RESEARCH ARTICLE

EVALUATION OF OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN

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ARTICLE INFO	ABSTRACT
	Osteoporosis is a metabolic disorder of bone that is characterized by low bone mineral density (BMD) and microarchitecture deterioration of bone tissue which predisposes to increased fracture risk. The prevalence of osteoporosis increases with age and common in postmenopausal women. Measurement of bone mineral density is the best available method to confirm or rule out osteoporosis. The present cross sectional study was undertaken to assess the osteoporosis in postmenopausal women by measuring bone mineral density (BMD). 120 postmenopausal women with 45-80 years of age were included in this study. Bone mineral density was assessed by Achilles ultrasound bone densitometer. The results of BMD were analyzed on the basis of T-score. In our study 82% of the postmenopausal women had a subnormal T- scores. Of the 120 participants 18% were normal, 51.7% were osteopaenic, 23.3% were osteoporotic, 6.7% were severe osteoporotic. So our study recommends that postmenopausal women should be screened for osteoporotic fracture risk which may be an important strategy in the management of postmenopausal osteoporosis.

INTRODUCTION

Osteoporosis is a metabolic disorder of the bone that is characterized by low bone mineral density (BMD) and microarchitecture deterioration of bone tissue leading to bone fragility and susceptibility to fracture. Osteoporosis is usually asymptomatic until fracture occurs, as a result in most of the patients osteoporosis is diagnosed after a fracture. Hence it is also called as a silent epidemic. Postmenopausal Osteoporosis is a very common problem leading to increased risk of fractures. Approximately 70% fractures in women aged more than 45 years being due to Osteoporosis most common being hip fracture.

Osteoporosis is a major global public health problem, and it is epidemic in the United States, presently threatening more than 44 million individuals and affecting 10 million Americans. A women left untreated has a 50% chance of suffering from osteoporotic fracture. The United States Preventive Services Task Force (USPSTF) found good evidence that the risk for Osteoporosis and fracture increases with age and other factors, that bone density measurements accurately predict the risk for the fractures in the short term and treating asymptomatic women with Osteoporosis reduces their risk fractures. Measurement of bone mineral density by bone densitometer is the best available method to confirm or rule out diagnosis of

Osteoporosis by WHO criteria depending on T-score and Z-score. Low bone mineral mass is the main factor underlying osteoporotic fracture.

The risk factors for Osteoporosis are advanced age, menopause, white or Asian ethnicity, history of fractures, family history of Osteoporosis, history of falls, lack of physical activity, smoking, excessive use of caffeine or alcohol, low Ca or Vit- D intake. Genetic factors account for upto 80 percent of the bone mass variation in any population. The present study was undertaken for assessment of Osteoporosis in postmenopausal women.

MATERIALS AND METHODS

This study was conducted in the department of physiology, Sri Venkateswara Medical College, Tirupati. 120 postmenopausal women aged between 45-80 years were included this study. Postmenopausal women with smoking, alcoholism, subjects with diabetes mellitus, hepatic diseases, renal disorders, Cushing's syndrome, auto immune diseases such as rheumatoid arthritis, women who had undergone hysterectomy, who were on hormone replacement therapy, who were taking Ca or Vit-D preparations were excluded. The menopausal status was determined on the bases of clinical history, symptoms of menstrual cycles, hot flushes and irritability.

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A detailed medical, obstetrical, menstrual, family and drug history was recorded in a proforma designed for this study. Height and weight were measured. Body mass index (BMI) was calculated by using the formula weight kg/height (cm)^2. The bone mineral density was measured by Achilles ultrasound bone densitometer. Bone quantitative ultrasound (QUS) is relatively inexpensive, easy, does not involve ionizing radiation and is portable making it particularly suitable for use in screening programmes QUS measurements made by transmitting ultrasonic signals through the heel have proven to be the most clinically useful.

The results of BMD were analyzed on the basis of T-scores according to WHO criteria. Table-1

Table-1 who criteria for assessing disease severity

S.no	Diagnostic classification	T-score
1	Normal	> - 1.0
2	Osteopaenia	-1.0 to -2.5
3	Osteoporosis	<= - 2.5
4	Severe Osteoporosis	<- 2.5 with fracture

RESULTS

Data was collected regarding age, duration of menopause, BMI, family history, symptoms suggestive of low BMD.

