Study Of BMD Using Femur Densitometer In An Air Force Station

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Abstract

Background: Osteoporosis does not have dramatic clinical presentation except when fracture occurs. Tools like DEXA (dual energy X ray deabsorptiometry) can help screen those who would be more prone to osteoporosis enabling us to manage them in a better way.
Methods: All men and women women who attended the health camp at the station medicare centre, Bakshi Ka Talaab, Lucknow were offered bone densitometry. The results of BMD were classified as T-score as defined by WHO criteria(3) in to normal, osteoporotic and osteopenic.
Results: 37.00% had N BMD as per WHO criteria (T>-1SD), 12.59% had osteoporosis (T<-2.5SD) and 50.39% had osteopenia (T<l SD to -2.5SD). Among menopausal women, 6(31.5%) were osteopenic and 1 (5.2%) were Osteoporotic. In non-Menopausal 36(58.06%) were osteopenic and 8(12.09%) were Osteoporotic . Among females, osteopenic and Osteoporosis started at an early age as compared to males.

INTRODUCTION

Osteoporosis is a systemic skeletal disease characterised by low bone mass and microarchitectural deterioration of bone tissue with a consequent increases in fragility and susceptibility to fracture (1).

One of the most rapidly emerging global health problem in postmenopausal women is osteoporosis. In India osteoporosis is highly prevalent with an estimated 30 million women diagnosed to have osteoporosis.(2)The prevalence of osteoporosis in India is high. Osteoporotic fractures are thought to occur early in Indian women. The proportion of elderly population is rapidly increasing in India. Aging population and postmenopausal women are concerned about problem, caused by osteoporosis. Osteoporosis is a silent epidemic, does not have dramatic clinical presentation except when fracture occurs.

Tools like DEXA (dual energy X ray deabsorptiometry) can help screen those who would be more prone to osteoporosis enabling us to manage them in a better way. It has helped us to improve Quality of life. Measurement of bone mineral content can help identify those who are likely to develop osteoporosis. Keeping this in view the above study was undertaken to study BMD using bone densitometer.

METHODS

This cross sectional study was conducted on a health camp organised in Bakshi ka Talaab, Lucknow. All men and women who attended the camp for general check up at the station medicare centre were offered bone densitometry. Baseline dexa scans were analysed and BMD of femur was measured by DEXA. The no. of participants were 127 ,aged 20 years and above who attended the camp .A standardised proforma was filled. Upon detection of osteoporosis/osteopenic, patients were referred for treatment .All participants belonged to middle socio economic strata. The instrument used was DEXA . Based on densitometer readings, WHO has set criteria for defining osteoporosis using T scores .T scores describes bone mass of the patient compared to the mean peak bone men of the normal young adult reference population. The results of BMD were classified as T-score as defined by WHO criteria(3) in to normal, osteoporotic and osteopenic.

WHO CRITERIA;-

Normal (<-1SD) A value of BMD that is below 1SD of young adult reference mean.

Osteopenia(>1--2.5SD) A value of BMD that is more than 1SD below the young adult mean but less than 2.5SD below this this value.

Osteoporosis(>2.5SD) A value of BMD that is 2.5SD or more below young adult mean.

Severe osteoporosis;- A value of BMD that is more than 2.5SD below young adult mean in the presence of 1 or more fragility fracture .

Results were tabulated and analysed statistically

RESULTS

Table 1

Age and Sex distribution of participants (n=127)

Age(years)	Male	Female	Total(percentage)
21-25	01	01	02(1.57%)
26-30	12	01	13(10.23%)
31-35	14	07	21(16.535%)
36-40	18	07	25(19.685%)
41-45	19	03	22(17.322%)
46-50	08	17	25(19.685%)
51-55	07	04	11(8.661%)
56-60	01	06	07(5.511%)
>60	01	-	01(0.787%)
Total	81(63.779%)	41(36.220%)	127

The above table (Table-1) showing age and sex distribution of the participants revealed that in our study there were 81(63.77%) females and 46(36.22%) males. Maximum no. (19.685%) of subjects were in the age group 36-50years and only 1 person was above 60 years .Minimum age group was 21-25 years. There were 48.03%below 40 years and 51.97% above 40 years

Table 2

Age wise distribution of Osteopenia and Osteoporosis cases

Age(years)	Osteopenia	Osteoporosis		Normal	No(percent)
21-25	01	00	0(50%)	1	2(1.57%)
26-30	06	02	8(61.53%)	5	13(10.23%)
31-35	05	03	8(38.09%)	13	21(16.535%)
36-40	17	01	18(72%)	7	25(19.685%)
41-45	13	01	14(63.63%)	8	22(17.322%)
46-50	16	05	21(84%)	4	25(19.685%)
51-55	05	01	6(54.55)	5	11(8.661%)
56-60	01	02	3(42.857)	4	7(5.511%)
>60	00	01	Nil	0	1(0.787%)
Total\					127

The above table (Table ll) shows age wise distribution of osteopenic and osteoporosis cases reveals that out of Osteoporotic women, maximum(31.25%) were in age group of 46-50 years and among osteopenic women, 26.56% were in age group of 36-40years age group.

