ORIGINAL RESEARCH

Assessment of osteoporosis in postmenopausal women

[1]Dr. Ayush Chauhan, [2]Dr. Sharad Kumar Sahu, [3]Dr. Smriti Chaturvedi, [4]Dr. Dinesh Kumar Patel

[1]Consultant Orthopaedic Surgeon, Chatrapati Shivaji Hospital, Sagar, M.P., India
[2]Assistant Professor, Department of Surgery Bundelkhand Medical College, Sagar, M.P., India
[3]Assistant Professor, Department of Pathology, Bundelkhand Medical College, Sagar, M.P., India

Corresponding Author
Dr. Dinesh Kumar Patel
Consultant ENT-HNS Surgeon, Bhagyodaya Hospital, Sagar, M.P., India
Email- patelgmc@gmail.com

ABSTRACT
Background: The disease known as osteoporosis, which is characterized by a decrease in bone mineral density, is referred to as "porous bones. The present study was conducted to assess the level of osteoporosis in post-menopausal women. **Materials & Methods:** 112 post-menopausal women age ranged from 40-60 years were selected. Data on fractures, anthropometry, demographics, and OP risk factors were gathered. A comprehensive clinical assessment was performed. The level of calcium in the blood was measured. Achilles ultrasonic bone densitometer was used to measure BMD in all participants. **Results:** The age group 40-50 years had 22, and 50-60 years had 90 subjects. The difference was significant (P< 0.05). The duration of menopause was 1-5 years in 10, 6-10 years in 28 and >10 years in 74 subjects. Osteoporosis was seen in 45 subjects. Fracture was seen in 11 hips, 6 wrists and 3 Radius/Ulna. The difference was significant (P< 0.05). The mean serum calcium level in osteoporosis subjects was 2.01 µg/ml and in non- osteoporosis subjects was 7.84 µg/ml. The difference was significant (P< 0.05). **Conclusion:**Due to the high rate of osteoporosis in postmenopausal women, routine evaluation of bone mineral density is required.
Key words: Bone mineral density, Menopausal, Osteoporosis

INTRODUCTION

The disease known as osteoporosis, which is characterized by a decrease in bone mineral density, is referred to as "porous bones". It is seen in the older population and is considered a modern epidemic. Osteoporosis raises the risk of bone breakage because it weakens and fractures readily. These fractures may cause pain, deformity, and immobility.[1] About 10% of women suffer from this condition. Over 500,000 vertebral fractures and 247,000 hip fractures are reported each year.[2] Women who have osteoporosis are more likely to fracture. The demographic trends for hip fractures and osteoporosis are comparable. Hip fractures are considered to be the most dangerous side effect associated with osteoporosis.[3] The annual cost of healthcare to treat this problem is between seven and ten billion US dollars.Hormonal, mechanical, and dietary factors all influence skeletal growth, bone remodeling regulation, and skeleton maintenance.[4] Dietary, environmental, behavioral, genetic, reproductive status and history, disease states, drug therapy, and other factors that are not directly related to bone density are included in the following categories. There are several methods for determining bone mineral density (BMD) in an objective manner.[5] The most popular method, dual-energy X-ray absorptiometry (DEXA), is thought of as the gold standard test since it is inexpensive, easily accessible, easy to use, and provides a reasonably accurate estimate of the BMD.[6,7]The present study was conducted to assess the level of osteoporosis in post-menopausal women.

MATERIALS & METHODS

The present study comprised of112post-menopausal women age ranged from 40-60 years. All women gave their written consent to participate in the study.
Data such as name, age etc. was recorded. Data on fractures, anthropometry, demographics, and OP risk factors were gathered. A comprehensive clinical assessment was performed. The level of calcium in the blood was measured. Achilles ultrasonic bone densitometer was used to measure BMD in all participants.Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table: I Distribution of subjects

Age group (Years)	Number	P value
40-50	22	0.01
50-60	90	

Table I shows that age group 40-50 years had 22, and 50-60 years had 90 subjects. The difference was significant (P< 0.05).

Table: II Assessment of parameters

Parameters	Variables	Number	P value
Duration of menopause (years)	1-5	10	0.05
	6-10	28	
	>10	74	
Osteoporosis	Yes	45	0.02
	No	67	
Type of fracture	Hip	11	0.04
	Wrist	6	
	Radius/Ulna	3	

Table II, graph Ishows that the duration of menopause was 1-5 years in 10, 6-10 years in 28 and >10 years in 74 subjects. Osteoporosis was seen in 45subjects. Fracture was seen in 11 hips, 6 wrists and 3 Radius/Ulna. The difference was significant (P< 0.05).
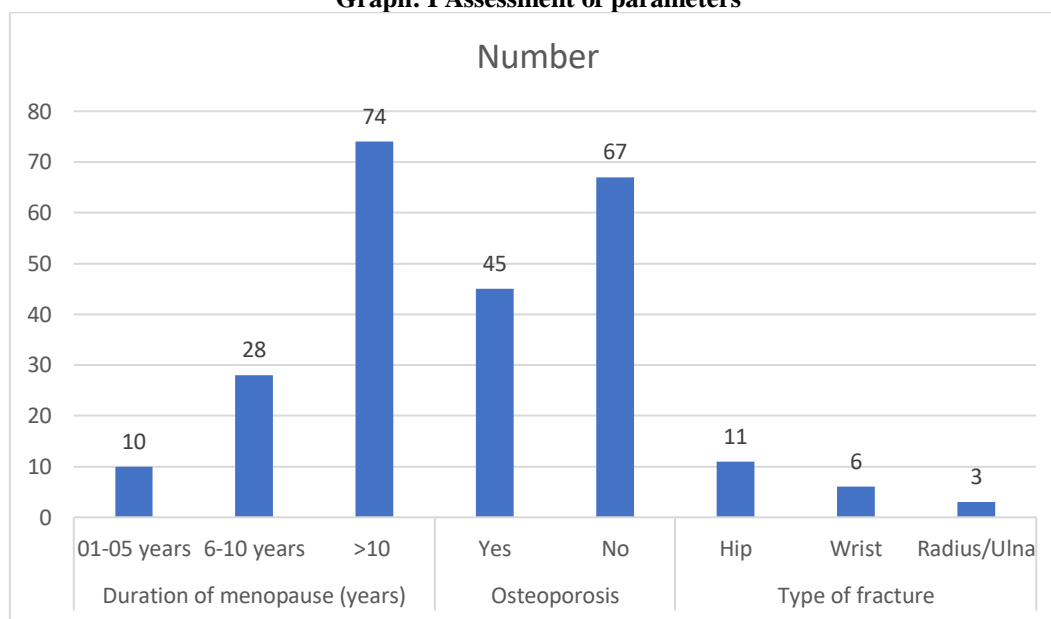
Graph: I Assessment of parameters

