EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH
www.ejpmr.com

OSTEOPOROTIC FRACTURES: PROFILE OF PATIENTS IN TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Osteoporosis is a common worldwide disease which is characterized by reduction of bone mass and alteration of bone architecture and results in in increased bone fragility and increased risk of fracture. Because of aging of the population the prevalence of osteoporosis is expected to increase significantly in the future. Postmenopausal women and elderly men are most commonly affected by the osteoporosis. Osteoporosis is defined as "a skeletal disorder characterized by compromised bone strength leading to an increased risk of fracture." According to the National Institutes of Health Consensus Development Panel. Osteoporosis is subdivided into primary osteoporosis and secondary osteoporosis. Primary osteoporosis includes postmenopausal osteoporosis (type I) and senile osteoporosis (type II), and secondary osteoporosis, definable etiologic diseases such as malabsorption, medications such as glucocorticoids, hyperparathyroidism. The objective of this study was to evaluate the epidemiological profile of the population affected by osteoporotic fractures which includes proximal femur and proximal humerus fracture, distal radius, and the thoraco-lumbar spine fracture. **Material And Methods**: Study group (osteoporotic fractures,: Patients above 45 years of age presenting any one or a combination of the following fractures: proximal femur, proximal humerus, distal radius, and thoraco-lumbar spine, with a mechanism of low-energy trauma. Patients with high-energy fractures were not included. Data on demographic profile, fracture type, habits, personal history, previous fractures, level of physical activity, use of medications and behavioral measures to treat osteoporosis, and functional assessment was collected. **Results**: In our study it was found that there was female preponderance in both the groups in control group there were 18 males and 32 females while in osteoporotic fracture group there were 13 male and 37 females. Mean age in control group was 64.7 ±10.6 while in osteoporotic fracture group was 74.18 ±9.6. Weight in osteoporotic fracture group was higher (69 ± 15.4) than control group (63.9 ± 12.5). In control group 1(2%) was observed associated with Rheumatoid arthritis while in osteoporotic fracture group 3(6%) patients were observed. Most of the fracture were due to slip or fall. Out of 50 fractures included in the study 21(42%) were fracture of the proximal femur, 11(22%) were Proximal humerus, 16(32%) Distal radius and 2(4%) were Thoraco-lumbar spine fracture. **Conclusion:** Osteoporosis leads to an increased risk of fracture. Patients with osteoporotic fractures were older, a greater number were women, weighed less, had lower BMI.

KEYWORDS: Osteoporosis, proximal femur, proximal humerus, distal radius.

INTRODUCTION

Osteoporosis is a common worldwide disease which is characterized by reduction of bone mass and alteration of bone architecture and results in in increased bone fragility and increased risk of fracture.[1,2,3] Osteoporosis is considered as a public health problem worldwide. It has been estimated that 9 million osteoporotic fractures occur each year, the equivalent of one fracture every 3.5 seconds.[4] Because of aging of the population the prevalence of osteoporosis is expected to increase significantly in the future. Postmenopausal women and elderly men are most commonly affected by the osteoporosis.[5]

Because of its growing economic burden of, osteoporosis represents a major concern of the health care systems.[6] Osteoporosis is defined as "a skeletal disorder characterized by compromised bone strength leading to an increased risk of fracture." According to the National Institutes of Health Consensus Development Panel.[7] According to the World Health Organization (WHO) criteria, osteoporosis is defined as a bone mineral density (BMD) that lies 2.5 standard deviation (SD) or more below the average value for young healthy women.[8] Vitamin D is an important harmone on bone growth and remodelling. Also it has effect on also on immune function and other metabolic pathways involved in the healing process.[9]

Osteoporosis is subdivided into primary osteoporosis and secondary osteoporosis. Primary osteoporosis includes postmenopausal osteoporosis (type I) and senile osteoporosis (type II), and secondary osteoporosis, definable etiologic diseases such as malabsorption, medications such as glucocorticoids, hyperparathyroidism.[10,11]

Causes of osteoporosis include advancing age, female gender, hypogonadism or premature ovarian failure, low body mass index, rheumatoid arthritis, vitamin D deficiency, low calcium intake, hyperkyphosis, current smoking, alcohol abuse, immobilization, medications, such as glucocorticoids, anticoagulants, anticonvulsants.[12,1] Osteoporosis is a silent disease and sometimes cannot be diagnosed until any fracture occurs.

The objective of this study was to evaluate the epidemiological profile of the population affected by osteoporotic fractures which includes proximal femur and proximal humerus fracture, distal radius, and the thoraco-lumbar spine fracture. Also to identify factors potentially related to this fracture in relation to patients treated for osteoarthritis during the same period.

MATERIAL AND METHODS
The present study was conducted in the Dept. of Orthopaedics at Meenakshi Medical College Hospital and Research Institute. Patients included in the study were aged 45 and more with osteoporotic fractures.

Inclusion criteria: Study group (osteoporotic fractures,: Patients above 45 years of age presenting any one or a combination of the following fractures: proximal femur, proximal humerus, distal radius, and thoraco-lumbar spine, with a mechanism of low-energy trauma. Patients with high-energy fractures were not included.

Exclusion criteria: age below 45 years, fracture with high energy trauma, road side accidents.

Control group: patients with osteoarthritis: Patients above 45 years with clinical and or radiographic diagnosis of osteoarthritis of the knee, with and without comorbidities.

Data on demographic profile, fracture type, habits, personal history, previous fractures, level of physical activity, use of medications and behavioral measures to treat osteoporosis, and functional assessment was collected.

Written informed consent from all the patients was taken. Approval of the institutional ethics committee was obtained before starting the study.