Table 3

Distribution of male and female in different subgroups

	Female	Male	Total
Normal	30(63.83%)	17(36.17%)	47(37.0)
Osteopenia	42(65.62%)	22(34.37%)	64(50.39)
Osteoporosis	9(56.25%)	07(43.75%)	16(12.59)
TOTAL	81(63.719%)	46(36.220%)	127

The above table(table lll) showing distribution of male and female in different subgroups, shows that 37.00% had N BMD as per WHO criteria (T>-1SD),12.59% had osteoporosis (T<-2.5SD) and 50.39% had osteopenia(T<I SD to -2.5SD). Among male patients ,N BMD was seen in 36.95% and among female patients in 63.83% cases.

Table 4

Frequency distribution of menopausal and nonmenopausal women

	Normal	Osteopenia	Osteoporosis	Total
Menopausal	12(40%) (63.2%)	6(14.285%) (31.5%)	1(11.11%) (5.2%)	19(23.45%)
Non-Menopausal	18(60%) (29.05%)	36(85.74%) (58.06%)	8(88.888%) (12.9%)	62(76.54%)
TOTAL	30(37.03%)	42()	9(11.11%)	81(100%)

The above table (table4) shows that Out of 81 women, 62 (76.54%) were Non- Menopausal. Of the Osteoporotic women, 11.11% Menopausal and of the osteopenic women, 14.285% were menopausal. Among menopausal women,6 (31.5%) were osteopenic and 1 (5.2%) were Osteoporotic .In non-Menopausal 36 (58.06%) were osteopenic and 8 (12.09%) were

Table 5

Age and Sex wise Distribution of cases with abnormalormal BMD

Age	Abnormal BMD		Total	Abnormal BMD		Total
21-25	1	(100%)	1	0	(NIL)	1
26-30	8	(66.66%)	12	0	(NIL)	1
31-35	6	(42.95%)	14	2	(28.56%)	7
35-40	11	(61.11%)	18	7	(100%)	7
41-45	12	(65.15%)	19	2	(66.66%)	3
46-50	8	(100%)	8	13	(76.46%)	17
51-55	3	(42.85%)	7	3	(75%)	4
56-60	1	(100%)	1	2	(33.32%)	6
>60	1	(100%)	1	0	(NIL)	0
Total	51		81	29		46

(Abnormal=abnormal BMD includes both osteoporosis and osteopenia)

The above table (table V) shows that among females, Osteopenic and Osteoporosis started at an early age as compared to males. In females, in all age group, >40% showed abnormal BMD, but in males abnormal BMD with >40% is seen in the 35-55 years age group.

DISCUSSION

In the present, study there were 81

(63.77%) females and 46 (36.22%) males. Maximum no. (19.685%) of subjects were in the age group 36-50 years and only 1 person was above 60 years. Minimum age group was 21-25 years. There were 48.03%below 40years and 51.97%above 40years.

Out of Osteoporotic cases, a maximum (31.25%) were in age group of 46-50 years and among osteopenic cases, 26.56% were in age group of 36-40 years. This is in contrast with study done by H Rao (4), where Osteoporosis commenced in a younger age group (31-40) .

37.00% had N BMD as per WHO criteria (T>-1SD), 12.59% had osteoporosis (T<-2.5SD) and 50.39% had osteopenia(T<I SD to -2.5SD. Among male patients , N BMD was seen in 36.95% and among female patients in 63.83% cases in a study done by H Rao (4). In a study done by Gandhi A (5),58% women had N BMD, 34% had osteopenia and 8% had osteoporosis.

Once a women is in her 4th decade, there is gradual loss of BMD. It is seen that there is considerable increase in bone loss immediately following menopause. Out of 81 women, 62 (76.54%) were Non- Menopausal . Of the osteoporotic women, 11.11% Menopausal and of the osteopenic women, 14.3% were menopausal. Among menopausal women ,6(31.5%) were osteopenic and1 (5.2%) were Osteoporotic . In non-Menopausal 36(58.06%) were osteopenic and 8 (12.09%) were Osteoporotic. These findings point to other factors in the causation of osteopenia and osteoporosis in females.

Among females, Osteopenic and Osteoporosis started at an early age as compared to males. In females, in all age group, >40% showed abnormal BMD, but in males abnormal BMD with >40% is seen in the 35-55 years age group

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