

## Menopause and Role of Antioxidants, Calcium and Exercises

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### Abstract:

**Objective:** To study the role of antioxidants, calcium and exercises in menopausal women.

**Method:** In this pilot study fifty postmenopausal women were selected and they supplemented with antioxidants, calcium and advised weight bearing exercises for three months. Their menopausal symptoms, lipid profiles and BMD were assessed.

**Results:** Antioxidants, calcium and exercises reduced stress, elevate mood and enhance energy. Exercise and calcium supplementation have synergistic effect on bone density.

**Conclusion:** Adequate supplementation of antioxidants, calcium along with exercises there is improvement in lipid profile, alleviation of menopausal symptoms and improvement in bone health.

**Key words:** Menopausal symptoms, BMD, Antioxidants

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### I. Introduction

Menopause is defined as the permanent cessation of menstruation due to loss of ovarian follicular activity and hence lack of ovarian hormones. Menopausal women are also referred to as 'mature women'. The age at which natural menopause occurs is between the age of forty five and fifty five with a mean at around fifty one years for women worldwide. Menopause is the time in a woman's life when reproductive capacity ceases. The ovaries stop functioning and their production of steroid hormones fall. A variety of physiological changes take place in the body at this time. Some of these changes are results of cessation of ovarian functions with resulting deficiency of hormones. Superadded to this are other concurrent changes that are a result of the ongoing ageing process combined with concomitant life changes. About 73% of women report troublesome symptoms during menopause. The most common symptoms are hot flushes and vaginal atrophy. Other symptoms are irritability, depression, night sweats, palpitation, mood swings, aging of skin, osteoporosis, decreased immune function and weakening of muscles. Long term systemic effects of menopause are cardiovascular problems, joint problems, connective tissue & collagen disorders and neurological problems.

Antioxidants are substances that protect against the deleterious effects of free radicals arising as a by product of normal metabolism or by chemical accidents. These are vitamins like A, C, E, carotenoids cystine glutathione. Minerals like selenium, zinc, copper, iron, chromium, manganese. Under normal circumstances in healthy individuals the effect of oxidants is counteracted by antioxidant defenses found in body's cell compartments in the form of enzymatic and non-enzymatic antioxidants. Menopausal women are vulnerable to the action of free radicals because of loss of the antioxidant effect of estrogen as well as the decreased competence of antioxidant defenses with ageing. Hence there is need of antioxidants, which is sufficient to prevent deficiency and to reduce the enhanced oxidative stress and decrease the risk of diseases associated with ageing. Calcium influences bone strength through its effect on bone mass. Calcium intake is one of the important modifiable environmental factors for the normal development of the skeleton during growth and the maintenance of bone mass in later life. After menopause, women lose bone at a rate of 2-3% per year. This is mostly due to the deficiency of estrogen at menopause which leads to decreased intestinal calcium absorption and renal calcium re-absorption (1,2,3,4). So there is need of intake of 1200-1500mg/day of calcium in menopausal women. Calcium supplementation and exercise have synergistic effect on bone density. Apart from this, exercise can improve self-esteem, reduce stress, elevate mood, enhance energy, reduces chances of cardiovascular disease, increase muscle mass and body metabolism thus resulting in weight loss and alteration of the muscle-fat ratio. Hence regular exercise prescription for menopausal women is an

adjunct therapy to enhance the medication's effect on bones and the cardiovascular system. weight bearing exercises, are those in which the bones and muscles work against gravity like walking, dancing, jogging and stair climbing. These can help menopausal women stay healthier.

## II. Methods And Materials

This randomized trial was performed to determine and compare the effect of antioxidants, calcium and exercise with that of placebo in reducing the menopausal symptoms, improvement in lipid profile and improvement in bone mass. Total fifty postmenopausal women with the age of 45-60 years (mean age 51 years) were selected. The study was approved by Ethical Committee of Adesh Medical college Bathinda, where study was performed. Written informed consent was obtained from all women. Women with both natural and surgical menopause were included. Exclusion criteria were women on HRT therapy and hypersensitivity to study drugs. Women were randomized and divided into two groups where group A(25) received antioxidant, calcium and exercise plan while group B (25) received placebo treatment.

