

# Observation of Bone Density Changes in Post Menopausal Women not Receiving Hormone Replacement

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**Summary:** Twenty seven patients, menopausal for more than 10 years, who had never received any form of hormone replacement therapy, were assessed for bone loss in the pelvis and bilateral hip joint area. The criterion used was Singh's Index. It was found that 12 out of 27 patients showed no serious osteoporotic changes despite non-receipt of hormone replacement.

## Introduction :

During a course of her lifetime a woman will lose nearly half her trabecular bone and 35% of her cortical bone (Riggs and Melton, 1986). Osteoporosis progresses silently and is often recognized after the occurrence of fractures. The Singh grading system can be used to estimate the degree of osteoporosis (Singh et al 1970). Grading is based on the appearance of primary and secondary compression and tension trabeculae as seen on the antero-posterior radiographs of the proximal femur (Fig. 1). Grade 3, 2 and 1 may be considered osteoporotic while grade 4, 5 and 6 are considered variants of normal bone. The intact opposite hip must be included in the initial radiograph.

## Materials and Methods :

Twenty seven Indian postmenopausal women, more than 10 years, formed the basis of this ongoing observational study carried out at the B.Y.L. Nair Charitable Hospital, Mumbai. The duration of study was from August 96 to March 97. The parameters included were 1) No receipt of any form of hormone replacement 2) Radiograph showing an anteroposterior view of the pelvis including both hip joints 3) Measurement of serum calcium, alkaline phosphatase and phosphate levels 4) Detailed history with respect to an active or sedentary life style was recorded and conditions like diabetes mellitus, alcoholism, epilepsy, liver disease, hyper-parathyroidism were ruled out. Patients with preexisting contributory medical condition were excluded from this study.

Table I

Scoring by Singh's index	No. of cases
	27
Unilateral Hip index (Less than or Equal to 3)	15
Bilateral mean Hip index (Less than or Equal to 3)	11
Least Score (Right Score)	
(Right hip)	2
(Left hip)	1

## Results :

Based on Singh's Index scoring (Table I) it was observed that out of 27 women, 12 were unaffected by osteoporotic changes, the indices in both hips being more than 3.. However, 15 women showed a score of 3 or less when assessed, a single joint being the casualty. When the arithmetic mean of both hip joints was obtained as a possible predictor of pathology, 11 women were seen to be affected. A woman with a score of 2 in the right hip and 1 in the left hip was severely affected by osteoporosis.

Table II shows a measurement of various serum levels estimated in each patient. Nineteen out of 27 patients showed a low calcium level and a third showed low phosphate levels. Heaney et al (1977 & 1978) demonstrated a decline in calcium absorption in the gut of menopausal women which also finds a concurrence in our study.

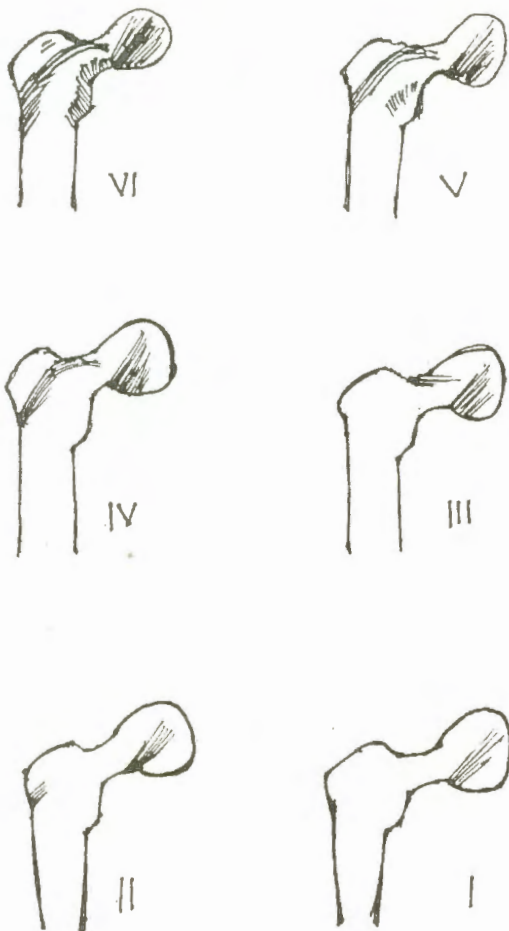


Fig. 1

Basic Trabecular Pattern of Singh's Index  
Normal (Grade ), Severe Osteoporosis (Grade 1)

### Discussion :

Singh's Index is one of the earliest described methods to assess osteoporosis, based on the radiological appearance of trabecular bone structure. However, methods like dual energy Xray absorptiometry (DEXA) are more precise and may be considered the gold standard for measuring osteoporosis (Sartoris, 1994) Such indices may help decide about prognosis and treatment modalities. It was an interesting finding in our study that though 19 of 27 patients showed low serum calcium levels as was expected, 12 of 27 patients on scoring of radiographs of pelvis and both hips showed scores greater than 3 indicating that loss of trabecular bone was not severe even after more than 10 years of menopause and no therapy.

### Conclusion :

This ongoing study based on observation of gross bone changes by radiography and serum calcium, phosphate and alkaline phosphatase level measurements throws up some interesting findings including an absence of severe osteoporosis in 12 of 27 patients studies. It is indeed food for thought and material for further analysis whether hormone therapy could have decreased the degree of osteoporotic changes in those women with scores of 3 or less.

Table - II

Serum	Levels	No. of Cases
Serum Calcium (9-11 mg%)		
More Than	11 mg%	4
Less Than	9 mg%	19
Serum Phosphate (3-3.5 mg%)		
Cases		
More than	4.5mg%	1
Less than	3 mg%	8
Serum Alkaline Phosphate (1-4.4 BU)		
Cases		
More Than	4.4BU	14

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