Prevalence and Analysis of Risk Factors of Osteoporosis in Persons of Above 40 Years Age Group in Amritsar - A Study of 500 Cases

Tarandeep Singh[1], Sohan Singh[1], Rakesh Sharma[1], Rajesh Kapila[1]

[1]Dept of Orthopaedics, Govt. Medical College, Amritsar, Punjab, India.

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Address of Correspondence
Dr. Tarandeep Singh
Dept of Orthopaedics, Govt. Medical College, Amritsar, Punjab, India.
E mail:drtarandeep81@gmail.com


Dr Tarandeep Singh


Dr Rakesh Sharma

Abstract: Background: In India 61million people have suffered from osteoporosis; 200% rise in last decade and 50% rise expected in next 10 years. It is a syndrome with many causes and a number of clinical forms. In this study we intend to study prevalence of osteoporosis in the different population groups greater than 40 years age and identify risk factors associated with osteoporosis in them.

Materials and Methods: Five hundred persons of either sex of more than 40 years age group were analyzed with the help of Achilles express (calcaneal ultrasonometer) based upon their -T score.they were screened for various modifiable and non modifiable risk fact.

Results: It is more common in postmenopausal females. Thin, frail and short people are more prone to osteoporosis. Sedentary life style coupled with increased intake of alcohol and tobacco is important modifiable factors.

Conclusion: Osteoporosis is a silent killer. Prevention is better than cure as prevention requires simple steps such as good dietary habits, active life style, good control of systemic disorders, and reduced intake of coffee, tobacco and alcohol. Proper control of systemic disorder such as diabetes and hypertension helps to control osteoporosis

Keywords: Osteoporosis, risk factors, elderly, amritsar.

THESIS SUMMARY

Introduction:

Osteoporosis is now recognized as "Silent epidemic disorder". In India 61million people (1 in 3women and 1 in 8 men) have suffered from osteoporosis; 200% rice in last decade and 50% rise expected in next 10 years. An estimated 75 million people in Europe, USA and Japan. In the USA it affects >25 million people, predispose to >1.3 million fractures annually, of which predominantly post menopausal women. During the course of various bone diseases, common skeletal response is bone loss and it is not surprising that what we call osteoporosis is, in fact a syndrome with many causes and a number of clinical forms. Osteoporosis may be localized or generalized.

The two major determinants of risk in the development of osteoporosis are peak bone mass and rate of bone loss. These two determinants are influenced by a number of genetic and environmental factors. Roughly 70% of cases of osteoporosis are probably as a result of genetic predisposition, including the role of genetics in dictating how an individual will respond to exogenous stressors. The remaining 30% of cases probably triggered by environmental factors. In this study we intend to study prevalence of osteoporosis in the different population groups greater than 40 years age and identify risk factors associated with osteoporosis in them.

Materials and methods:

Five hundred persons of either sex of more than 40 years age group were analyzed with the help of Achilles express (calcaneal ultrasonometer) based upon their -T score. Detailed history of each person as referred to their Age, Sex and Marital status whether married or unmarried was recorded. Persons were analyzed based upon their residential area whether belong

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to rural or urban population. Educational level of the person was depicted as illiterate or literate. Those persons who cannot read or write were included under illiterate. Literate persons include those who can read and write. Literate persons further analyzed as under matric, matric, plus two, graduate, postgraduate or more based upon their education level. Religion of the person was also recorded as different religions such as Hindu, Sikh, Christian, Mohammedan, Persian, Jain, Buddhist, Yahudi had different dietary habits. Working of the person was recorded as the type of work they were performing to know if the nature of their work was sedentary, medium or heavy work. Persons were also analyzed based upon their economic status which includes family monthly income. Body weight and height of all the persons were also recorded because it also affects the bone mass. Amount of alcohol intake, No. of cigarette per week they were taking also recorded. Blood sugar level of the person all the persons was taken to know whether they belong to Diabetic or Non-diabetic community. Similarly to study the effect of blood pressure level on bone mineral density persons were depicted as Hypertensive or Non-hypertensive groups after recording their blood pressure, normal blood pressure was taken as 130/90 mmHg. To put light on hormonal effect on bone mineral density, reproductive status of the person especially in case of females was included such as no. of pregnancies, duration of lactation, last pregnancy, abortions if any, Pre/Postmenopausal, contraceptive used or not. Whether differ drugs affect bone mineral density, history of drug intake (corticosteroid, anticonvulsants, heparin, anticancer drugs, gluthemide, thyroid hormone, LHRH, GNRH agonists, cyclosporine, methotrexate, lithium) included as one of the assessment criteria. To ascertain the affect of dietary habits such as vegetarian-those who eat only plant sources without diary product, lacto-vegetarian-who eat diary product also, ovo-vegetarian- those who eat eggs but no meat and non-vegetarian-those who take meat also and amount of tea/coffee intake on bone mineral density history of specific type of dietary pattern was recorded. Further family history of hip/spine fracture in >40 years age, history of previous surgery/hospital admission, history of previous fracture, history of prolonged immobilization, history of malignancy (multiple myeloma, metastatic bone disease, lymphoma), history of gastrointestinal intolerance, history of radiation therapy, history of connective tissue disease, history of chronic obstructive pulmonary disease, any spinal deformity, any other relevant factor was asked and observations were made accordingly.