Primary efficacy endpoints were improvement in the symptoms including; hot flushes, night sweats tiredness, insomnia and feeling of well being. The secondary endpoints were improvement in lipid profile, hemoglobin, reduction in weight and improvement in bone mineral density i.e BMD.

Group A received one antioxidant capsule, calcium(1200mg) and a plan of weight-bearing and strength-training exercise for three months. The improvement in symptoms were graded as minimal, good and almost complete on 30th, 60th and 90th day(Table 1). Lipid profile, hemoglobin, weight and BMD were also evaluated on the same days(Table2).

## III. Results

Results were analyzed statistically by the Chi-Square test. P value less than 0.05 was considered significant. At baseline 25 women each from group A & B reported menopausal symptoms. On the 90th day, 15 women(60%) in group A as compared to 4(16%) in group B reported almost complete improvement (p=0.001). 8 (32%) women in group A reported moderate improvement as compared to 13 (52%) in group B. Only 2 (8%) women in group A reported minimal improvement as compared to 8 (32%) in group B. (Table 1) The secondary endpoints were also show improvement. There was increase in BMD by 5-10% in group A as compared to group B. Similarly group A show improved results in lipid profile i.e reduces LDL, increases HDL and reduced levels of triglycerides. There were also increase of hemoglobin by 20% in group A as compared to group B.(Table 2)

**Table 1 - Improvement in symptoms**

Improvement in symptoms	Group A ( 25 )	Group B ( 25 )
	Post Treatment -90th days	Post Treatment -90th days
Complete	15= 60%	4= 16%
Moderate	8= 32%	13=52%
Minimal	8= 8%	8=32%

**Table 2- secondary endpoints**

Parameters	Group A =25	Group A =25
BMD	Increase in 10%	Nil
Lipid profile	Improved in 30%	Improved in 3%
Hb%	Increase in 20%	NIL
Reduction in wt	In 40%	In 6%

## IV. Discussion

In our study key symptoms of menopause were quantified to assess the effectiveness of antioxidants, calcium and exercise in menopause. Antioxidants supplements significantly reduces the postmenopausal symptoms and improved general well being suggesting their important role in the treatment of menopausal symptoms. Antioxidants like vitamin C improve the endothelial function in postmenopausal women with established estrogen deficiency (5). Evidence indicates that postmenopausal women have increased plasma homocysteine level. Folic acid, vitamin B6 and vitamin B12 is associated

with a significant reduction in plasma concentrations of homocysteine(6,7,8,9). Postmenopausal osteoporosis is characterized by low bone mass and microarchitectural deterioration of bone tissue leading to enhanced bone fragility and increased fracture risk(10,11,12,13). India seems to have a very high prevalence of osteoporosis, which may be due to associated nutritional vitamin D and calcium deficiency(14,15,16). Osteoporosis is a preventable disease. Prevention starts from childhood and the goals include regular weight-bearing exercise, good general nutrition, adequate intake of calcium and vitamin D and not smoking(17). All perimenopausal and postmenopausal women should undergo a bone density scan to establish their baseline status. All peri & postmenopausal women should receive both calcium and vitamin D supplements, including 1000-1200mg calcium and 800iu vitamin D daily(18). Exercise and calcium supplementation have synergistic effect on bone density. Exercise can improve self esteem, reduces stress, elevate mood and enhance energy. Regular exercise reduces risks associated with reduced estrogen i.e reduces LDL, increases HDL, cholesterol and reduces the levels of blood triglycerides and fibrinogen and increases cardiorespiratory endurance(19). PFMT (pelvic floor muscle training) also known as Keigel's exercises, are very much effective treatment among various other treatment modalities for a very common kind of bladder problem i.e stress and urge incontinence. There are three types of exercise that can help postmenopausal women stay healthier; aerobic, weight bearing and flexibility exercises help reduce the depression and irritability that can come with menopause.

## V. Conclusion

A nonhormonal nutritional supplement i.e antioxidant and calcium along with regular exercise schedule provides relief and prevention from menopausal symptoms. Results obtained from this study supports to the evidence that long-term treatment with antioxidant, calcium supplement along with exercise could be more effective in improving symptoms related to menopause without any detrimental effects on women's health. The regime also appears to be a safe and effective alternative to HRT for postmenopausal women. The potential to increase bone mass, and to compensate for bone loss due to osteoporosis, is a benefit of calcium intake and exercise that should not be overlooked.

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