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A Comparative Study BMD [Bone Mineral Density] in Two Group of Patients at Tertiary Care Hospital of Uttarakhand

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Abstract
Objective- *A comparative study BMD in two group of patients at tertiary care hospital of Uttarakhand.*
Method- *This study was conducted in the Department of Orthopaedics and Obstetrics & Gynaecology department of Government Medical College Haldwani, Uttarakhand, over a period of one year from 1st January 2015 to 31st December 2015. It was a hospital based cross sectional study which was conducted to assess the BMD in two group of patients. In group A, 30 patients were of those patient in whom uterus was intact and In group B, 30 patients were hysterectomised for some benign lesion of uterus.*
Observation-- *Pt in the group of intact uterus were mainly in the 45-47 yrs [83.33%]. where 40% of the pt had normal T score . 56% had osteopenia, and only 4% had osteoporosis. But in the group of pts those they had hysterectomy 16 pts [53.33%] were from 48-50yrs. out of 16 pts 8 [50%] had osteopenia and 3 [18.75%] had osteopor osis. 5 [31.5%] had normal T score. In the group of intact uterus 53.33% from hill area and 46.67% from plain area. In the group of hysterctomised pts uterus 40 from hill area and 60% from plain area.*
Keywords: *BMD [Bone Mineral Density], DEXA [Dual Energy X-ray Absorptiometry], Menopause, Osteoporosis, Osteopenia.*

INTRODUCTION

Osteoporosis is a disease where decreased bone strength increases the risk of a broken bone It is the most common reason for a broken bone among the elderly .Bones that commonly break include the back bones. the bones of the forearm. and the hip . after cessation of adult growth, the skeletaon consolidates to reach peak bone mass at the age of 35-40 yrs there after slow subsequent age related loss of bone mass occur at a rate of

0.4% annually, but women are additionally exposed to an accelerated rate of bone loss during the perimenopause[1]. Osteoporosis may be due to lower than normal peak bone mass and greater than normal bone loss. Bone loss increases after menopause due to lower levels of estrogen. Osteoporosis may also occur due to a number of diseases or treatments including alcoholism anorexia hyperthyroidism surgical removal of the ovaries and kidney disease Certain medications increase the rate of bone loss including some anti seizure medication, chemotherapy, GnRH ,proton pump inhibitors, selective serotonin reuptake inhibitors and steroids. Not enough exercise and smoking are also risk factors. Osteoporosis is defined as a bone density of 2.5 standard deviations below that of a young adult.aaa Thi is typically measured by DEXA [dual energy X-ray absorptiometry] at the hip.
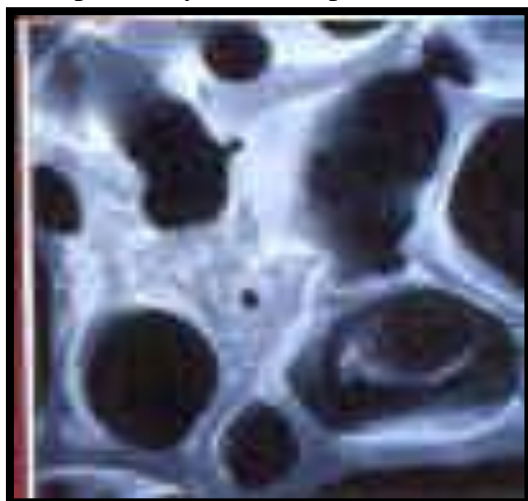

Fig 1: Normal Bone

Fig 2: Osteoporotic Bone

BMD measurement may be used to determine the fracture risk, diagnose osteoporosis, and identify woman who would benefit from treatment. BMD is expressed as a T score which is the no of standard deviation from the mean for a young healthy woman[2].

A --- T score above –1 is normal

B-- T score between –1 to-2.5 indicate osteopenia

C--- T score below -2.5 denote osteoporosis [2]

While there are many different types of BMD tests, all are non-invasive. most tests differ in which bones are measured to determine the BMD result.

These tests include:--- Dual-energy X-ray absorptiometry (DXA or DEXA)

Dual X-ray Absorptiometry and Laser (DXL)

Quantitative computed tomography (QCT)

Qualitative ultrasound QUS)

Single photon absorptiometry (SPA)

Dual photon absorptiometry (DPA)

Digital X-ray radiogrammetry (DXR)

Single energy X-ray absorptiometry (SEXA)

DEXA is currently the most widely used, but ultrasound has been described as a more cost-effective approach to measure bone density.

The test works by measuring a specific bone or bones, usually the spine, hip, and wrist. The density of these bones is then compared with an average index based on age, sex, and size. The resulting comparison is used to determine risk for fractures and the stage of osteoporosis (if any) in an individual.