Results:

Prevalence was more among females (17.27%) as compared to males (14.86%). Because of majority of females belonged to postmenopausal age group. Postmenopausal females have more prevalence (26.85%) as compared to premenopausal (11.76%) because of estrogen deficiency. Prevalence of osteoporosis was more among urban population (17.67%) as compared to rural (14.0%) because of modern life style adopted by urban population. Prevalence was more among persons practicing sedentary work (22.43%) as compared to medium (12.50%) or heavy work/exercise (3.80%). Increased mechanical stress leads to more stimulation of osteoblasts and hence more bone mineral density. Osteoporosis was more prevalent among Muslim (100.0%) as compared to Hindu (17.77%) and Sikh (14.28%) because wearing of burke in Muslims, vegetarian dietary habits among Hindus and religiously banning of smoking among Sikhs. Persons belonging to higher socioeconomic strata (monthly family income more than 10,000 Rs) have less prevalence of osteoporosis (13.44%) as compared middle (monthly family income between 5000-10,000Rs) (16.23%) and lower socioeconomic group (monthly family income less than 5000Rs) (18.36%). This was due to poor nutritional health and low education status in persons belonged to low socioeconomic strata. Prevalence was more in males as well as females of less than 60 kg weight (18.24%, 18.75%)as compared with weight more than 60 kg(16.15%,13.79%). Higher body weight causes increased mechanical stimulation of osteoblasts and hence increase in bone mineral density. Females and males with height less than 160 cm have more prevalence (17.82%, 17.04%) as compared with height more than 160 cm (15.78%, 13.43%) because of their good nutritional habits. Alcoholics have more prevalence (23.75%) as compared to non-alcoholics (14.76%). Alcohol causes direct toxicity of osteoblasts, altering liver profile leading to deranged metabolism of calcium and vitamin-D hence decrease in bone mineral density. Smokers have more prevalence (22.48%) as compared with non-smokers (14.0%) because smoking causes premature menopause in females and nicotine is directly toxic to osteoblast differentiating sialoproteins. Diabetic females as well as males have more prevalence (23.53%, 25.0%) as compared to non-diabetics (15.42%, 13.15%) because of various neural and vascular pathologies occurring in diabetes. Hypertensive persons have more prevalence (20.27%) as compared to non-hypertensive persons (15.49%) because of high urinary excretion of calcium in hypertensive persons. Females as well as males with non-vegetarian dietary habits have less prevalence (14.81%, 11.88%) as compared to lacto-vegetarian dietary habits (18.34%, 17.95%).Females as well as males taking coffee (27.45%, 15.62%) have more prevalence as compared to tea taking (14.98%, 14.73%). Caffeine causes increased urinary excretion of calcium not compensated in 24 hr dietary intake.

Conclusion:

Osteoporosis is a common geriatric problem which can lead to devastating complications if not rectified early. It is more common in postmenopausal females probably due to estrogen deficiency. Thin, frail and short people are more prone to osteoporosis. Besides this bone health is severely eroded by various modifiable factors. Sedentary life style coupled with increased intake of alcohol and tobacco are important modifiable factors. Diet rich in calcium and proteins, reduced intake of caffeine (coffee) and proper control of systemic disorder such as diabetes and hypertension helps to control osteoporosis. Osteoporosis is a silent killer and prevention is better than cure as prevention requires simple steps such as good dietary habits, active life style, good control of systemic disorders, reduced intake of coffee, tobacco and alcohol. So we should organize mass awareness programs both at hospital level and by involving various channels of mass communications such as news paper, radio, television and cinema to highlight these facts. This thing

can go a long way in the prevention of osteoporosis and many serious complications like fractures (hip and spine) especially in geriatric patients.

Key Words:
osteoporosis, risk factors, elderly, Amritsar.

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