAS

	VAS
QUALEFFO physical function mobility	P = 0.001 r=0.421
QUALEFFO general health	P = 0.001 r=0.352

QUALEFFO: Quality of Life Questionnaire of the European Foundation for Osteoporosis-41 item, VAS: Visual Analogue Scale

It is known with certainty that fracture of osteoporosis is required long-term and expensive treatment and even leading to death (10). We thought that quality of life should be viewed even before fractures. We aimed to evaluate whether osteoporosis could have a negative effect on patient's quality of life. We have finally seen that quality of life is affected by osteoporosis even if no fractures.

Our results showed important information about life quality in osteoporotic patients. However, there were several limitations. The major limitation of our study is the relatively small number of patients. We used a mixed-participant population with and without pain. Finally, there was no supervision of compliance performed during daily activities for patients and we

reported that the patient's own statement.

We consider that it is too difficult to indicate the direct effects on BMD, in that BMD is known to be regulated by the combination of many hormones and cytokines, as well as genetic, vitamin D level, peak bone mass formation, osteocalcin and antigen values specific to bones. The significance of difference found between parameters of CTX and serum osteocalcin in our study. This result may be explained by the idea that demolition parameters are more influenced in patients, compared to bone formation, and such parameters are at least balanced or in favor of formations in controls (11-13).

Osteoporosis is a chronic process with physical, social and economic features (14). An interesting finding of this study was the effect of osteoporosis on quality of life. We have shown that women with osteoporosis are at higher risk of developing problems with physical disability and difficulties with activity of daily living. The patients with osteoporosis may be at risk for reduced quality of life. Care should be taken to maintain or improve their daily activities may help to improve quality of life. We think that the quality of life of osteoporotic patients should be detailed investigated before the occurrence of fractures, in order to develop the appropriate approach.

Osteoporosis may be considered as a disease leading to severe discomfort, disability, affecting different aspects of personal life with a variety of consequences, such as fear of fall, reduced physical ability, reduced social activity, poor well-being, and

depressed mood (15). Especially, fear of falling may be associated with activity restrictions resulting social isolation. Understanding of these problems may help patients to develop more efficient strategies for accepting the disease and coping with it. We would like to remind physicians osteoporotic patients should be thoroughly investigated even before the occurrence of fractures, in order to develop the appropriate intervention. We showed that pain severity was correlated with life quality, so health related quality of life may be related with perceived pain in osteoporotic women.

Osteoporosis was perceived by our patients as a disease leading to severe discomfort and affecting different aspects of personal life such as physical function activities of daily living, household chores and general health. A reduced quality of life was present in our patients although no fracture. Life quality should be taken into account when planning treatment for osteoporosis. The therapy for osteoporosis may not able to completely eliminate the impact of the disease on the perceived quality of life.

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