Table-2 Distribution of subjects according to age, duration of menopause, BMI family history and symptoms

s.no	Variables	Number	Percentage %
1.	Age in Years		
	45-55	52	43.3
	56-65	36	30
	66-75	24	20
	76-80	8	6.7
2.	Duration of menopause in years		
	1-5	18	15
	6-10	64	53.3
	>10	38	31.7
3.	BMI		
	< 25	72	60
	> 25	48	40
4.	Family History		
	Yes	62	52
	No	58	48
5.	Symptom		
	Backache	80	66.7
	polyarthralgia	32	26.7
	kyphosis	8	6.7

As evident from Table-2 it was observed that among 120 subjects 43.3% (n=52) were in the age group of 45-55 years, 53.3% (n=64) of subjects the duration of menopause was 6-10 years, In 60% (n=72) subjects BMI was < 25, 66.7% (n=80) of subjects have backache.

Table-3 Distribution of subjects according to the T-scores

s.no	Diagnostic Classfication	Number	Percentage%	T-score
1	Normal	22	18.3	> - 1.0
2	Osteopaenia	62	51.7	-1.0 to -2.5
3	Osteoporosis	28	23.3	<= - 2.5
4	Severe osteoporosis	8	6.7	< -25 with fracture

Of the 120 subjects 18.3% (n=22)were normal bone density, 51.7% (n=62) were osteopaenic, 23.3 (n=28) were osteoporotic 6.7% (n=8) were severe osteoporotic

DISCUSSION

The silent progressively metabolic bone disease is widely prevalent in India and osteoporotic fractures are a common cause of morbidity and mortality in adult Indian women. With increase in the population, world wide osteoporosis is the commonest bone problem of the elderly people. Due to demographic change it is estimated that the risk of hip fractures will increase approximately upto 6 folds till 2050. The outcome of study showed increase in duration of menopause was associated with low bone mineral density. In more than 50% of subjects the duration of menopause was 6-10 years. For women, there is a period of about 10-15 years when bone loss is accelerated due to estrogen withdrawal at the menopause, when more than one third of the bone is lost from the skeleton. In our study 43.3% (n=52) were in the age group of 45-55 years. With the onset of menopause, rapid bone loss occurs which is believed to the average approximately 2-3% over the following 5-10 years being greatest in the early postmenopausal years.Our study show positive correlation between low BMI and low BMD. 60% (n=72) had low BMI (< 25) 52% (n=62) had family history of osteoporosis. Genetic factors account for upto 80 percent of the bone mass variation in any population. The outcome of this study showed 18.3% (n=32) normal, 51.7% (n=62) osteopaenic, 23.3% (n=28) osteoporotic, 6.7% (n=8) severe osteoporotic according to T-score of WHO criteria.

Osteoporosis is a condition that can be prevented and treated if diagnosed early and accurately. Unfortunately it is often undiagnosed until fracture occurs. Therefore the no. of people who are screened for this disease must be increased.Measuring bone mineral density is the important tool in the diagnosis of osteoporosis. Risk for osteoporosis increases with age. A patient risk for fracture increases with age even at the same BMD or T-score.

In our study of the 36 subjects who were osteoporotic majority were more than 55 years old similar to other studies. Backache is major symptom and signifies vertebral compression fractures. Approximately 50% of women over 65 years have spinal compression fractures leading to back pain. In our study backache was the commonest symptom and present in 66.7% of the subjects

CONCLUSION

Osteoporosis and its consequent fractures cause significant morbidity and mortality among both men and women, were commonly postmenopausal women. Assessment of bone mineral density is the single best predictor of risk for osteoporotic fractures and contributes to clinical decision-making. So public health promotional activities should be implemented in view of the relatively high prevalence of osteoporosis to minimize both the morbidity of the disease and its burden on society.

