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Original Research

Prevalence of Osteoporosis in males above 50 years of age

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***ABSTRACT*:**
Background: Osteoporosis is a serious health problem in men but remains underdiagnosed and under-treated. The present study was to determine prevalence of osteoporosis in males above 50 years of age. **Materials & Methods:** 68 males above 50 years of age were included. Level of vitamin D, calcium, BMI and T score was calculated. **Results:** Habit of smoking was present in 12, 13 and 18 subjects, alcoholism in 10, 12 and 15 subjects, 13, 10 and 13 subjects were from rural area and 12, 9 and 11 subjects were from urban area and sedentary life style was seen in 14 normal, 17 osteopenia and 20 osteoporosis subjects respectively. The difference was non- significant (P> 0.05). The mean vitamin D level in normal subjects was 19.2 ng/dl, in osteopenia subjects was 13.2 ng/ml and in osteoporosis subjects was 8.4 ng/ml, mean calcium level was 9.8 mg/dl, in osteopenia was 9.3 mg/dl and 8.1 mg/dl in osteoporosis subjects, BMI (Kg/m^2) was 24.5, 23.1 and 20.2 respectively and mean T score was 0.62, -1.52 and -2.17 respectively. The difference was significant (P< 0.05). **Conclusion:** The prevalence of osteoporosis in males above 50 years of age was 35.2%. Sedentary life style, smoking and alcoholism were risk factors.
Key words: Alcoholism, Sedentary life style, smoking.

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INTRODUCTION

Osteoporosis is defined as a progressive, systemic, skeletal disease characterized by low bone mass and microarchitectural deterioration of bone tissues with a consequent increase in bone fragility and susceptibility to fracture.[1] Studies have shown that bone loss starts from the age of 30–40 years in both men and women. In women, it has been postulated that menopause is followed by an immediate decrease in bone mass and density within a year. This increased rate of bone loss reaches equilibrium approximately 10 years after menopause and then merges into a continuous age-related loss. While type 1 or postmenopausal osteoporosis generally occurs before the age of 65 years and affects women, Type 2 osteoporosis is universal after peak bone mass has been attained and is found in both men and women.[2]

Osteoporosis is a serious health problem in men but remains underdiagnosed and under-treated. Osteoporotic fracture in men is commoner than myocardial infarction and prostate cancer. Osteoporosis and osteoporotic fractures increase with advancing age with loss of bone mineral density (BMD) at 1% per year.[3] An osteoporotic fracture may occur in one fifth men above 50 years age during their life time. In terms of symptomatology like back pain, kyphosis, height loss, and emotional difficulties, the clinical outcome of osteoporotic fracture in men is similar to women; however, morbidity following hip fracture is profound in males, with over 50% of men requiring institutionalization and only 20% returning to their previous level of function.[4] Contributing factors may be genetic determinants, several life-style related factors like physical activity, calcium intake, smoking, alcohol consumption, and vitamin D status may influence the bone mass in men. However, the prevalence and influence of these factors may vary according to ethnicity.[5] The present study aimed to determine prevalence of osteoporosis in males above 50 years of age.

MATERIALS & METHODS

The present study comprised of 68 males above 50 years of age. The consent for participation in the study

was obtained before starting from all enrolled subjects.

Demographic data such as name, age, gender etc. was recorded. History of smoking, alcohol intake, nutritional history and anthropometric parameters such as height, weight, BMI, residential area, type of work, economic status were recorded. An overnight fasting blood sample was obtained for estimation of serum calcium (8.6–10.2 mg/dL), 25- hydroxy vitamin D (20–50 ng/mL) hereafter referred to as vitamin D. Vitamin D deficiency was defined as a vitamin D level of less than 20 ng/mL and a level less than 10 ng/mL was considered to indicate severe vitamin D deficiency. The vitamin D level was measured by Enzyme Immunoassay. BMD was assessed using the Hologic DXA QDR 4500 machine. The BMD was measured at the femoral neck of Right hip by the same technician. The WHO classification was used for categorization of BMD. Osteoporosis was defined as T score ≤−2.5 bone mass −1 to −2.5 and normal as ≥1. Data thus collected was analysed statistically. P value <0.05 was regarded as significant.

RESULTS

Table I Distribution of subjects

Parameters	Normal (25)	Osteopenia (19)	Osteoporosis (24)	P value
Smoking	12	13	18	0.12
Alcoholism	10	12	15	0.15
Rural	13	10	13	0.18
Urban	12	9	11	
Sedentary life style	14	17	20	0.05

Table I, graph I shows that habit of smoking was present in 12, 13 and 18 subjects, alcoholism in 10, 12 and 15 subjects, 13, 10 and 13 subjects were from rural area and 12, 9 and 11 subjects were from urban area and sedentary life style was seen in 14 normal, 17 osteopenia and 20 osteoporosis subjects respectively. The difference was non- significant (P> 0.05).

