



Research Article

The Incidence of Urogynecological Problems in Postmenopausal Women and Its Correlation with Serum Estradiol Levels

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ABSTRACT

Background: Menopause is an irreversible bio psychological phenomenon associated with the process of ageing in women along with which there is a steady decline of the various functions, including a drop in serum estradiol levels, wherein there are an array of changes projected in the form of urogynaecological symptoms.

Aims & Objectives: To determine the prevalence of urogynecological complaints amongst postmenopausal women and their correlation with serum estradiol levels.

Materials & Methods: A cross-sectional hospital based study was carried out amongst 190 postmenopausal women over 18 months at the Department of Obstetrics & Gynaecology, JSS Hospital, Mysuru. All patient data which were related to the incidence of urogynaecological symptoms were recorded & its correlation with serum estradiol levels was carried out.

Results: The most common symptoms recorded was 188 (98.95%) hot flushes and 187 (98.42%) vaginal dryness. The mean serum estradiol levels among postmenopausal women was found to be 20.28 pg/ml and significant. The mean estradiol levels amongst most common urinary symptoms was found to be not significant with p-value:0.7852 but vaginal symptoms had a significant p value: 0.022.

Conclusion: Menopause is an age related irreversible process which cannot be stopped at any stage. We found a direct relationship wherein a drop in estradiol levels increased the symptoms, however it is possible to address the associated symptoms of menopause which may improve the quality of life of an individual on social, economic as well as psychological aspect. Therefore, we recommend timely assessment, early detection and timely management of the condition.

Keywords: Bladder, Menopausal symptoms in South India, Serum estradiol, Womens health

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INTRODUCTION

Menopause is an irreversible bio psychological phenomenon associated with the process of ageing in women along with which there is a steady decline of the various functions of the body, which can be primarily attributed to the deficiency in the estrogen levels.¹⁻³ As per the Indian menopause society research,

the average age of menopause amongst Indian women is recorded to be 47.5 years.¹ It has also been found that approximately 33% of the women spend their lives in the phase of menopause.^{2,3}

Ovary is a vital dynamic indispensable organ of the female reproductive system which is responsible for a plethora of

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changes taking place throughout the life cycle of women. Ovaries are reckoned to be the principle source of estradiol (estrogen), accounting for about 66% of the estrogen levels in the women's body.

Estrogens have the capability to increase the blood flow which aids in maintaining a low pH whilst elevating the levels of glycogen, which in turn increases the lactobacilli count in the vagina which acts as a protective mechanism against vaginitis as well as urinary tract infections.⁴

Enormous data collected over the years has made it evident that the drop in the estrogen levels has a significant role in the pathogenesis of the common symptoms of Genitourinary syndrome of menopause (GSM) such as vaginal dryness and burning; pelvic pain and dyspareunia, in addition to which there may also present with pelvic floor dysfunctions such as irritative lower urinary tract symptoms (LUTS). Lower urinary tract symptoms form an extensive categorization of symptoms of GSM which encompasses urinary urgency, frequency, pain in the lower urinary tract & urinary incontinence due to urgency (UII), along with other symptoms being observed as voiding dysfunction.^{5,6,7}

Even though 80% of the postmenopausal women have such symptoms, it is only 20-25% of them who seek care reporting the vaginal and urinary symptoms. In INDIA, the most common reason cited for not seeking medical care/help is because of cultural values.^{1,5}

Only 20–25% of postmenopausal women who seek care report having vaginal or urinary symptoms, despite the fact that 80% of them have such symptoms. Cultural values are the most often mentioned excuse given in India for not seeking medical attention or assistance. In addition, many women may experience a lack of support and direction as they age, which could make things harder for postmenopausal women.^{1,5}

Numerous studies have made it evident that vaginal estrogen treatment has more beneficial effects on symptoms and signs of vaginal atrophy in comparison to that of postmenopausal women treated with placebo, which was put forward by the International uro gynaecology association research and development committee.^{8,9}

AIMS AND OBJECTIVES OF THE STUDY

PRIMARY OBJECTIVE

- ❖ To determine the prevalence of urogynecological complaints in postmenopausal women

SECONDARY OBJECTIVES

- ❖ To assess correlation of symptoms to serum estradiol levels.

MATERIALS AND METHODOLOGY

- **Study design:** Cross sectional study
- **Study Duration & Place:** The study was conducted over 18 months (December 2022 – May 2024) at the Department of Obstetrics & Gynecology, JSS Hospital, Mysuru.

- **Sampling technique:** Consecutive sampling
- **Sample size:** Sample size estimated, considering prevalence of urogynecological problems among postmenopausal women as 67%(ref-nidhi etal), and alpha error of 5%, relative precision of 10%, as 190
- Formula:

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} \right)^2 (1-p)p}{\xi^2 p}$$

Where,

p : Expected proportion

ξ : Relative precision

1- α/2 : Desired Confidence level

- **Statistical methods:** The summary statistics was done using proportions, mean, median, SD and range. Inferential statistics was done using chi square test for comparing two independent proportions wherever required. Independent t test was used to compare 2 means and one way ANOVA to compare more than 2 group means. All the measurements were done using SPSS 210.
- **Subject Eligibility:-**
 - Inclusion Criteria:**
 - Postmenopausal women presenting to Department of Obstetrics & Gynecology.
 - Exclusion Criteria:**
 - Women who are on HRT.
 - Treated for genital malignancy.

