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EC GYNAECOLOGY
Research Article

Role of Isoflavones with Calcium, Vitamin D and Magnesium to Improve Menopausal Symptoms, Quality of Life, Sexual Function, Body Composition and Metabolic Parameters

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Received: October 08, 2019; **Published:** November 06, 2019

Abstract

Background: Menopause is a natural and normal event-not a disease or disorder. A woman not menstruating for one year after her last period is termed as being postmenopausal. Yet menopause symptoms may significantly affect quality of life, sexual function, body composition and metabolic parameters. According to a 2002 study, the Women's Health Initiative (WHI), found women who took HRT for several years had an increased risk of breast cancer, stroke and heart disease. Hence, the need for alternative therapy with nutritional supplements like isoflavones, calcium, magnesium and vitamin D.

Methods: Study was conducted of 50 patients visiting OPD in the year 2018. Each patient was counseled and a consent form was signed prior to data collection. All patients received oral preparation of isoflavones, calcium, magnesium, vitamin D up to 1 year. Assessment of quality of life and sexual function through evaluation of the Menopause-Specific Quality of Life Questionnaire (MENQOL) and the Female Sexual Function Index.

Results: After 12 months, a significant reduction in Menopause- specific quality of life (MENQOL) ($p < 0.05$) and a significant increase in all Female Sexual Function Index (FSFI) domain scores ($p < 0.05$) was observed. Isoflavones improve menopausal symptoms without causing significant side effects. Isoflavones together with calcium, vitamin D improve vasomotor disturbances as well as quality of life and sexual function in menopausal women. Furthermore, this mixture ameliorates lipid profile and body composition toward pre-menopausal homeostatic condition. Isoflavones and vitamin D also exert a synergistic effect on bone metabolism.

Conclusion: The combination of isoflavones together with calcium, vitamin D and magnesium acts as an alternative to HRT exhibiting positive effects on menopausal symptoms, quality of life, sexual function, body composition and metabolic parameters.

Keywords: *Isoflavones; Calcium; Vitamin D; Magnesium; Menopausal Symptoms; Quality of Life; Sexual Function; Body Composition; Metabolic Parameters*

Introduction

Menopause is defined as physiologic or iatrogenic cessation of menses (amenorrhea) due to decreased ovarian follicular function. Menopause is a natural and normal event-not a disease or disorder. A woman not menstruating for one year after her last period is termed

as being postmenopausal. Yet menopause symptoms may significantly affect quality of life. Most women reach menopause between the ages of 45 and 55years. On average, menopause occurs at age 51, but it varies from person to person [1].

Menopause is divided into two phases [2]:

- Perimenopause, when a woman begins to have symptoms but is still having periods, which can last for 4 to 5 years. She can still become pregnant during this time.
- Postmenopause, when a woman does not menstruate for almost 12 months.

The term surgical menopause is used if both ovaries are removed for e.g. Hysterectomy.

As ovaries age, their response to the pituitary gonadotropins follicle-stimulating hormone (FSH) and luteinizing hormone (LH) decreases, causing [1]:

- A shorter follicular phase (with shorter and less regular menstrual cycles)
- Fewer ovulations
- Decreased estrogen and progesterone production.

Around menopause, estrogen levels decrease by half [1]. The most common menopausal symptoms due to decreased estrogen levels are vasomotor symptoms manifesting as hot flashes, night sweats and mood swings. The risk for depression rises during the menopause transition, especially in women with a history of depression [3].

Changes in the general appearance

- **Skin:** The skin loses its elasticity and becomes thin and fine. This is due to the loss of elastin and collagen from the skin.
- **Weight:** Weight increase is more likely to be the result of irregular food habit due to mood swing. There is more deposition of fat around hips, waist and buttocks.
- **Hair:** Hair become dry and coarse after menopause. There may hair loss due to the decreasing level of estrogen.
- **Voice:** Voice become deeper due to thickening of vocal cords.