Statistical analysis was done by patient characteristics that were described using absolute and relative frequencies. Association was verified using the chi-square or Fisher's exact tests.

Data was inserted on the Microsoft Excel 2013 version and SPSS for Windows software was used for statistical analysis.

RESULTS
50 patients with osteoporotic fractures and 50 patients with osteoarthritis of the knee was included in the study.

Table 1: Demographic profile of the patients.

	Control (n = 50)	Osteoporotic (n = 50)
Sex		
Male	18	13
Female	32	37
Age (years), mean ± SD	64.7 ±10.6	74.18 ±9.6
Weight (Kg), mean ± SD	63.9 ± 12.5	69 ± 15.4
BMI (Kg/m²), mean ± SD	26.9 ± 3.3	27.3 ± 6.4
Rheumatoid arthritis, n (%)	1(2)	3 (6)
Secondary osteoporosis, n (%)	6(12)	4 (8)
Previous falls, n (%)	12(24)	24(48)
Muscle weakness, n (%)	20(40)	21 (42)
Hypertension, n (%)	24(48)	35 (70)
Previous fractures, n (%)	7(14)	15 (30)
Prior diagnosis of osteoporosis, n (%)	12 (24)	24(48)
Calcium supplementation, n (%)	12 (24)	24 (48)
Taking medication for osteoporosis, n (%)	6(12)	10 (20)

In our study it was found that there was female preponderance in both the groups in control group there were 18 males and 32 females while in osteoporotic fracture group there were 13 male and 37 females. Mean age in control group was 64.7 ±10.6 while in osteoporotic fracture group was 74.18 ±9.6. Weight in osteoporotic fracture group was higher (69 ± 15.4) than control group (63.9 ± 12.5). Also BMI (body mass index) in control group was 26.9 ± 3.3 and osteoporotic fracture group was 27.3 ± 6.4. In control group 1(2%) was observed associated with Rheumatoid arthritis while in osteoporotic fracture group 3(6%) patients were

observed. Secondary osteoporosis in control and in osteoporotic fracture group was 6(12%) and 4(8%) respectively. Hypertension was observed in 24(48%) in control group while it was 35 970%) in osteoporotic fracture group. 12(24%) patients in control group were diagnosed previously of osteoporosis while it was 24(48%) in osteoporotic fracture group.

Table 2: Fractures in osteoporotic group.

Fracture type	No (%)
Proximal femur	21(42%)
Proximal humerus	11(22%)
Distal radius	16(32%)
Thoraco-lumbar spine	2 (4%)
Total	50

Most of the fracture were due ti slip or fall. Out of 50 fractures included in the study 21(42%) were fracture of the proximal femur, 11(22%) were Proximal humerus, 16(32%) Distal radius and 2 (4%) were Thoraco-lumbar spine fracture.

DISCUSSION
Osteoporosis is one of the silent disease until it is complicated by fractures and commonly these fractures occur following minimal trauma or, in some cases, with no trauma and take a major economic toll on the nation. This disease can be prevented, diagnosed, and treated before fractures occur. National Osteoporosis Foundation (NOF) first published the Guide in 1999 but even after so many years after publication of these guidelines it is found that many patients are not being given appropriate information about prevention and many patients are not receiving appropriate testing to diagnose osteoporosis or establish osteoporosis risk.[8]

There are universal recommendations by Cosman F etal.[8] Which includes Counsel on the risk of osteoporosis, diet that includes adequate amounts of total calcium intake, Advise on vitamin D intake, Recommend regular weight-bearing and muscle-strengthening exercise, Assess risk factors for falls and offer appropriate modifications, Advise on cessation of tobacco smoking and avoidance of excessive alcohol intake. Also diagnostic assessment has been proposed: Measure height annually, Bone mineral density (BMD) testing, vertebral imaging should be performed, check for secondary causes of osteoporosis and Biochemical markers of bone turnover. Also pharmacological treatment should be initiated just after the diagnosis and in those with hip or vertebral (clinical or asymptomatic) fractures, in postmenopausal women and men age 50 and older with low bone mass.[8]

In this study it was observed that the patients with osteoporotic fractures were older, a greater number were women, weighed less, had lower BMI which was in accordance withthe findings of other studies.[13,14]

In our study most of the fractures were proximal femur or hip fracture 21(42%).Hip fractures are associated with an 8 to 36 % excess mortality in 1 year, and mortality is in men than in women.[15] In our study out of 50 osteoporotic fractues 37(64%) were females. In a study by *Wright NC Et al.*[16] more than 9.9 million Americans have osteoporosis and a 43.1 million have low bone density. In a study it was found that About one out of every two women will experience an osteoporosis-related fracture at some point in her lifetime, as will approximately one in five men.[17]

In our study only 2(4%) fractures were vertebral. In a study it was seen that the majority of vertebral fractures are clinically silent in initial stages, and are often associated with symptoms of pain, disability, deformity, and mortality.[18]

It was observed that 1(2%) in control group were suffuring from rheumatoid arthritis while in osteoporotic frscture group it was 3(6%). In Oslo-Truro-Amsterdam (OSTRA) collaborative study it was observed that 15–20% of rheumatoid arthritis patients are affected by osteoporosis of the hip and spine.[19] Inflammation due to rheumatoid arthritis plays a key role in arthritis activity, as well as in bone resorption and osteoporosis.[20]

CONCLUSION
Osteoporosis is a skeletal disorder characterized by compromised bone strength leading to an increased risk of fracture. Patients with osteoporotic fractures were older, a greater number were women, weighed less, had lower BMI.

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