



Musculoskeletal Pain in Elderly Patients with Osteoporosis: A Multicenter Study

Osteoporozu Olan Yaşlı Hastalarda Kas İskelet Sistemi Ağrısı: Çok Merkezli Bir Çalışma

Yeşim GÖKÇE KUTSAL, Oya ÖZDEMİR*, Sevilay KARAHAN**, Yeşim AKYOL***, Pınar BORMAN****, Asuman DOĞAN*****, Sibel EYİĞÖR*****, Rengin GÜZEL*****, Özgür ORTANCIL*****, Serpil SAVAŞ*****, Kazım ŞENEL*****, Ayşe Dicle TURHANOGĖLU*****, İlker YAĞCI*****

Department of Physical Medicine and Rehabilitation, Hacettepe University, Faculty of Medicine, Ankara, Turkey

*Hacettepe University Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Ankara, Turkey

**Department of Biostatistics, Hacettepe University, Faculty of Medicine, Ankara, Turkey

***Department of Physical Medicine and Rehabilitation, Ondokuz Mayıs University, Faculty of Medicine, Samsun, Turkey

****Ankara Training and Research Hospital, 1st Physical Medicine and Rehabilitation Clinic, Ankara, Turkey

*****Ankara Physical Medicine and Rehabilitation Training and Research Hospital, 5th Physical Medicine and Rehabilitation Clinic, Ankara, Turkey

*****Department of Physical Medicine and Rehabilitation, Ege University Faculty of Medicine, Izmir, Turkey

*****Department of Physical Medicine and Rehabilitation, Çukurova University Faculty of Medicine, Adana, Turkey

*****Department of Physical Medicine and Rehabilitation, Karaelmas University Faculty of Medicine, Zonguldak, Turkey

*****Department of Physical Medicine and Rehabilitation, Süleyman Demirel University Faculty of Medicine, Isparta, Turkey

*****Department of Physical Medicine and Rehabilitation, Atatürk University, Faculty of Medicine, Erzurum, Turkey

*****Department of Physical Medicine and Rehabilitation, Mustafa Kemal University Faculty of Medicine, Hatay, Turkey

*****Department of Physical Medicine and Rehabilitation, Marmara University Faculty of Medicine, İstanbul, Turkey

Summary

Objective: The aim of this study was to identify the ones with osteoporosis (OP) in elderly patients presenting with musculoskeletal complaints and to evaluate the distribution of region of pain and the medications used for the musculoskeletal disease(s) in these patients.

Materials and Methods: 1141 elderly patients who were consecutively admitted to the outpatient clinics in nine different provinces were screened for the diagnosis of OP. Age, gender, complaints, diagnosis and current medications related to musculoskeletal system disorder(s) were recorded.

Results: 382 elderly (341 female, 41 male) with a mean age of 71.9±5.3 years had the diagnosis of OP. Low (54.5%) and upper back (39.6%) pain were the most common complaints in both sexes. These were followed by knee, hip, cervical and shoulder pain, respectively. Osteoarthritis (36%), lumbar (21%) and cervical spondylosis/stenosis (10%) were the most common musculoskeletal diseases accompanying OP. The mean number of drugs used was 3.0±1.2. The most commonly

Özet

Amaç: Çalışmanın amacı kas iskelet sistemi (KİS) yakınması ile başvuran yaşlı hastalar içerisinde osteoporozu (OP) olanları belirlemek, bu hastaların ağrıyan bölgelerinin dağılımını ve KİS hastalıklarına yönelik kullandıkları ilaçları değerlendirmektir.

Gereç ve Yöntem: Dokuz farklı şehirdeki polikliniklere ardı sıra başvuran 1141 hasta OP tanısına yönelik olarak tarandı. Hastaların yaşları, cinsiyetleri, kas iskelet sistemine dair başvuru yakınmaları, tanıları ve ilaç kullandıklarını kaydedildi.

Bulgular: Yaş ortalaması 71,9±5,3 yıl olan 382 hastanın (341 kadın, 41 erkek) OP tanısı mevcuttu. Her iki cinsten de hastaların en sık başvuru yakınmaları bel (%54,5) ve sırt ağrısı (%39,6) olarak belirlendi. Bunları sırasıyla diz, kalça, boyun ve omuz ağrısı takip ediyordu. OP'ye en sık eşlik eden tanıları arasında osteoartrit (%36), lomber spondiloz/stenoz (%21) ve servikal spondiloz/stenoz (%10) ilk sıralarda yer alıyordu. Hastaların kullanmakta olduğu ortalama ilaç sayısı 3±1,2 idi. OP tedavisine yönelik

prescribed anti-osteoporotic agents were bisphosphonates (59%). For the musculoskeletal pain, non-steroidal anti-inflammatory drugs (systemic and/or topical) were used in 46.6% and paracetamol in 24.6% of patients.