The other symptoms associated with menopause are [3]:

- Increased abdominal fat and decreased lean body mass resulting in difficulty in losing weight
- Vaginal changes such as decreased lubrication and vaginal dryness
- Sometimes vaginal changes are more severe and progress to atrophic vaginitis causing pain during intercourse and speculum exams, as well as increased urinary symptoms, such as urine leakage and frequent bladder infections

Also, with menopause, women lose the protective effects of estrogen and are at increased risk for osteoporosis and heart disease.

Materials and Methods

Study was conducted of 50 patients visiting OPD in the year 2018.Each patient was counselled and a consent form was signed prior to data collection. We only enrolled menopausal women who voluntarily accepted to participate in this study and met the following criteria: age between 40 and 60 years, absence of menses for more than 12 months, presence of vasomotor disturbances with normal pelvic examination (no mass palpable confirmed ultrasonically). Exclusion criteria were women who received other drugs such as estrogen, estrogen-progestin or other treatments in last three months for menopausal symptoms, or on any other drugs. Other exclusion criteria

included hyperthyroidism and diabetes, osteoporosis (T-score < -2.5 at the femoral neck or lumbar spine), history of pathologic fractures or significant spine abnormalities.

Results

Mean of parameters analysed- Total patients 50

Age (years)	51
Menopause (years)	2
Age of menopause (years)	49
Parity (no. of children)	2
No of vaginal delivery	2
Body mass index (BMI) (kg/m^2)	27

Commonest complaint of patients presenting to the outpatient department were hot flushes, night sweats, irregular period, sleep disturbance, sore breasts, mood changes and weight gain. She also complained of itching of vagina, dryness, frequency of urine, dyspareunia, and low libido. Of the total 50 patients 14 patients had family history of breast cancer.

All patients received oral preparation of isoflavones, calcium, magnesium, vitamin D up to 1 year. Assessment of quality of life and sexual function through evaluation of the Menopause-Specific Quality of Life Questionnaire (MENQOL) and the Female Sexual Function Index. Analysis of Total cholesterol, HDL, LDL, triglycerides and serum 25-OH-vitamin D levels were evaluated at baseline and after 12 months.

After 12 months, a significant reduction in Menopause- specific quality of life (MENQOL) ($p < 0.05$) and a significant increase in all Female Sexual Function Index (FSFI) domain scores ($p < 0.05$) was observed (Figure 1 and 2).