METHODOLOGY

This study was conducted in the Department of Orthopaedic and Obstetrics & Gynaecology department of Government Medical College Haldwani, Uttarakhand, over a period of one year from 1st January 2015 to 31st December 2015. It was a hospital based cross sectional study which was conducted to assess the BMD in two groups of patients. In group A, 30 patients were of those patient in whom uterus was intact and In group B, 30 patients were hysterectomised for some benign lesion of uterus.

Population was investigated

Those female patients in the age group of forty five to fifty five year age group.

Exclusion criteria—patients suffering from any diseases like malignancy, DM, prior H/O radiotherapy and steroid therapy were excluded from study.

OBSERVATION

Table 1: Patients in whom uterus is present

Age	N=30	T score >-1	T score -1to-2.5	T score <-2.5
45-47yrs	25 [83.33%]	10 [40%]	14[56%]	1[4%]
48-50yrs	5 [16.67%]	0 [0%]	4[80%]	1[20%]
48-50yrs	0 [0%]	0 [0%]	0	0

Table 2: Patients they had hysterectomy—

Age	N=30	>-1	-1to-2.5	<-2.5
45-47yrs	9 [30%]	5 [55.55%]	4 [44.44%]	0 [0%]
48-50yrs	5 [16.67%]	1 [20%]	3 [60%]	1 [20%]
48-50yrs	16 [53.33%]	5 [31.5%]	8 [50%]	3 [18.75%]

Pt in the group of intact uterus were mainly in the 45-47yrs [83.33%] .where 40% of the patients had normal T score. 56% had osteopenia, and only 4% had osteoporosis.

But in the group of pts those they had hysterectomy 16 pts [53.33%] were from 48-50 yrs. out of 16 pts 8 [50%] had osteopenia and 3 [18.75%] had osteoporosis. 5 [31.5%] had normal T score.

Table 3: According to geographical area they belong

	In intact uterus N=30	% 100%
Hill area	16	53.33%
Plain area	14	46.67%

Table 4: According to geographical area they belong in the hysterectomised group

	In absent uterus N=30	% 100%
Hill area	12	40%
Plain area	18	60%

In the group of intact uterus 53.33% from hill area and 46.67% from plain area.

In the group of hysterctomised pts uterus 40% from hill area and 60% from plain area.

Table 5: According to Parity

UTERUS PRESENT	N=30	100%
P1L1	6	20%
P2-P3	21	70%
P4-P5	3	10%
>P5	0	0%

UTERUS ABSENT	N=30	100%
P1L1	2	6.67%
P2-P3	18	60%
P4-P5	8	26.66%
>P5	2	6.67 %

In the both the group low parity had less number of patients.

DISCUSSION AND CONCLUSION

In March 2006 LOHANA CK et al; conducted a study at Aga Khan University Hospital Karanchi. Their study demonstrated 40% were osteopenic[3]. 47% were osteoporotic, 13%were normal. In another study done by Nanjam R et al in 2011 out of 90pts 10% were normal, 44.4% were osteopenic, 33.3%were osteoporotic and 12.2% were severely osteoporotic[4].

In our study Pt in the group of intact uterus were mainly in the 45-47yrs [83.33%]. Where 40% of the pt had normal T score . 56% had osteopenia, and only 4% had osteoporosis.

But in the group of pts those they had hysterectomy 16pts [53.33%] were from 48-50yrs.out of 16pts 8 [50%] had osteopenia and 3 [18.75%] had osteoporosis.

BMD is an age dependant variable which demonstrate an increasing trend in the distribution of osteoporosis with advancing age. as the study done by Gupta A, Chaudhary D N et al in 2014.in their study 51% were osteoporotic out of which 23.3% were from 56-60yrs of age, 15 %were from 51-55yrs age, 10 % were from 46-50yrs of age[5]. and in our study in the intact uterus group [4%] osteoporotic were of 45-47yrs and 20% osteoporotic in the age group 48-50 yrs. in the hysterectomised group [0 %] osteoporotic were of 45-47 yrs. and 20% osteoporotic in the age group 48-50yrs and [18.75%] osteoporotic were of 48-50yrs. This is as seen in Chaudhary D N et al study.

Approximately 0.5% of young healthy women between the ages of 30-40 have Tscore of -2.5 or less [7,8]. In our study youngest study group 45-47yrs had 4%pt Tscore less then-2.5.

osteoporosis is a leading health issue in the aged women and BMD measurement can diagnosed patients in the osteopenic state and timely treatment can decrease the morbidity. and in future it need more study with serum calcium level.

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