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Original Research

Assessment of level of osteoporosis in post- menopausal women

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ABSTRACT:

Background: Osteoporosis is characterized by a decreased mineral density of the bones. The present study was conducted to assess level of osteoporosis in post- menopausal women. **Materials & Methods:** 82 post- menopausal women underwent measurement of blood calcium level was done. All subjects underwent BMD measurement using Achilles ultrasound bone densitometer. **Results:** Age group 45-55 years had 26, 55-65 years had 24 and >65 years had 32 subjects. Duration of menopause was 1-5 years in 10, 6-10 years in 24 and >10 years in 48 subjects. Osteoporosis was seen among 25 subjects. The mean serum calcium level in osteoporosis subjects was 3.45 µg/ml and in non- osteoporosis subjects was 7.30 µg/ml. The difference was significant (P< 0.05). **Conclusion:** Regular assessment of bone mineral density in post- menopausal women is mandatory as the level of osteoporosis in post- menopausal women was high.

Key words: Bone mineral density, Osteoporosis, Post- menopausal women

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INTRODUCTION

Osteoporosis literally means "porous bones" and is characterized by a decreased mineral density of the bones. It is seen in aging population and is considered as a modern epidemic. Osteoporosis makes the bones weak and fragile, increasing the chances of them getting fractured even with trivial trauma. Such fractures may lead to pain, deformity, and disability.[1] This disease affects approximately ten percent of the female population. Around 500,000 vertebral fractures and 247,000 hip fractures are reported annually.[2] Women with osteoporosis are more likely to experience fractures. Demographic trends for hip fracture parallel those for osteoporosis. Hip fracture is considered the most serious osteoporosis-associated complication. Health care costs to treat this complication range from seven to ten billion US dollars annually.[3] Hormonal, mechanical, and dietary factors are crucial to the maintenance of the skeleton, regulation of the bone remodeling process, and skeletal growth. Other supplementary factors involved in the development of osteoporosis are classified into demographic and genetic, reproductive status and history, dietary, environmental, behavioral, disease states, and drug therapeutic categories.[4] Many methods of objective evaluation of bone mineral density (BMD) are available. The most widely used method is dual energy X-ray absorptiometry (DEXA) which is considered as the gold standard test as it is cheap, easily available, and easy to use and provides a sufficiently accurate estimation of the BMD.[5] The present study was conducted to assess level of osteoporosis in post- menopausal women.

MATERIALS & METHODS

The present study was conducted among 82 post-menopausal women. Data such as name, age etc. was recorded. A thorough clinical examination was carried out. Measurement of blood calcium level was done. All subjects underwent BMD measurement using Achilles ultrasound bone densitometer. Results were tabulated and subjected to statistical analysis using Mann Whitney U test. P value less than 0.05 was considered significant.

RESULTS

Table I Age wise distribution of subjects

Age group (Years)	Number	P value
45-55	26	0.04
55-65	24	
>65	32	

Table I shows that age group 45-55 years had 26, 55-65 years had 24 and >65 years had 32 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	0.02
	6-10	24	
	>10	48	
Osteoporosis	Yes	25	0.01
	No	57	

Table II, graph I shows that duration of menopause was 1-5 years in 10, 6-10 years in 24 and >10 years in 48 subjects. Osteoporosis was seen among 25 subjects. The difference was significant (P< 0.05).