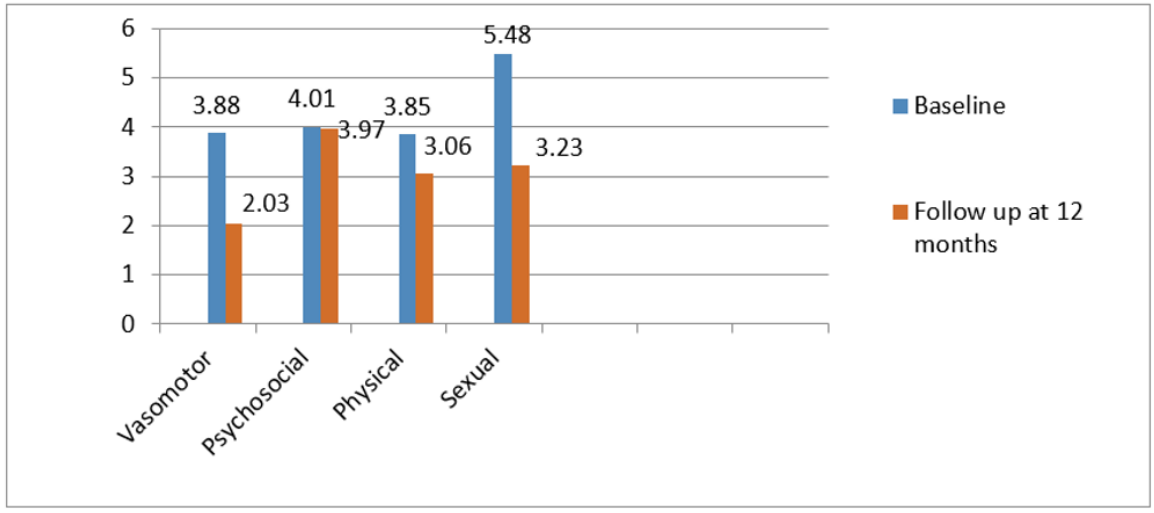

Figure 1: *MENQOL domain scores at baseline and at 12-months follow-up.*

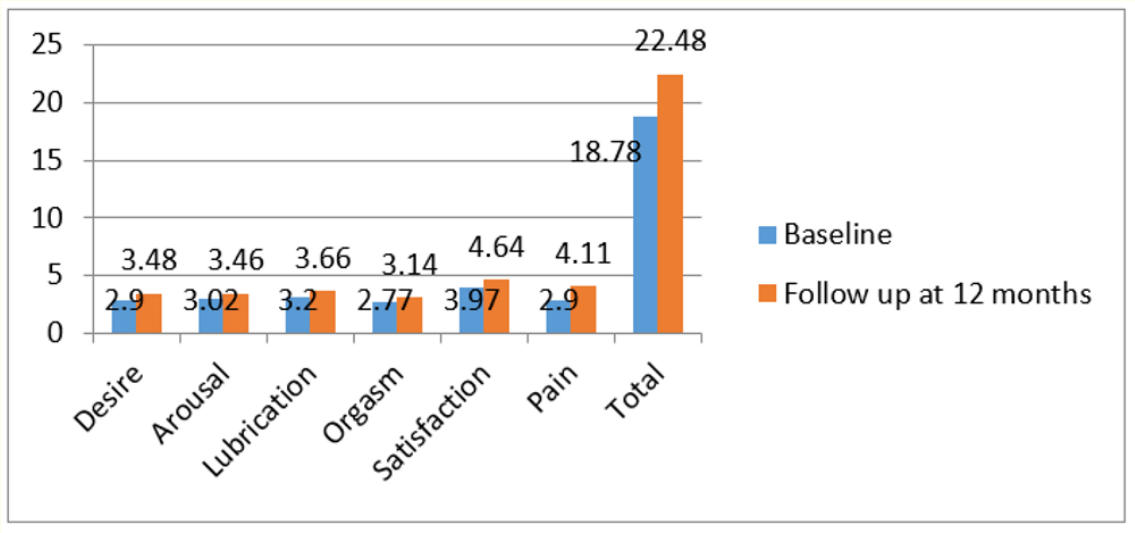

Figure 2: *Female sexual function index (FSFI) scores at baseline and at 12-months follow-up.*

Discussion

Menopause itself does not need treatment, however it is important to treat associated symptoms and reduce risk of long-term medical conditions, such as heart disease and osteoporosis [2].

Hormone replacement therapy (HRT), which consists of supplemental estrogen and progesterone, was used to treat menopausal symptoms in earlier days. According to a 2002 study, the Women's Health Initiative (WHI), found women who took HRT for several years had an increased risk of breast cancer, stroke and heart disease. Hence, the need for alternative therapy with nutritional supplements like isoflavones, calcium, magnesium and vitamin D [2].

Isoflavones improve menopausal symptoms without causing significant side effects. Isoflavones together with calcium, vitamin D improve vasomotor disturbances as well as quality of life and sexual function in menopausal women. Furthermore, this mixture ameliorates lipid profile and body composition toward pre-menopausal homeostatic condition [4].

Isoflavones and vitamin D also exert a synergistic effect on bone metabolism [4].

As estrogen levels decline with menopause, women are at risk for osteoporosis. Hence, the need for calcium, vitamin D and magnesium supplementation to prevent loss of bone density. Poor calcium intake in early life can account for as much as 50% of the differences in hip fracture rates in postmenopausal women [5].

The National Institutes of Health (NIH) recommends that women over 50 need 1,200 mg of calcium per day through diet and supplements. Also, the recommended dietary intake for vitamin D is currently 400 to 600 IU per day for women between 50 to 70 years of age [2].

Conclusion

The combination of isoflavones together with calcium, vitamin D and magnesium acts as an alternative to HRT exhibiting positive effects on menopausal symptoms, quality of life, sexual function, body composition and metabolic parameters.

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Volume 8 Issue 12 December 2019