Graph I Distribution of subjects

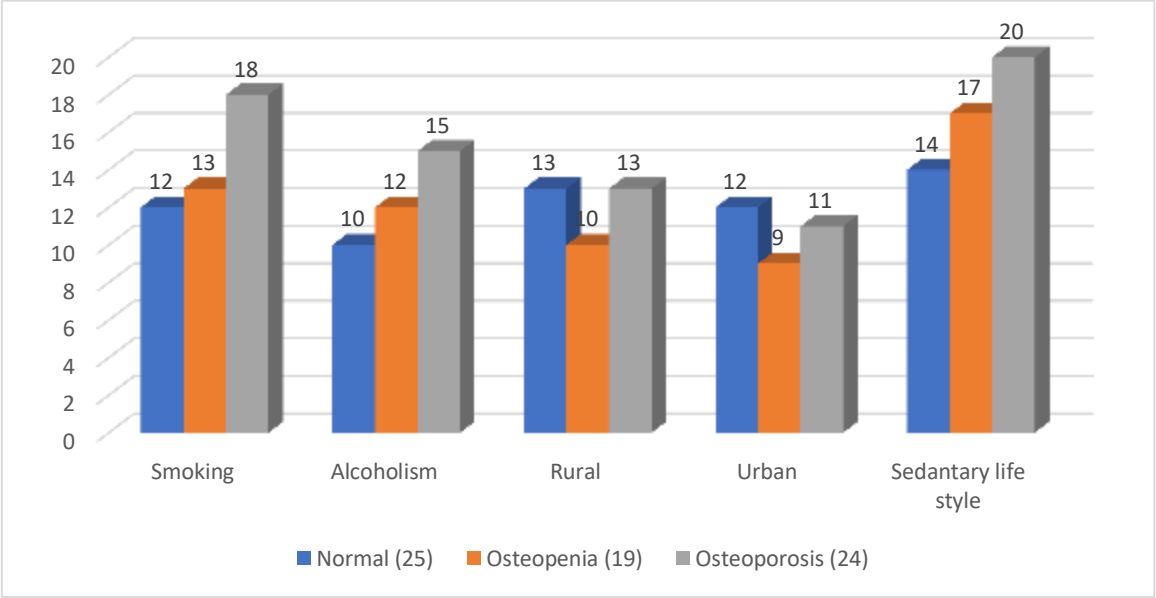

Table II Assessment of biochemical parameters

Parameters	Normal (25)	Osteopenia (19)	Osteoporosis (24)	P value
Vit D (ng/ml)	19.2	13.2	8.4	0.02
Calcium (mg/dl)	9.8	9.3	8.1	0.05
BMI (Kg/m^2)	24.5	23.1	20.2	0.05
T score	0.62	-1.52	-2.17	0.001

Table II, graph II shows that mean vitamin D level in normal subjects was 19.2 ng/dl, in osteopenia subjects was 13.2 ng/ml and in osteoporosis subjects was 8.4 ng/ml, mean calcium level was 9.8 mg/dl, in osteopenia was 9.3 mg/dl and 8.1 mg/dl in osteoporosis subjects, BMI (Kg/m^2) was 24.5, 23.1 and 20.2 respectively and mean T score was 0.62, -1.52 and -2.17 respectively. The difference was significant (P< 0.05).

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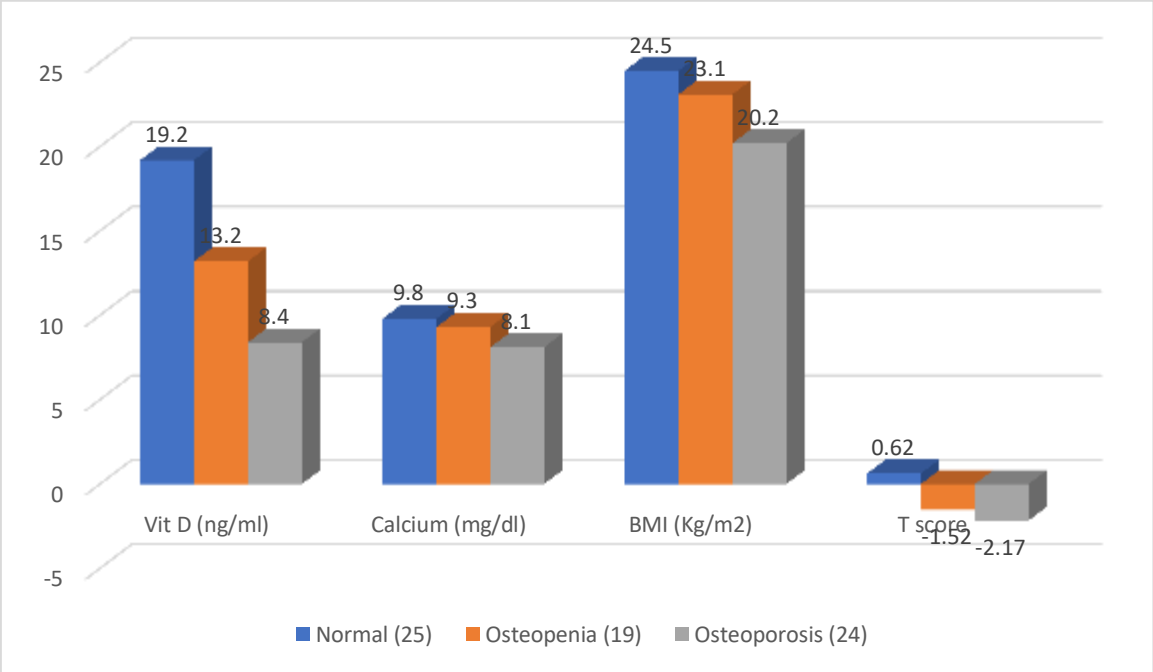