Conclusion: It is crucial to perform a thorough physical examination to reveal the underlying cause of back pain in elderly osteoporotic patients. Besides, in order to minimize polypharmacy, it should be kept in mind that non-pharmacological approaches can be used for the management of musculoskeletal diseases. *Türk J Phys Med Rehab 2012;58:263-6.*

Key Words: Osteoporosis; musculoskeletal diseases; pain; elderly

olarak en sık reçetelenen ilaçlar bifosfonatları (%59). KİS ağrıları için hastaların %46,6'sı non-steroidal antiinflatuvar ilaçlar (sistemik ve/veya topikal), %24,6'sı ise parasetamol kullanıyordu.

Sonuç: OP'si olan yaşlı hastalarda bel ağrısının altında yatan nedeninin açığa çıkarılması için tam bir fizik muayene yapılması çok önemlidir. Bununla birlikte, çoklu ilaç kullanımını en alt düzeye getirmek için farmakolojik olmayan yaklaşımların KİS hastalıklarının tedavisinde kullanılabileceği mutlaka akılda tutulmalıdır. *Türk Fiz Tıp Rehab Derg 2012;58:263-6.*

Anahtar Kelimeler: Osteoporoz, kas iskelet sistemi hastalıkları, ağrı, yaşlı

Introduction

Musculoskeletal diseases have been recognized as a major health problem by the World Health Organization with the endorsement of the Bone and Joint Decade 2000-2010. Musculoskeletal disorders with their high prevalence pose a considerable burden on individuals and health care systems in terms of disability, reduced quality of life and economic costs (1). It has been demonstrated that the frequency of musculoskeletal diseases increases with age and these entities are the leading cause of chronic pain and disability in elderly population (2-5).

Among all musculoskeletal disorders, osteoporosis (OP) has a particular importance for elderly people, because not only the prevalence of OP but also the risk of OP-related fractures with high morbidity and mortality rates increases with aging (6). It is well-known that elderly patients with thoracic and lumbar vertebral fractures caused by OP often experience back pain. Recently, it has been demonstrated that despite the absence of vertebral fractures, bone resorption due to OP may also cause low back pain (7). The aim of this nationwide study was to identify the patients with the diagnosis of OP in a large sample of elderly people presenting with musculoskeletal complaints. We also aimed to explore the distribution of region of musculoskeletal pain and medications used for the treatment of particular musculoskeletal complaints in these patients.

Materials and Methods

This multicenter study was conducted in nine provinces located in six different geographical regions of Turkey. This cross-sectional study was designed to cover all patients appealing to the centers between April and December 2008. Sample size calculation and weighting according to the elderly population were not done. A total of 1141 patients aged 60 years and over, who were consecutively admitted to the outpatient clinics of physical medicine and rehabilitation departments, were prospectively screened for OP. Bone mineral density was measured by using dual energy X-ray absorptiometry (DXA) - either Lunar or Hologic -. In all these centers, the diagnosis of OP has been established according to the World Health Organization criteria. The patients' age, gender, complaints, diagnosis and current medications related to musculoskeletal disorder(s) were recorded on a standard form. Age groups were categorized as 60-69, 70-79 and 80 years and over.

All statistical analyses were performed using the SPSS version 15. Descriptive data were presented as mean±standard deviation

for continuous variables and as frequencies and percentages for categorical variables. The independent samples t-test and the Mann-Whitney U test were performed to test the differences between the genders, and Chi-square and the Kruskal-Wallis test were used for age group analysis. Statistical significance was determined at p-value of less than 0.05.

Results

It was found that out of 1141 (74% were women), 382 patients had the diagnosis of OP. The distribution of the patients according to the geographical region they were living in is presented in Table 1. The mean age of these osteoporotic patients was 71.9±5.3 years and men (n=41) were significantly older than women (n=341) (p=0.002). The distribution of the patients according to gender and age groups is demonstrated in Figure 1. Age group distributions were similar among the genders (p=0.157).

