



IMPACT OF MINERALS IN HEALTH OF PRE AND POST MENOPAUSAL WOMEN IN NORTH INDIAN POPULATION

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ABSTRACT

Background-Menopause is defined as the permanent cessation of menstruation, resulting from reduced ovarian hormone secretion that occurs naturally or is induced by surgery, chemotherapy or radiation. The post menopausal stage in women is essentially an oestrogen deficient state.

Aim-Objective of the present study was to explore the risk of accelerated bone mass loss by assessing bone markers such as iron, TIBC, calcium and phosphorus.

Methods-This cross-sectional was carried out in 20 premenopausal and 20 post menopausal women in MLN Medical college Allahabad. Serum iron, TIBC, calcium and phosphorus levels of each subject was determined.

Result-Postmenopausal women showed marked significant increase in iron levels and significantly decrease in the levels of calcium and phosphorus as compared to premenopausal women.

Conclusion-This study suggest that post -menopausal women had low serum calcium and phosphorus which indicate high risk for developing osteoporosis, bone fracture and low bone mineral density than pre-menopausal women.

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INTRODUCTION

The health of girls and women is affected, by developmental, physiological and psychological age. Womens live are marked by a continuum from intrauterine life to the elderly years: infancy, childhood and adolescence merarche, reproductive life, the menopausal transition, postmenopausal years, the elderly and frail elderly. Across the life span of women, Menopause probably has the greatest impact on Health (1).

Menopause refers to the permanent cessation of menstruation due to loss of ovarian follicular activity. It results in a decrease in estrogen secretion that is responsible for most of the features seen in menopausal women (2). Menopause women are of high risk group for iron level disturbance in her bodies. As we, know bone metabolism is a dynamic and continuous process to maintain a balance between the resorption of old initiated by osteoclasts and the formation of new bone under control of osteoblasts (3).

Calcium has definite role in bone metabolism is particularly important in elderly women because low dietary intake have been associated with reduced bone mineral density(4,5).

Post menopausal women need to obtain sufficient amounts of calcium to maintain bone health and suppress parathyroid hormone (6).

Phosphorus have been proposed as having an important role in bone metabolism. Phosphorus, as phosphate combine with calcium ions to form hydroxy apatite, the major inorganic molecule in teeth and bone.

Subject and Method

The study was performed on 20 premenopausal women with age (40-45) years and 20 postmenopausal women of age {46-50} years old. None of women had cardiac, renal disease, diabetes or any endocrine disorder. No women were taking any vitamin or food supplements, nor was on a weight reducing diet at the time of study.

Non-fasting venous blood samples were drawn between 8:00 to 12:00am. Blood samples were centrifuged at 3000rpm for 15 min at 4°C and serum was separated for the assay laboratory parameters. Serum iron and TIBC was measured by colorimetric method using Ferrozine kit (7). Serum Calcium and Phosphorus were also estimated colorimetrically by O, Cresolphthalein Complexone (OCPC) end point Assay method (8) and Mod Gomorris method (9) respectively.

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Statistical Analysis

Mean \pm S.D. of all the variables was determined. Students t-test was applied to see the significance of difference of parameters between two groups. Pearsons correlation coefficient was determined to evaluate correlation different parameters.

RESULT

There was significant difference in level of iron (Fe), total iron binding capacity (TIBC), Calcium (Ca) and phosphorus (P).

Serum Iron is significantly ($p < 0.01$) higher in post menopausal women as compared to that in premenopausal women TIBC was slightly increased in post menopausal women which is not significant.

Serum Calcium and Phosphorus levels further significantly decrease in postmenopausal women as compared to premenopausal women.

Table

Sn Parameters	Control	Premenopausal	Postmenopausal	P-Value
1 Serum Iron	132.3 \pm 32.85	133.5 \pm 2.69	354.2 \pm 8.82	P<0.001
2 TIBC	252.7 \pm 31.28	257.9 \pm 9.90	262.4 \pm 14.46	P>0.01
3 Serum Calcium	9.51 \pm 0.678	8.05 \pm 0.49	5.62 \pm 0.62	P<0.01
4 Serum Phosphorus	4.72 \pm 0.27	4.48 \pm 3.71	3.34 \pm 1.88	P<0.01

DISCUSSION

Calcium, Iron, TIBC and Phosphorus status was evaluated in pre and post menopausal women in the present study. Marked low level of Serum Calcium was found in the post menopausal than in premenopausal women. Declining ovarian function before menopause is accompanied by reduction in bone mass and altered calcium metabolism (10). Oestrogen deficiency may induce calcium loss due to decreased intestinal calcium absorption and decreased renal calcium conservation (11,12,13). This further support the above observation of low serum calcium level, hence susceptibility for the development of weakening of bone.

Serum Iron is significantly increase in post menopausal women as compared to pre menopausal women due to cessation of menstruation, there is no loss of iron from the body,so it acculumates in the body,which lead to increase serum iron in menopausal women(14,10).

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