Method of collection of data:

- **Patients that fit into inclusion and exclusion criteria**



Questionnaire given about urogynecological symptoms and 5ml of fasting blood sample was collected from each patient in a red vacutainer which was centrifuged and analysed for serum estradiol levels by chemiluminescence method.



Severity of symptoms were analysed and correlated with serum estradiol levels.

RESULTS

Table 1: Incidence of postmenopausal symptoms

SYMPTOMS	YES	NO
VAGINAL DRYNESS	187 (98.42%)	3 (1.58%)
ITCHING	185 (97.37%)	5 (2.63%)
DISCHARGE PER VAGINA	48 (25.26%)	142 (74.74%)
BLEEDING PER VAGINA	61 (8.95%)	129 (91.05%)
EXPERIENCE A FEELING OF INCOMPLETE BLADDER EMPTYING	91 (47.90%)	99 (52.10%)
HAVE TO PUSH ON A BULGE IN VAGINAL AREA WITH YOUR FINGERS TO START OR COMPLETE URINATION	66 (34.74%)	124 (65.26%)
EXPERIENCE FREQUENT URINATION	109 (57.37%)	81 (42.63%)
EXPERIENCE URINE LEAKAGE ASSOCIATED WITH A FEELING OF URGENCY THAT IS A STRONG SENSATION	67 (35.26%)	123 (64.74%)
EXPERIENCE URINE LEAKAGE RELATED TO COUGHING, SNEEZING, OR LAUGHING	132 (69.47%)	58 (30.53%)
EXPERIENCE DIFFICULTY EMPTYING YOUR BLADDER	59 (31.05%)	131 (68.95%)
EXPERIENCE PRESSURE IN THE LOWER ABDOMEN	53 (27.90%)	137 (72.10%)
EXPERIENCE HEAVINESS OR DULLNESS IN THE PELVIC AREA	48(25.26%)	142 (74.74%)
HAVE A BULGE FALLING OUT , THAT YOU CAN SEE OR FEEL IN YOUR VAGINAL AREA	122 (64.21%)	68 (35.79%)
EVER HAVE TO PUSH ON THE VAGINA OR AROUND THE RECTUM TO HAVE OR COMPLETE BOWEL MOVEMENTS	3 (1.58%)	187 (98.42%)
HOT FLUSHES	188 (98.95%)	2 (1.05%)
MOOD VARIATIONS	100 (52.63%)	90 (47.37%)
ANY OTHER SYMPTOMS	1 (0.53%)	189 (99.47%)

The most common symptoms were 188 (98.95%) hot flushes, 187 (98.42%) vaginal dryness, 185 (97.37%) itching, 132 (69.47%) experience urine leakage related to coughing, sneezing, or laughing, 122 (64.21%) have a bulge falling out ,

that you can see or feel in your vaginal area, 109 (57.37%) experience frequent urination, 100 (52.63%) mood variations. Other symptoms were found to be less than 50%

TABLE 2a: SERUM ESTRADIOL LEVELS AMONGST POSTMENOPAUSAL WOMEN

SERUM ESTRADIOL LEVELS (pg/ml)	POSTMENOPAUSAL WOMEN	MEAN ESTRADIOL LEVELS (pg/ml)
=<15	58	15
15.1-19	46	17.58
19.1 – 25	79	21.49
25.1 – 30	6	27.6
>30	1	31.18
p	<0.00001	

The result is significant at $p < .05$

The mean estradiol levels was found to be 15, 17.58, 21.49, 27.6 & 31.18 with estradiol levels of =<15, 15.1-19, 19.1 – 25, 25.1 – 30 and >30. It was found to be statistically significant

TABLE 2b: MEAN SERUM ESTRADIOL LEVELS AMONGST POSTMENOPAUSAL WOMEN

MEAN ESTRADIOL LEVELS	20.28 pg/ml
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TABLE 3: MEAN ESTRADIOL LEVELS AMONGST MOST VAGINAL SYMPTOMS & THEIR STATISTICAL SIGNIFICANCE

SYMPTOMS	MEAN ESTRADIOL (Pg/ml)	STATISTICAL SIGNIFICANCE
VAGINAL DRYNESS	18.45 ± 3.77	The p -value is .022516. The result is significant at $p < .05$.
HAVE TO PUSH ON A BULGE IN VAGINAL AREA WITH YOUR FINGERS TO START OR COMPLETE URINATION	16.91 ± 3.38	
HAVE A BULGE FALLING OUT , THAT YOU CAN SEE OR FEEL IN YOUR VAGINAL AREA	17.77 ± 3.42	
EVER HAVE TO PUSH ON THE VAGINA OR AROUND THE RECTUM TO HAVE OR COMPLETE BOWEL MOVEMENTS	17.34 ± 2.16	

