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RISK FACTORS OF OSTEOPOROSIS AMONG POST-MENOPAUSAL WOMEN.

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ABSTRACT… Objectives: This study was conducted to determine risk factors of osteoporosis in women after menopause. **Study Design:** Cross Sectional study. **Setting:** Sir Ganga Ram Hospital located in Lahore, a city of Pakistan. **Period:** 1st January 2018 to 31st July 2018 comprising on seven months duration. **Material & Methods:** An inclusion and exclusion criteria was formed. Patients diagnosed cases of osteoporosis presenting in out-patient door of the study institution during study period and falling in inclusion criteria were selected for the study. Those not falling in criteria were excluded from the study. A questionnaire was formed containing all necessary questions such as age of patient, risk factors of osteoporosis and age of menopause. All data was documented properly. A well informed written consent was taken from all patients for including them in the study. Consent was taken from the ethical committee of the study institution for conducting study. Privacy of data of patients was maintained. Data was analyzed using statistical software and Microsoft office version 2017. Results were calculated in the form of frequencies and percentages and presented via tables and graphs. P-value less than 0.05 were considered significant. **Results:** Total 115 post-menopausal females with osteoporosis were studied. Their age range was 35-63 years with mean age 46.7 years. Age of menopause among study females was found to be less than 40 years in 4.3% cases, between 41-45 years in 20.9% cases, between 46-50 years in 9.6% and between 51-55 years in 25.2%. Common risk factors of osteoporosis reported in study females include low calcium diet in 60.8% cases, family history of osteoporosis positive at least in one close relative, overweight in 57.4% and history of steroid intake for prolong period was found a cause of osteoporosis in 21.7% cases, excessive intake of soft drinks (more than 400ml daily) in 34.8% and excessive coffee intake (more than 2 cups daily) reported in 33%. Other risk factors include thyroid disease, ongoing hormonal replacement therapy, and prolonged immobilization. **Conclusion:** Osteoporosis is a common problem among females particularly in post menopausal period. Most common risk factors of this disease are improper diet and lack of physical activity. By spreading awareness of this disease in community, encouraging proper intake of calcium containing diet and daily exercise can reduce incidence of this disease.

Key words: Osteoporosis Risk Factors, Calcium Diet, Post-menopausal Period.

INTRODUCTION

Osteoporosis is a very common disease of bones worldwide. Mostly women suffer from this disease. This is a skeletal disease in which bone density is decreased and deterioration of bones occurs. In this condition bones become weak. This disease is not only common in developing or underdeveloped countries but also common in developed countries like America, Japan and Europe where more than seventy five million fractures occur annually due to osteoporosis.[1] Fractures of hip, vertebrae and bones of fore arm are much common in his disease. This disease is commonly occurs in old age people. Younger people are less likely to have this disease until unless any other systemic disease or endocrinal problem present causing metabolic disturbance and leading to decreased bone mineral density.[2] Sunlight exposure is necessary for vitamin D synthesis which makes bones strong by increasing mineralization of bones. People living in countries having less exposure of sunlight or where span of winter season is prolong, have vitamin D deficiency and therefore

osteoporosis is much common among them.[3] Life style and dietary habits play major role in prevalence of this disease. Low calcium diet and less physical activity increases incidence of disease. Genetic predisposition is also important risk factor. Patients with osteoporosis usually present with the complaint of pain in bones, backache and spontaneous bone fractures. Fractures may occur in usual activity of routine life while walking, running, climbing on stairs etc. Physical examination may help in making diagnosis but radiological examination is more helpful such as X ray of long bones showing decreased thickness of compact bone and more wide spongy bone and decreased density of bones. DEXA scan is very helpful in making diagnosis as it measures bone mineral density. It is simple to perform an investigation of choice. This scan takes few minutes and gives definite result. In early age of females dietary habits and physical activity have very important influence on gaining bone mass and bone mineral density.[4] In postmenopausal period hormonal changes and decreased estrogen level causes reduced minerals deposition on bones thus making bones weak and minor trauma and low energy force may cause fracture. In osteoporosis healing of fracture is also reduced. In this study risk factors of osteoporosis have been determined among females in postmenopausal period as this disease is very common in this period due to hormonal changes. Conducting such studies can help us to prevent disease by recognizing common risk factors by giving awareness to female population.