Ninety-eight percent of the patients described musculoskeletal pain in at least one region of their body. Low back (54.5%) and upper back (39.6%) pain were the most common complaints in both genders and all age groups. The regions of musculoskeletal pain are listed in Table 2. While 50% of the 374 patients experienced pain in only one site, 32.1% had pain in two, and 17.9% in three or more areas. The most common combination was low back and upper back pain, which was seen in 19.7% of all patients. Osteoarthritis (36.1% of the women, 34.1% of the men), lumbar (19.9% of the women, 26.8% of the men) and cervical spondylosis/stenosis (10% of the women, 12.2% of the men) were

Table 1. The distribution of the patients according to the geographical regions.

Geographical regions	Osteoporotic patients n (%)	Patients with musculoskeletal pain (n)	The rate of osteoporotic patients (%)
Central anatolia	56 (14.6)	207	27,1
Mediterranean	136 (35.7)	372	36.6
Black Sea	84 (21.9)	214	39.3
Aegean	44 (11.5)	150	29.3
Eastern Anatolia	45 (11.8)	98	45.9
Marmara	17 (4.5)	100	17
Total	382 (100)	1141	

the most common diagnosis accompanying OP in all age groups. While 69.9% of the patients had one more diagnosis apart from OP, 25.7% had two and 4.4% had three or more concomitant musculoskeletal disorders.

The mean number of medications used, including the ones for OP treatment, was 3.0±1.2. The distribution of the number of drugs is shown in Figure 2. There was no statistically significant difference between men and women (p=0.543) and among age groups (p=0.430) (Table 3). While 38.2% of the patients were using medication only for OP, 22% of them were using one, 28.8% two and 11% three or more additional drugs. Among anti-osteoporotic drugs, the most commonly prescribed agents were bisphosphonates (59%) and they were followed by calcitonin (13.8%), strontium ranelate (11.6%), parathyroid hormone (7.1%) and selective estrogen receptor modulators (1.6%). Moreover, 91.8% of the patients were advised to take calcium and vitamin D supplements. For the treatment of musculoskeletal disease(s), systemic and/or local non-steroidal anti-inflammatory drugs (NSAIDs) were used in 46.6% and paracetamol (acetaminophen) in 24.6% of the patients. The enteral and topical forms of NSAIDs were combined in 72 patients. Out of all patients under the medication of bisphosphonates (a total of 223), the numbers of the ones who were concurrently using NSAIDs and paracetamol were 97 and 56, respectively.

Table 2. Regions of musculoskeletal pain in osteoporotic patients.

Pain localisation	Women (n=341) (%)	Men (n=41) (%)	Total (382) (%)
Low back	54.5	45.0	53.5
Upper back	39.6	40.0	39.6
Knee	28.3	27.5	28.2
Hip	15.2	32.5	17.0
Neck	13.4	20.0	14.1
Shoulder	12.8	20.0	13.6
Wrist-hand	5.1	12.5	5.9
Ankle-foot	4.5	2.5	4.3
Elbow	2.1	5.0	2.4

Table 3. The comparison of the number of the drugs according to gender and age groups.

		Mean±Standard deviation	Median	Test statistics	p-value	
Number of drugs used	Male	3.1±1.2	3	z=-0.609	0.543	
	Female	3.0±1.2	3			
	60-69	Male	3.1±1.3	3	$\chi^2= 1.689$	0.430
		Female	3.0±1.2	3		
≥80	Male	2.9±1.0	2,5			

Discussion

OP is a systemic skeletal disease characterized by low bone mineral density and micro-architectural deterioration giving rise to bone fragility and an increased susceptibility to fracture. OP is an important health problem occurring both in developed and developing countries (8-10). Despite significant progress in knowledge about OP, public awareness is required for effective management and prevention. Previously, in another nationwide study evaluating the educational status of osteoporotic individuals and their awareness about the disease, it was demonstrated that significant differences exist in terms of educational status, clothing style, smoking, level of physical activity, calcium intake, and knowledge about OP between geographical regions of our country. As a result, it was stated that education has profound effects on awareness about OP and many aspects of human behaviour, such as calcium intake, physical activity, clothing style and smoking (11).