DISCUSSION

Worldwide, it is estimated that 1 in 3 women above the age of 50 will experience osteoporotic fractures, as well as 1 in 5 men. India with a population of 1.2 billion people is the second most populated country in the world with approximately 10% of population (more than 100 million) over 50 years of age.[6] In 2013, sources estimate that 50 million people in India are either osteoporotic (T-score lower than-2.5) or have low bone mass (T-score between-1.0 and-2.5).[7] Studies indicate that osteoporosis and osteopenia or low bone mass may occur at a relatively younger age in Indian population. Despite being a common cause of morbidity and mortality in males, Indian data on male osteoporosis are few.[8] A study in Delhi estimated the prevalence of osteoporosis as 24.6% in men and 42.5% in women above 50 years of age. Another study by Sharma et al[9] has reported a prevalence of 8.5% in the femoral neck region in men. Even though these estimates suggest that prevalence of osteoporosis in males is lower than in women, mortality in males post hip fracture is high.[9] Further, in older men, the risk of hip fracture or vertebral fracture is 30% higher than in women of the same age. Male osteoporosis largely remains underdiagnosed and untreated and is revealed only after the occurrence of a fracture. Osteoporotic fractures in men are more common than myocardial infarction and prostate cancer, and yet the majority of studies in osteoporosis have a focus on women especially postmenopausal women with little data available in men.[10] The present study was prevalence of osteoporosis in males above 50 years of age.

In present study, habit of smoking was present in 12, 13 and 18 subjects, alcoholism in 10, 12 and 15 subjects, 13, 10 and 13 subjects were from rural area and 12, 9 and 11 subjects were from urban area and sedentary life style was seen in 14 normal, 17 osteopenia and 20 osteoporosis subjects respectively. Kadam et al[11] in their study421 apparently healthy Indian adults (women = 228), 40–75 years of age, in a cross-sectional study in Pune city, India. Bone mineral density (BMD) was measured by dual-energy X-ray absorptiometry at two sites-lumbar spine (LS) and left femur. Individuals were classified as having osteoporosis or osteopenia based on the World Health Organization criteria of T-scores. Mean age of study population was 53.3 ± 8.4 years. Of the total women, 44.3% were postmenopausal with 49.2 ± 3.5 years as mean age at menopause. Postmenopausal women showed a rapid decline in BMD with age till 50 years while men showed a gradual decline. Premenopausal women showed no significant decline in BMD with age ($P > 0.1$). Significantly lower T-scores were observed at LS in men compared to premenopausal ($P < 0.05$). At left femur, T-scores were lower in men compared to premenopausal women ($P < 0.05$) but not postmenopausal women ($P > 0.1$). The prevalence of osteoporosis in men at LS was lower than postmenopausal women but higher than premenopausal women.

We observed that mean vitamin D level in normal subjects was 19.2 ng/dl, in osteopenia subjects was 13.2 ng/ml and in osteoporosis subjects was 8.4 ng/ml, mean calcium level was 9.8 mg/dl, in osteopenia was 9.3 mg/dl and 8.1 mg/dl in osteoporosis subjects, BMI (Kg/m^2) was 24.5, 23.1 and 20.2 respectively and mean T score was 0.62, -1.52 and -2.17 respectively.

Quereshi et al[12] found that prevalence of osteopenia and osteoporosis in the study population was 28.5% and 11.5%. Age wise maximum prevalence was in the

age group 71-80 years (31.81%). Prevalence of osteoporosis was more among Muslim community 20.83%, more in low socio economic group (BPL). T score of study population was - 0.3705±1.41. The mean BMI, S-Calcium, Vitamin D levels and T score values among osteopenic and osteoporotic patients were statistically highly significant when compared to patients without osteo-penic/porotic changes ($p<0.05$). The limitation of the study is small sample size.

CONCLUSION

Prevalence of osteoporosis in males above 50 years of age was 35.2%. Sedantary life style, smoking and alcoholism were risk factors.

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