PATIENTS AND METHODS

Female patients presenting to out-patient door of the study institution diagnosed for osteoporosis were studied for determining risk factors among them. These females were in post menopausal period. Age range was 35- 63 years with minimum age reported 35 years and maximum age of female in study group was 63 years. These females had menopause in various ages. A proforma was designed mentioning all necessary questions related to age of female, age at menopause and presence of risk factors like low calcium diet, family history of osteoporosis, taking any hormonal treatment for any disease,

thyroid disease, taking steroids for any disease like osteoarthritis or rheumatoid arthritis etc, having any disease causing immobilization, use of excessive tea or coffee more than two cups daily and excessive cold drink consumption more than 2 glass or more than 400 ml daily. Consent was taken from all female cases in study group for including them in the study. Privacy of their data was maintained.

According to inclusion criteria.
Those females were included in the study diagnosed with osteoporosis.
They were in post-menopausal period.
Remember their menopausal age.
Gave consent for including them in study.
Not having any malignancy or bone tumors or osteomyelitis.

According to exclusion criteria
Females not willing for study unable to give history due to mental illness or any other disease.
Having any malignancy or bone tumors or taking chemo or radiotherapy in which early menopause occurred due to some gynecological or systemic disease.
Patients with chronic renal failure were not included.

RESULTS

Total 115 female cases were included in this study falling in inclusion criteria. These females belonged to different age groups. There were 5(4.3%) between 35-45 years, 10(8.7%) cases between 41-45 years, 28(24.3%) between 46-50 years, 36(31.3%) between 51-55 years, 19(16.5%) between 56-60 years and 17(14.8%) females were having age above 60 years. Menopausal age among females of study group was less than 40 years in 5(4.3%) cases, between 41-45 years in 24(20.9%) cases, between 46-50 years in 57(49.6%) and between 51-55 years in 29(25.2%) cases. Risk factors of osteoporosis were determined among these post menopausal females. There were 70(60.8%) females taking low calcium diet, in 28(24.3%) family history of osteoporosis was positive, 14(12.2%) females were taking hormonal replacement therapy which was a cause of osteoporosis. In 10(8.7%) females

thyroid disease was present, 25(21.7%) were taking steroids for any disease from more than 3 months, 66(57.4%) were overweight patients. There was history of immobilization in 17(14.8%) females due to some disability or disease. History of excessive use of carbonated drinks and coffee was present in 40(34.8%) and 38(33%) cases respectively.

Risk Factors	Number of Cases	%	P-Value
Less intake of calcium containing diet	70	60.8	0.05
Family history of osteoporosis	28	24.3	0.045
Taking hormone replacement therapy	14	12.2	0.32
Thyroid disease	10	8.7	0.21
Steroid intake	25		0.15
Overweight	66	57.4	0.008
Immobilization	17	14.8	0.17
Use of excessive carbonated drinks	40	34.8	0.02
Excessive use of Coffee	38	33	0.017
Multiple risk factors found	4	3.5%	0.01

Table-I. Frequency of risk factors of osteoporosis in study group.

