

SIGNIFICANCE OF INCIDENTAL THICKNESS OF ENDOMETRIUM ECHO ON TRANSVAGINAL ULTRA SOUND IN ASYMPTOMATIC POSTMENOPAUSAL WOMEN

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ABSTRACT

Background--The World Health Organization defines natural menopause as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity without an obvious intervening cause and is confirmed only after 12 consecutive months of amenorrhea. In asymptomatic postmenopausal women sonographically thickened endometrium (usually ≥ 5 mm) as an indication to proceed to further, more invasive investigations to find out endometrial pathology to reduce morbidity and mortality.

AIM-- To evaluate endometrial pathology in asymptomatic postmenopausal women with endometrial thickness ≥ 5 mm on transvaginal ultrasound.

Methods-- This was a Descriptive study done in All Asymptomatic Postmenopausal Women attending Gynecology OPD in the Department of Obstetrics and Gynecology Kasturba Hospital, BHEL, Bhopal, Madhya Pradesh, India between - MAY 2018 to AUGUST 2019 .sample size 100 patients. In inclusion criteria, all asymptomatic postmenopausal women having endometrial thickness ≥ 5 mm and written informed consent. In exclusion criteria,

women with abnormal pap smear report grossly abnormal cervix and diagnosed genital tract malignancy, bleeding diathesis, and cardiac diseases.

Result--Out of 100 patients on which transvaginal sonography was performed Majority of the patients had endometrium thickness (mm) of 9 mm (23%) followed by 8 mm (22%) and 10 mm (14%). There were further taken hysteroscopy guided biopsy which shows 2% of women ca endometrium diagnosed and 19 % of the women endometrial polyp was diagnosed, 16% had endometrial hyperplasia without atypia and 1% patients had endometrial hyperplasia with atypia.

Conclusion-- The risk of cancer is high if the endometrium is thick (≥ 8 mm) in asymptomatic postmenopausal women. The results of our study highlight the need for routine use of transvaginal ultrasound as a screening test for endometrial cancer. We should consider though the rising incidence of endometrial cancer, and the requirement for more and larger prospective trials with surrogate criteria for the thickened endometrial stripe in postmenopausal women in TVS for both symptomatic and asymptomatic postmenopausal women.

Keywords--Asymptomatic postmenopausal women, Thickened endometrium, Transvaginal ultrasound, endometrial pathology, Hysteroscopy guided biopsy.

Introduction

The World Health Organization defines natural menopause as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity without an obvious intervening cause and is confirmed only after 12 consecutive months of amenorrhea.¹

In general, natural menopause occurs between 45 and 55 years of age. In India, the range of mean age at menopause reported in different studies appears to be rather young, between 41.9 and 49.4.²

menopause, according to the Indian National Family Health Survey (NFHS-3)³ carried out during 2005-2006, about 18percent of currently married women in the age group of 30-49 yr. had reached menopause; a very similar finding of 17.7 percent was reported in an earlier survey round (NFHS-2, 1998-99).⁴ Previous research using NFHS-2 data showed significant influences of educational attainment, the standard of living, number of children, age at first and last birth, use of contraception, body mass index, and anemia.⁵ Asymptomatic endometrial thickening is defined as endometrium ≥ 5 mm thick on ultrasonographic examination in postmenopausal women who have no complaints of bleeding. This condition presents a clinical-management dilemma and is a frequent reason for referral by family physicians, often after routine ultrasonographic examinations undertaken for non-gynecologic reasons.⁶ In 2009, the American College of Obstetricians and Gynecologists stated that there was no evidence to recommend routine investigation for asymptomatic endometrial thickening.⁷ Transvaginal ultrasonography is routinely performed as part of a pelvic sonogram in postmenopausal women, and images of the endometrium, including a measurement of the endometrial thickness (ET), are frequently obtained. A sonographically thickened endometrium (usually $>$ or equal 5 mm) is an indication to proceed to further, more invasive investigations to find out endometrial pathology to reduce morbidity and mortality. In women without vaginal bleeding, the threshold separating normal from abnormally thickened endometrium is not known.

In the present study we tried to evaluate endometrial pathology in asymptomatic postmenopausal women with endometrial thickness ≥ 5 mm on transvaginal ultrasound.

Materials and Methods

This was a Descriptive study done in All Asymptomatic Postmenopausal Women attending Gynecology OPD in Department of Obstetrics and Gynecology Kasturba Hospital, BHEL, Bhopal, Madhya Pradesh, India between - MAY 2018 to AUGUST 2019

Sample size: 100

Inclusion Criteria:

- Women who reported at least 12 months of amenorrhea after the age of 40 yrs provided that the amenorrhea was not explained by medication or disease.
- All asymptomatic postmenopausal women have endometrial thickness ≥ 5 mm.
- Patient giving written informed consent.

Exclusion Criteria:

- Women with bleeding diathesis and cardiac diseases.
- Women with abnormal Pap Smear report / grossly abnormal cervix.
- Women with diagnosed genital tract malignancy.

Intervention: transvaginal sonography; The measurement of the endometrium is made at its maximal thickness on a midline sagittal image of the uterus obtained by transvaginal ultrasound. It is a bilayer measurement combining the width of both the anterior and the posterior layers of the endometrium.

Method of collection of data: All Postmenopausal Women whether symptomatic or asymptomatic who fulfill the inclusion and exclusion criteria and were willing to participate in the study were selected based on purposive sampling.

A detailed history was taken. Systemic examination and routine Pap smear were done. Informed & written consent of all cases for routine transvaginal sonogram was taken after explaining the procedure.

All patients have initially undergone a transvaginal sonogram.