The prevalence of OP increases due to increased life expectancy. Kanis et al. (9). reported that by using a reference derived from women aged 20-29 years, the prevalence of OP was estimated to be 21.2% in women between the ages of 50 and 84 years and 6.3% in men. Unfortunately, the data on prevalence of OP in our country is limited to the clinical trials. To the best of our knowledge, there is only one field survey in which calcaneal

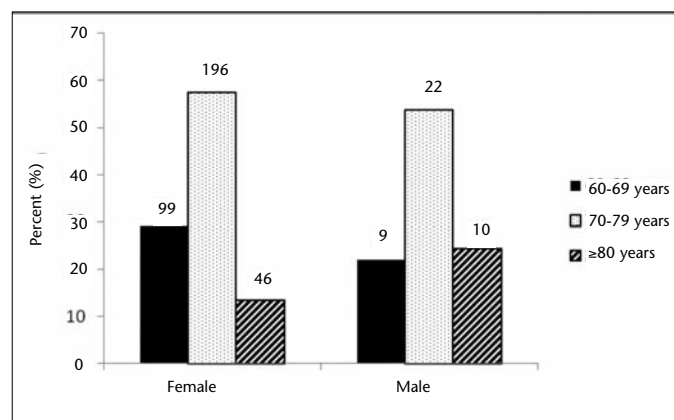


Figure 1. The distribution of the patients according to gender and age groups.

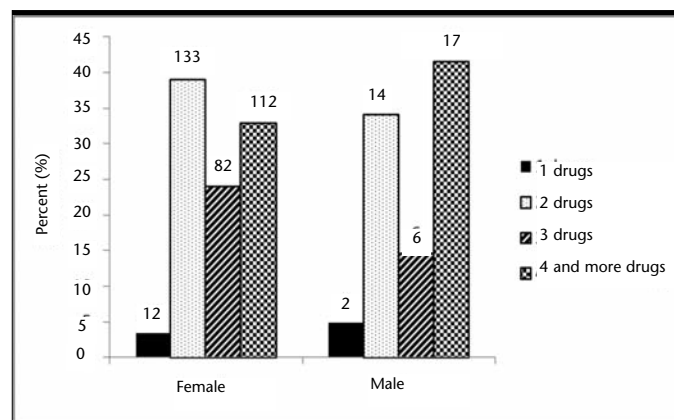


Figure 2. The distribution of the number of drugs being used by the patients.

ultrasonography was used to determine the prevalence of OP in the middle Anatolian population aged more than 40 years. In this study, it was found that the prevalence of OP was 14% in total, 17.1% in females and 9.2% in males. The highest prevalence value was determined in individuals older than 70 years of age and OP was more common among women compared to men (10). In the present study, 40.5% of the women and 13.7% of the men have the diagnosis of OP. These rates could seem like higher than expected, however, it should be kept in mind that the study population consisted of individuals seeking medical help for their musculoskeletal complaints. The relatively low number of men enrolled in this study could be explained by the findings suggesting that the prevalence rates of musculoskeletal disorders in most anatomic sites is higher among women. There are several possible explanations for the marked gender difference in musculoskeletal pain. First of all, women are more vulnerable to develop musculoskeletal pain owing to differences in sex-linked biological factors, different pain sensitivity or psychological factors. Secondly, women are, more than men, exposed to risk factors for musculoskeletal disorders, and lastly, women have greater willing to report pain (12,13).

Musculoskeletal pain is very common in elderly people, giving rise to functional and psychological impairments. Similar to the previous studies investigating the prevalence of musculoskeletal disorders in community-dwelling adults, we found that the most common body regions of musculoskeletal pain were low and upper back. These were followed by knee, hip, neck and shoulder. It has been also stated that especially in elderly, musculoskeletal pain was usually reported in multiple sites (13-15). Indeed, 50% of our patients had pain in more than one site. There is a wide range of disorders that constitute the problem of musculoskeletal pain in the elderly. In the present study, the most common coexisting musculoskeletal disorders in osteoporotic patients were determined as osteoarthritis, lumbar and cervical spondylosis/stenosis. This finding is consistent with a previous study concluding that OP and osteoarthritis are likely to be the main causes of musculoskeletal pain in elderly (13). Accordingly, knee and hip pain were thought to be the major symptoms of osteoarthritis. Nevertheless, back pain could take its source from OP or spondylosis/stenosis or both. However, it was not in the scope of this multicenter study to figure out the relation between regional musculoskeletal pain and final diagnosis.

In this study, we found that beside OP treatment, 61.8% of the patients were using at least one medication for the treatment of coexisting musculoskeletal diseases. The most commonly prescribed drugs were systemic and/or local NSAIDs. It has been established that NSAIDs are useful in chronic musculoskeletal pain, but the incidence of musculoskeletal disorders increases with age, and this is in parallel with the increased risk of adverse effects to the NSAIDs (16,17). Moreover, our findings indicate that pharmacological interventions for multiple musculoskeletal diseases make a remarkable contribution to the polypharmacy in elderly. Indeed, it has been recently reported that polypharmacy is correlated with various factors including age, sex, and presence of chronic medical conditions (18).