Age of Patients (years)	Number of Patients	%
35-40	5	43.5
41-45	10	8.7
46-50	28	24.3
51-55	36	31.3
56-60	19	16.5
Above 60	17	14.8
Total	115	100

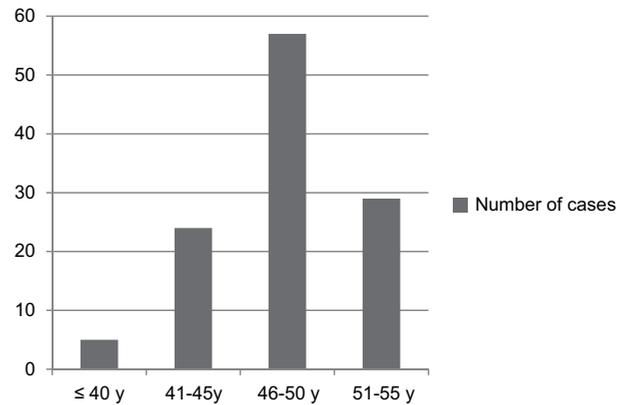Table-II. Age distribution of females in study group.

Figure-1. Age of menopause among females in study group (N=115)

DISCUSSION

Osteoporosis is a most common change in human skeletal system in old age particularly in females. More research work needed in this aspect and proper strategy is required to early diagnose and prevent the progression of disease. Making policies on large scale can reduce complications related to this disease and incidence of osteoporotic fractures can also be reduced. Risk factors of osteoporosis include advance age, use of corticosteroids, calcium deficiency, hormone replacement therapy, thyroid disease, increased body weight, family history of fracture, decreased physical activity and over intake of soft drinks and coffee.[5] According to a study conducted on 80 cases in Europe, osteoporosis was common among those taking low calcium diet and vertebral fractures as a consequences of osteoporosis were common in these cases.[6] A study conducted by Bonaiuti D et al reported beneficial effects of daily exercise in preventing osteoporotic fractures among postmenopausal women.[7] In our study osteoporosis was common in women older than 45 years of age with 24.3% cases between 46-50 years, 31.3% between 51-55 years. These results were similar to those reported by another study done by Babu AS et al and vestergaard et al in which women above 50 years were most commonly having osteoporosis.[7,8] It is more common in post menopausal women than premenopausal women. As in this period hormonal changes in body make bones fragile and easy to break by minor trauma. DEXA scan is an investigation of

choice to diagnose osteoporosis which detects bone mineral density. It is costly investigation so everyone can not afford it so many females having osteoporosis remain undiagnosed and present with fractures when disease is advanced.[10] This disease has high prevalence worldwide. It is not only common among eastern women but also common in western women. According to a report prevalence of osteoporosis is 20% in Canada.[11,12] Its prevalence is also high among women in Japan above 50 years of age with significant incidence of fractures.[13] Low level of estrogen level decreases bone mineral density so women taking hormone replacement therapy have low level of estrogen in the body and are prone to osteoporosis complications. Use of excessive coffee is an important risk factor. In our study 33% women were reported for taking excessive use of coffee. A study conducted by Hannan MT et al reported high incidence of osteoporosis among people taking 2-4 cups of coffee daily.[14] Physical activity plays major role in preventing osteoporosis. Daily exercise is very essential and increases bone mineral density. Cummings SR et al studied effect of physical activity on osteoporosis. He concluded that people spending most of the time indoor or sitting on chair and lying on bed are more prone to suffer from this disease as compared to those who spent their mostly time outdoor or at work have less chances to get this disease. Which people spent their time outdoor get sunlight which helps in synthesis of vitamin D in the body. This vitamin causes mineralization of bones and making them strong. As ladies spent their most of the time at home hence they are less exposed to sunlight and have vitamin-D deficiency so chances of getting osteoporosis are much higher in women.[15-17] In our study immobilization was a risk factor among 14.8% cases and this is comparable to the results of previous studies. Use of proper diet containing calcium content, daily exercise and avoiding carbonated drinks can minimize incidence of this disease. Awareness should be given to the people especially women about osteoporosis, its signs symptoms, risk factors and preventive measures. Health facilities should be developed and DEXA scan should be available in hospitals for diagnosing osteoporosis. In small health centres X ray of long bones should be done which help in making diagnosis.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Subhan Shahid	Topic selection, Data collection.	
2	M. Umair Hashmi	Data collection, Data analysis & comparing.	