TABLE 4: MEAN ESTRADIOL LEVELS AMONGST MOST URINARY SYMPTOMS & THEIR STATISTICAL SIGNIFICANCE

SYMPTOMS	MEAN ESTRADIOL (pg/ml)	STATISTICAL SIGNIFICANCE
EXPERIENCE A FEELING OF INCOMPLETE BLADDER EMPTYING	17.38 ± 3.93	The p-value is .785224. The result is not significant at p < .05
EXPERIENCE FREQUENT URINATION	17.17 ± 3.36	
EXPERIENCE URINE LEAKAGE ASSOCIATED WITH A FEELING OF URGENCY THAT IS A STRONG SENSATION	16.78 ± 3.46	
EXPERIENCE URINE LEAKAGE RELATED TO COUGHING, SNEEZING, OR LAUGHING	17.32 ± 3.33	
EXPERIENCE DIFFICULTY EMPTYING YOUR BLADDER	16.90 ± 3.55	

DISCUSSION

Menopause is an irreversible phenomenon earmarking the end of the menstrual cycle in ageing woman wherein there is a steady decline in the levels of estrogen as well as across the various functions of the body, which is more pronounced in women with surgical menopause in comparison to the women with natural menopause.

In our study the most common symptoms recorded as per their highest incidence to lowest were as follows 188 (98.95%) hot flushes, 187 (98.42%) vaginal dryness, 185 (97.37%) itching, 132 (69.47%) experience urine leakage related to coughing, sneezing, or laughing, 122 (64.21%) have a bulge falling out, that you can see or feel in your vaginal area, 109 (57.37%) experience frequent urination, 100 (52.63%) mood variations.

Bharadwaj M et al.¹⁴ reported similar results wherein the most prevalent menopausal symptom as vaginal dryness 240 (80%), followed by vaginal itching (76%), vaginal discharge 200 (66.7%), dysuria 180 (60%), burning micturition 160 (53.3%), dyspareunia 170 (56.7%), increased frequency of urination 140 (46.7%), loss of libido 114 (38%), urinary incontinence 90 (30%), urgency 65 (21.6%)

Almost similar results were found by Soontrapa et al.¹⁵ in 2011 wherein they found UG symptoms revealing a high prevalence (vaginal dryness 71.2%, dyspareunia 52.0%, and incontinence 62.4%).

Gupta et al.² reports vaginal dryness as the most common complaint in both the groups (Group A: 62% and Group B: 48%) followed by vaginal discharge or infection (Group A: 28% and Group B: 25%). Around 19 (15%) in Group A and 10 (13.6%) in Group B were having burning micturition (dysuria), the most common complaint encountered

Hot flushes have been more common & severe in the western population, accounting to 50–82%, which is found to have a lower incidence amongst Asians.¹²

Within the framework of reproductive years, the production of estrogen is initiated within the theca cells in ovary with androgen production with terminal phase being the transformation of androgens to estrogens within the granulosa cells via the action of enzyme aromatase. The change in estradiol levels is associated with a plethora of changes in ageing women who may or may not require immediate attention. In our study, the mean estradiol level amongst the most common symptoms was found to be not significant, with vaginal dryness 18.45, itching 18.40, hot flushes 18.56, mood variations

18.07, have a bulge falling out 17.77. But the mean estradiol level amongst most vaginal symptoms was found to be significant and not significant in most urinary symptoms.

Malik et al.¹² reports mean values of serum estradiol were 66.29pMol/L and 64.13 pMol/L in bladder problems and vaginal dryness respectively. There was highly significant correlation seen with genito-urinary symptoms and fall in estradiol values (correlation coefficient of – 0.495)

In an article published by J H Lang et al, serum estradiol levels and ER values in the premenopausal women with pelvic organ prolapse were significantly lower than in the control group. A positive correlation was found between ERs and the number of postmenopausal years. ER values were similar in the cardinal and uterosacral ligaments¹⁶

In a study done by M Gopal et al, the relationship between changes in estradiol levels over time and lower urinary tract symptoms in premenopausal women as they transitioned to menopause was estimated. It showed that women with a sharp decline in estradiol through the menopausal transition have significantly lower urinary incontinence scores. Urinary filling symptoms and voiding dysfunction were not associated with changes in estradiol through the menopausal transition¹⁷

Even though we had a large sample size in our study, we would recommend a multi-centric study across different population for a better understanding of the correlation between the serum estradiol levels and the outcome of the severity of the symptoms in patients with menopause at different stages.

CONCLUSION

Menopause is an age related natural ongoing process which cannot be avoided at any stage; however it is possible to address the associated symptoms of menopause which may improve the quality of life of an individual on social, economic as well as psychological aspect. We found hot flushes, vaginal dryness, itching, mood changes and pelvic organ prolapse as the most common symptoms which were present in more than 50% of postmenopausal women and positive correlation between vaginal symptoms and fall in estradiol levels. Therefore, we recommend timely assessment, counselling, early detection and timely management of the condition.

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ETHICAL APPROVAL

Ethical clearance for the study was taken from hospital ethics committee with number JSS/MC/PG/IEC-58/2022-23 (attached as supplementary file)

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