Graph I Assessment of parameters

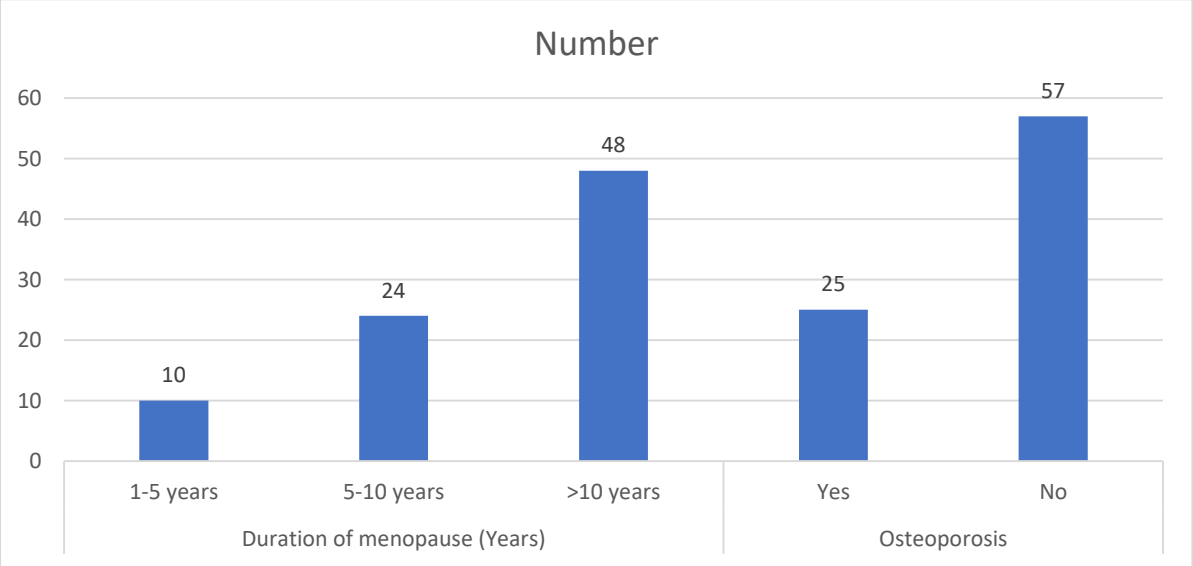

Table III Measurement of serum calcium level

Status	Mean (µg/ml)	P value
Osteoporosis	3.45	0.01
Non osteoporosis	7.30	

Table III shows that mean serum calcium level in osteoporosis subjects was 3.45 µg/ml and in non- osteoporosis subjects was 7.30 µg/ml. The difference was significant (P< 0.05).

DISCUSSION

Osteoporosis, a multifactorial systemic skeletal disease, is characterized by low bone mineral density (BMD) and micro-architectural deterioration of bone tissue resulting in bone fragility. BMD measured by dual X-ray absorptiometry is the gold standard to diagnose osteoporosis.[6] According to WHO criteria, osteoporosis is defined as the T-score of less or equal to 2.5 and osteopenia as the T-score between 1.0 and 2.5. The femoral neck and lumbar spine are recommended as the anatomic region of interest.[7] BMD decreases with age, thus primary osteoporosis mainly occurs in women 10–15 years after menopause and elderly men around 75–80 years old. Menopause is a natural physiological phenomenon resulting from primary ovarian failure secondary to apoptosis or programmed cell death. Ovarian function declines with age.[8] The onset of menopause features the decreasing production of estradiol, as well as increasing levels of follicle-stimulating hormone (FSH). During the menopausal transition period, women will experience a number of

bothersome symptoms, such as hot flashes, night sweats, vaginal atrophy and dryness, dyspareunia, sleep disturbance, and mood swings.[9] The present study was conducted to assess level of osteoporosis in post- menopausal women.

In present study, age group 45-55 years had 26, 55-65 years had 24 and >65 years had 32 subjects. Schnatz et al[10] conducted a study in a sample of 619 women and found that history of fracture (odds ratio [OR], 12.49), weight less than 127 pounds (OR, 3.50), and use of anticoagulants (OR, 5.40) increased the chance of developing osteoporosis. In contrast, multiparity (OR, 0.45) and history of breast-feeding (OR, 0.38) decreased the development of osteoporosis in postmenopausal women. In women aged 49 to 54, breast-feeding was significantly protective, while low body mass index was most indicative of osteoporosis in women ages 55 to 64. Both previous fracture and low body mass index were associated with osteoporosis in women over age 64. The current results are consistent with other studies suggesting that previous fracture, low body weight, and use of anticoagulants increase the risk of osteoporosis. Results also suggest that a history of pregnancy and breast-feeding protects against the development of postmenopausal osteoporosis, especially in women aged 49 to 54.

We observed that duration of menopause was 1-5 years in 10, 6-10 years in 24 and >10 years in 48 subjects. Osteoporosis was seen among 25 subjects. Gopinathan et al[11] assessed the level of awareness in postmenopausal women using the Osteoporosis Health Belief Scale (OHBS). The bone mineral density (BMD) was measured in each case by dual energy X-ray absorptiometry. Height, weight, and body mass index (BMI) of the participants were noted. No statistically significant difference was noted in the seven component parameters of OHBS among the normal, osteopenic and osteoporotic women suggesting that the health belief regarding susceptibility is not much different between the three groups of the study population. A statistically significant difference between the mean BMI of normal and osteoporotic population was noted.

We found that mean serum calcium level in osteoporosis subjects was 3.45 µg/ml and in non-osteoporosis subjects was 7.30 µg/ml. In a meta-analysis of 57 trials (both prevention and treatment trials) which included about 10,000 women, the combined results imply that on average the change in bone density is significantly higher in the MHT group (both opposed and unopposed estrogen) at all measurement sites. After one year the MHT group showed an average increase of bone mineral density at the lumbar spine of 5.4%, and the forearm and femoral neck were also increased by 3.0% and 2.5% respectively. After two years of treatment, the percentage change in favor of MHT increased by about 1.5% at all sites with an increase by 6.8%, 4.5%, and 4.1% at the lumbar spine, forearm, and femoral neck, respectively.[12]

CONCLUSION

Authors found that regular assessment of bone mineral density in post- menopausal women is mandatory as the level of osteoporosis in post-menopausal women was high.

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