Effect of Low Estrogen Level on Calcitriol and Other Bone Related Parameters in Postmenopausal Women

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Abstract

Menopause is a major physiological event and is associated with metabolic changes. In order to study the changes associated with bone related parameters present study was planned. The study comprised 100 post menopausal women as study group and 100 ideal weight healthy premenopausal women as control. The blood samples were analyzed for following biochemical parameters serum calcium, phosphorus, alkaline phosphatase and calcitrol. Results revealed that the significant changes observed in calcium, phosphorus and calcitriol when compared to control.

Index terms— postmenopause, calcitriol, bone related parameters.

1 Introduction

enopause is a normal event of women's life associated with hormonal changes these changes[1] may ideas to bone related problems. Abnormal mineral metabolism leads to bone related problem like osteoporosis, arthritis etc[2]. This has leads to hypothesis that can decrease calcium, phosphorus 3,4 , which is responsible for bone related problem in post menopause 5,6 . Scanty work has been done in order to correlate low estrogen level with bone related parameters so present study was planned for evaluate effect of low estrogen level on calcitrol and other bone related parameters in postmenopausal women.

2 II.

3 Material and Methods

This study was conducted in the department of Biochemistry M.G.M. Medical college Indore from Jan 2013 to Dec 2013. A total of 200 subjects were taken among them 100 postmenopausal women taken as cases and 100 normal premenopausal women were taken as control subject. 2ml blood samples collected from each subject and samples were analyzed for serum calcium, phosphorus, alkaline phosphatase by using fully automatic Biochemistry analyzer and calcitriol was estimated by using radio immunoassay method 7 .

4 III.

5 Statistical Analysis

Data were analysed using SPSS version 10 mean, S.D., paired and unpaired 't' test were calculated and significance was expressed by 'p' values. IV.

6 Results

The significant decrease observed in serum calcium and phosphorus level in postmenopausal women when compared to control.

The significant decrease is observed in serum vitamin D3 (calcitriol) level in postmenopausal women when compared with control.

Author ?: Department of biochemistry M.G.M. Medical college Indore. Authors ? ?: Department of Gynecology M.G.M. Medical college Indore. e-mail: drarvindyadav76@gmail.com The significant increase was observed in serum alkaline phosphatase level in postmenopausal women when compared to control.

V.

7 DISCUSSION

Decrease level of calcium and phosphorus observed in postmenopausal women is due to low level of estrogen in postmenopaus leads to loss of calcium and phosphorus in urine 2 set point and which leads to fall in GI absorption and tubular re-absorption of calcium and phosphorus. This is because of low activity of estrogen at these 2 sites 8 . Vitamin D3 level were found to be decreased in patient of osteoporosis. The women by increasing the intake of vitamin D3 can significantly reduce the bone loss and improve net bone density 8,9 .

In the studies on hypervitaminosis D 6 and impaired vitamin D metabolism in post menopausal women shows low serum calcium was found to be significant univeriate predictor of hypovitaminosis D 10,11 .

In present study significant correlation was observed between serum calcium, phosphorus, ALP level, and vitamin D level. A general awareness among the people is required to stress the importance of supplementary calcium with vitamin D. Preparation of intake of diets rich in calcium and vitamin D will be helpful to minimize the chances of osteoporosis and progression of osteoporosis in postmenopausal women.

Figure 1:

1

	Parameters	Control group n=100	Postmenopausal Women group n=100	p value
1	Calcium (mg/dl)	10.8 ±1.2	9 ± 1.6	<0.05
2	Phosphorus(mg/dl)	3.5 ± 0.8	2.8 ± 0.6	<0.05
3	Alkaline phosphatase (U/L)	52± 12	99 ± 26	<0.05
4	Calcitrol (pg/ml)	29 ± 6.1	22.4 ±5.7	<0.001

Figure 2: Table 1 :

[Mellisea and Donald ()] , K T Mellisea , M Donald . 1998.

[Nordin and Cristopher ()] 'A longitudinal study of bone related biochemical changes'. B E Nordin , S Cristopher . *J Clin. Endocrinology* 2004. 61 p. .

[Greg et al. ()] 'Accelerated bone loss in postmenopausal women with mild primary hyperthyrodism'. Andrew B Greg , Joanne P Stapleton , Margaret C Evans . *J. Clinical Endocrinology* 1996. 44 (6) p. .

[Albright ()] F A Albright . *Postmenopausal osteoporosis*, 1999. p. .

[Monolgas et al. ()] 'Cytorefractor assay for 1, 25 (OH) 2 D3 a simple rapid and reliable test for clinical application'. S L Monolgas , J Howared , F Culler . *Clin. Res* 1982. 30 p. 527.

[Ebelling and Sandgren ()] 'Evidence of an age related decrease in intestinal responsiveness to vitamin D relationship between 1, 25 (0H) 2 D3 and intestinal VDR. Concentration in normal women'. P R Ebelling , L B Sandgren . *J. clinic. Endo Metab* 1992. 75 p. .

[Van Hoop and Vander Mooren ()] 'Female HRT increase serum free vitamin D3, a one year prospective study'. H J C Van Hoop , Vander Mooren . *clinical endocrinology* 1999. 50 p. 516.

[Hypovitaminosis D in medical inpatients New Engl. J. Med] 'Hypovitaminosis D in medical inpatients'. *New Engl. J. Med* 338 p. .

[Sai et al. ()] 'Impaired vitamin D metabolism with aging in women. Possible role in pathogenesis of senile osteoporosis'. K S Sai , P L Riggs , R Kumar . *J. Cin invest* 1984. 73 p. .

[Zeruckh et al. ()] 'Longterm vitamin D3 therapy in postmenopausal osteoporosis'. J E Zeruckh , Sakhee , K Gias . *J. Clin. Endo Metab* 1983. 56 p. .

[Ahuja ()] 'Normal variation in the density of selected human bone in north India'. M Ahuja . *J bone Joint Surg* 1969. 51 p. .

[Leboff and Lynn ()] 'Occult vitamin D deficiency in postmenopausal US woman with acute hip fracture'. S M Leboff , K Lynn . *JAMA* 1999. 281 p. .