In conclusion, we want to draw attention to the importance of a thorough physical examination to reveal the underlying cause of back pain in elderly osteoporotic patients - spondylosis or OP itself. Once the diagnosis underlying the pain has been established, to minimize polypharmacy in elderly patients, non-pharmacological approaches like physical therapy and exercise programs may be considered for the management of musculoskeletal diseases.

Conflict of Interest:

Authors reported no conflicts of interest.

References

1. Woolf AD, Pfleger B. Burden of major musculoskeletal conditions. *Bull World Health Organ* 2003;81:646-56.
2. Elliott AM, Smith BH, Penny KI, Smith WC, Chambers WA. The epidemiology of chronic pain in the community. *Lancet* 1999;354:1248-52.
3. Picavet HS, Hazes JM. Prevalence of self reported musculoskeletal diseases is high. *Ann Rheum Dis* 2003;62:644-50.
4. Scudds RJ, Robertson JM. Pain factors associated with physical disability in a sample of community-dwelling senior citizens. *J Gerontol A Biol Sci Med Sci* 2000;55:393-9.
5. Satish S, Postigo LG, Ray LA, Goodwin JS. Chronic rheumatologic symptoms in a tri-ethnic sample of men and women aged 75 and older. *J Gerontol A Biol Sci Med Sci* 2001;56:471-6.
6. Boonen S, Dejaeger E, Vanderschueren D, Venken K, Bogaerts A, Verschueren S, et al. Osteoporosis and osteoporotic fracture occurrence and prevention in the elderly: a geriatric perspective. *Best Pract Res Clin Endocrinol Metab* 2008;22:765-85.
7. Ohtori S, Akazawa T, Murata Y, Kinoshita T, Yamashita M, Nakagawa K, et al. Risedronate decreases bone resorption and improves low back pain in postmenopausal osteoporosis patients without vertebral fractures. *J Clin Neurosci* 2010;17:209-13.
8. Cooper C. Epidemiology of osteoporosis. *Osteoporos Int* 1999;(Suppl 2):2-8.
9. Kanis JA, Johnell O, Oden A, Jonsson B, De Laet C, Dawson A. Risk of hip fracture according to the World Health Organization criteria for osteopenia and osteoporosis. *Bone* 2000;27:585-90.
10. Arslantas D, Metintas S, Unsal A, Isikli B, Kalyoncu C, Arslantas A. Prevalence of osteoporosis in middle anatolian population using calcaneal ultrasonography method. *Maturitas* 2008;59:234-41.
11. Gokce Kutsal Y, Atalay A, Arslan S, Başaran A, Cantürk F, Cindaş A, et al. Awareness of osteoporotic patients. *Osteoporos Int* 2005;16:128-33.
12. Wijnhoven HAH, de Vet HC, Picavet HSJ. Prevalence of musculoskeletal disorders is systematically higher in women than in men. *Clin J Pain* 2006;22:717-24.
13. Woo J, Leung J, Lau E. Prevalence and correlates of musculoskeletal pain in Chinese elderly and the impact on 4-year physical function and quality of life. *Public Health* 2009;123:549-56.
14. Antonopoulou M, Antonakis N, Hadjipavlou A, Lionis C. Patterns of pain and consulting behaviour in patients with musculoskeletal disorders in rural Crete, Greece. *Fam Pract* 2007;24:209-16.
15. Urwin M, Symmons D, Allison T, Brammah T, Busby H, Roxby M, et al. Estimating the burden of musculoskeletal disorders in the community: the comparative prevalence of symptoms at different anatomical sites, and the relation to social deprivation. *Ann Rheum Dis* 1998;57:649-55.
16. Elliott AM, Smith BH, Penny KI, Smith WC, Chambers WA. The epidemiology of chronic pain in the community. *Lancet* 1999;354:1248-52.
17. Kean WF, Rainford KD, Kean IRL. Management of chronic musculoskeletal pain in the elderly: options on oral medication use. *Inflammopharmacology* 2008;16:53-75.
18. Gokce Kutsal Y, Barak A, Atalay A, Baydar T, Kucukoglu S, Tuncer T, et al. Polypharmacy in the elderly: a multicenter study. *J Am Med Dir Assoc* 2009;10:486-90.