References

1. Kanis JA, Melton U, Christiansen C *et al*. The diagnosis of Osteoporosis. J Bone Miner Res 1994, 9 : 1137-41.

2. NIH consensus Development panel on Osteoporosis prevention at http://www.nof.org.
3. National Osteoporosis foundation 2003 disease statistics available at http:// www. nof.org.
4. Sanjay N.G. and Rohankar, M.A. Postmenopausal osteoporosis and exercise. Asian J. of Obs and Gynae Practice, 1999, 3,3,17-21.
5. Cooper c, Epidemiology of osteoporosis Int 1999, 9 (suppl.2) 2-8.
6. National Osteoporosis Foundation www.nof.org/osteoporosis/stats.htm,2003
7. Chrischilles EA, Butler CD, Davis C S *et al.* A model of life time Osteoporosis impact. Arch intern Med 1991; 151:2026-32.
8. Kanis JA. Assessment of fracture risk and its application to screening for post menopausal osteoporosis. Synopsis of a WHO report. Osteoporosis Int 1994; 4:368-81
9. World Health Organization. Assessment of fracture risks and its application ot ultra sonic attenuation in cancellous bone. Eng med 1984; 13:89-91.
10. Prentice , A. Is nutrition important in osteoporosis ? proceedings of the nutrition society, 1977 ,56, 357-367.
11. Reld DM ane New SA, Nutritional influences on bone mass. Proceedings of the Nutritional Society, 1997, 56, 977-987.
12. Weaver, C.M. The growing years and prevention of osteoporosis in later-life. Proceedings of the nutrition society, 2000, 59,3003-36.
13. Morrision, N.A.Ql. JC, Takita, A, Kelly P.J. Cropts, L Nguyen, T.V Sambrock, P.N. and Eis man, J.A. predictors of bone density from Vit D receptor allels Nature, 1994, 367-287.
14. Marchigiano, G. calcium intake in mid life women: one step in preventing osteoporosis Orthop Nurs, 1999,sept/oct, 11-18.
15. Mascarenhas, M.R. Tershakovec, A.M. Stettler, N.

16. Nutrition intervention in childhood for the prevention of chronic diseases in adulthood, curr. Opin pediatr . 1999, 11 , 598-604.
17. World Health Organization. Appropriate body mass index Asian populations and its implication for policy and intervention strategies. The lancet 2004; 363; 15-63
18. Genant -HK, Engelke K, Fuerst T, *et al.* Non invasive assessment of bone mineral and structure: state of the art. J Bone miner Res 1996; 11:707-30.
19. Gluer C-C, for the international quantitative ultrasound consenses group. Quantitative ultrasound techniques for the assessment of osteoporosis: expert agreement on current status. J Bone Miner Res 1997; 12:1280-8.
20. World Health Organization . Assessment of fracture risks and its application to screening of postmenopausal osteoporosis. Genava : WHO. 1994: 1- 129.
21. Cooper c, Compian G, Melton IJ. Hip fractures in the elderly: a world wide projection osteoporosis Int 1992; 2: 285-9.
22. Comstan . J, Osteoporosis. In the management of common metabolic bone disorders, 1993,PP, 29-62 (G Campbell, J. Compston and A Crisp, editors), Cambridge University Press, Cambridge.
23. Hui SL, Slemenda CW, Johston CC Jr . Age and bone mass as predictors of fracture in a prospective study. J Clin invest 1988; 81: 1804 - 9.
24. Kanis J A, Johnell O, Oden A, Ten year probabilities of osteoporotic fractures according to BMD and diagnostic thresholds. J Miner Res 2001; 16:5194.
25. Siris E S, Miller PD, Barrett Connor E *et al*, identification and fracture out comes of undiagnosed low bone mineral density in postmenopausal women: Results from the National osteoporosis risk assessment . JAMA 2001; 286: 2815-22.
26. Patel AM, Khadilkar S S, Postmenopausal osteoporosis. menopause J P publishers, 42-66.

How to cite this article:

Sujatha V *et al*., Evaluation Of Osteoporosis In Postmenopausal Women. *International Journal of Recent Scientific Research Vol. 6, Issue, 7, pp.5125-5127, July, 2015*

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