Table: III: Serum calcium level in osteoporosis and non- osteoporosis subjects

Condition	Mean (µg/ml)	P value
Osteoporosis	2.01	0.01
Non osteoporosis	7.84	

Table III shows that the mean serum calcium level in osteoporosis subjects was 2.01 µg/ml and in non-osteoporosis subjects was 7.84 µg/ml. The difference was significant (P< 0.05).

DISCUSSION

The hallmarks of osteoporosis, a multifactorial systemic skeletal disease, are reduced bone mineral density (BMD) and micro-architectural destruction of bone tissue. Dual X-ray absorptiometry assessment of bone mineral density (BMD) is the gold standard for osteoporosis diagnosis.[8] According to the World Health Organization, osteoporosis is characterized by a T-score of less than or equal to 2.5, whereas osteopenia is defined as a T-score ranging from 1.0 to 2.5.[9] The lumbar spine and femoral neck are the indicated anatomic regions of attention. Primary osteoporosis mostly affects women 10-15 years postmenopausal and senior males 75-80 years of age since BMD decreases with age.[10,11] Menopause begins with a decrease in estradiol synthesis and an increase

in follicle-stimulating hormone (FSH) levels.Women going through menopause will experience a number of painful symptoms.[12,13]The present study was conducted to assess the level of osteoporosis in post-menopausalfemale. We found that the age group 40-50 years had 22, and 50-60 years had 90 subjects. 4,960 women were enlisted by Rentero et al[14] at 96 primary care facilities. The three main risk factors for osteoporosis were: height reduction (30.1%), benzodiazepine usage (35.1%), and insufficient calcium consumption (43%). Having experienced at least one fall in the year prior, having a positive family history of falls (especially on the mother's side), smoking, having kyphosis, having any condition that affects bone metabolism, having a personal history of falls, and not being able to get out of a chair without using one's arms are other relatively common factors. The least common causes were issues with sensory perception that interfere with the patient's ability to walk and weight reduction of more than 10% during the previous ten years. We observed that the duration of menopause was 1-5 years in 10, 6-10 years in 28 and >10 years in 74 subjects. Osteoporosis was seen in 45 subjects. Fracture was seen in 11 hips, 6 wrists and 3 Radius/Ulna. Khinda et al[15] in their study osteoporosis and osteopenia were confirmed on the basis of T-scores using dual energy X-ray absorptiometry (DXA) at the hip (femoral neck) and lumbar spine regions (L1–L4 vertebrae). The prevalence of osteoporosis and osteopenia was observed to be 30.50% and 44.20%, respectively, in postmenopausal women of Punjab. In univariable and multivariable regression analysis, variables independently influencing the risk of osteoporosis and osteopenia were: higher systolic blood pressure (95%CI: 1.22–3.11 & 1.08–2.49), triglyceride levels (95%CI: 1.21–3.10 & 1.42–2.51), poor sleep quality (95%CI: 1.91–2.47 & 1.76–3.47) and C-reactive protein levels (95%CI: 2.18–3.56 & 1.03–2.18). Years since menopause >10 years was observed to be an independent predictor for the risk of osteopenia but not for osteoporosis. Higher body mass index (>30 kg·m−2) was observed to be a significant protective factor against the risk of osteoporosis (95%CI: 0.26–0.68) and osteopenia (95%CI: 0.19–0.52). The higher prevalence rates of osteoporosis and osteopenia in postmenopausal women of Punjab are alarming. We observed that the mean serum calcium level in osteoporosis subjects was 2.01 µg/ml and in non-osteoporosis subjects was 7.84 µg/ml.Franic et al[16] presumed that the group of women at higher risk of osteoporosis comprised of 1274 enrolled women between the ages of 60 and 75. Every extra year of life resulted in an 8% (p=0.001) increase in the chances ratio for osteoporosis. From 24.9% in 60–64 years of age to 37.4% in 70–75 years of age, the prevalence of OP rose with age. The odds ratio for osteoporosis in non-smokers was 0.424, a statistically significant value (p<0.05). The odds ratio for osteoporosis increased by two times for BMI <18.5,

although this difference was not statistically significant. When taking into account prior fractures during the last five years (p<0.001), hip fractures (p=0.001), wrist fractures (p=0.002), and observed height loss (p<0.001), the risk of fractures increased with age in women aged 60-75 (N= 1274). The use of hormone treatment (HT) reduced the prevalence of OP by 25 percent.

The shortcoming of the study is small sample size.

CONCLUSION
Authors found thatdue to the high rate of osteoporosis in postmenopausal women, routine evaluation of bone mineral density is required.

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