Patients with endometrial thickness ≥ 5 mm were subjected to a pap smear and diagnostic hysteroscopy-directed biopsy.

Statistical Analysis: All the data analysis was performed with the help of IBM SPSS ver. 20 software. Frequency distribution was performed to prepare the tables. Quantitative data were expressed as mean and standard deviation whereas categorical data were expressed as a percentage.

Results

The majority of the patients in the study were in the age group of 56-60 years (39 %) followed by 61-65 year (24%) and 66 -70 years (17 %). according to class patients in the study belong to Upper Middle Class (52%) followed by Middle Class (36%) and Upper Class (12%) socio-economic status.

Table 1: Age distribution of patients

| Age group | Frequency | percentage |
|-----------|-----------|------------|
| 45-50 | 3 | 3.0 |
| 51-55 | 14 | 14.0 |
| 56-60 | 39 | 39.0 |
| 61-65 | 24 | 24.0 |

| | | |
|--------------|-----|-------|
| 66-70 | 17 | 17.0 |
| 71-75 | 3 | 3.0 |
| Total | 100 | 100.0 |

Table 2: Distribution of Socioeconomic Status (SES) of patients

| SES | Frequency | Percentage |
|--------------------|-----------|------------|
| Upper Class | 12 | 12.0 |
| Upper Middle Class | 52 | 52.0 |
| Middle Class | 36 | 36.0 |
| Total | 100 | 100.0 |

in our study, the Majority of the patients according to Age of Menarche (AOM) belong to 14 AOM (58%) followed by 13 AOM (20%) and 15 AOM (10%). according to the duration of menopause maximum number of patients was in 11 - 15 years (38 %) followed by 6 – 10 years (27%) and 16 - 20 years (21 %). The majority of the women had an obstetric score of P2L2 (45%) followed by P3L3 (27%)

Table 3: Distribution according to Age of Menarche (AOM)

| AOM | Frequency | Percent |
|--------------|-----------|---------|
| 12 | 6 | 6.0 |
| 13 | 20 | 20.0 |
| 14 | 58 | 58.0 |
| 15 | 10 | 10.0 |
| 16 | 6 | 6.0 |
| Total | 100 | 100.0 |

Table 4: Distribution according to the duration of Menopause in years

| duration of Menopause in years | Frequency | percentage |
|--------------------------------|-----------|------------|
| 1-5 year | 6 | 6.0 |
| 6-10 year | 27 | 27.0 |
| 11-15 year | 38 | 38.0 |
| 16-20 year | 21 | 21.0 |
| 21-25 year | 8 | 8.0 |
| Total | 100 | 100.0 |

Table 5: Distribution according to obstetric score

| Obstetric score | Frequency | percentage |
|-----------------|-----------|------------|
| P1L1 | 2 | 2.0 |
| P2L2 | 45 | 45.0 |
| P3L3 | 27 | 27.0 |
| P4L3 | 3 | 3.0 |
| P4L4 | 17 | 17.0 |
| P5L5 | 4 | 4.0 |
| P6L6 | 2 | 2.0 |

| | | |
|-------|-----|-------|
| Total | 100 | 100.0 |
|-------|-----|-------|

Table 6: Distribution according to Endometrium Thickness (MM)

| Endometrium Thickness (MM) | Frequency | Percent |
|----------------------------|-----------|---------|
| 6 | 7 | 7.0 |
| 7 | 13 | 13.0 |
| 8 | 22 | 22.0 |
| 9 | 23 | 23.0 |
| 10 | 14 | 14.0 |
| 11 | 10 | 10.0 |
| 12 | 5 | 5.0 |
| 13 | 2 | 2.0 |
| 14 | 1 | 1.0 |
| 16 | 2 | 2.0 |
| 17 | 1 | 1.0 |
| Total | 100 | 100.0 |

after performing transvaginal sonography we found that 23% of patients had an endometrium thickness of 9 mm followed by 8 mm (22%) and 10 mm (14%).

Table 7: Distribution according to histopathological report

| Histopathological Report | Frequency | Percent |
|--|-----------|---------|
| Atrophy | 28 | 28.0 |
| Proliferative Endometrium | 20 | 20.0 |
| Polyp | 19 | 19.0 |
| Endometrial Hyperplasia Without Atypia | 16 | 16.0 |
| Insufficient Sampling | 10 | 10.0 |
| Unremarkable | 4 | 4.0 |
| Carcinoma Endometrium | 2 | 2.0 |
| Endometrial Hyperplasia with Atypia | 1 | 1.0 |
| Total | 100 | 100.0 |

in our study, we found that the maximum number of patients who have endometrial polyp which is 19%, 16% had endometrial hyperplasia without atypia, carcinoma endometrium diagnosed in 2% of women and 1% of patients had endometrial hyperplasia with atypia.

Discussion

In women with asymptomatic postmenopausal bleeding, the significance of TVS has been thoroughly studied. It is found that an endometrial measurement of 4 to 5mm or less has a negative predictive value for endometrial cancer of 99.4% or greater.⁷

In the present study, we found that the Majority of the patients were in the age group of 56-60years (39 %) followed by 61-65years (24%) and 66 -70 years (17 %) and the majority of the patients belong to the upper-middle class (52%) followed by the middle class (36%) and upper class (12%) socio-economic status. Similar reports were depicted in the previous studies.^{2, 8, 9}

Our study tried to find out the significance of incidental thickness of endometrium echo on transvaginal ultrasound. Endometrial cancer is usually associated with vaginal bleeding and the risk of cancer is very low in women without bleeding.¹⁰ Nowadays, screening for endometrial cancer is only recommended in women with Lynch syndrome, whose lifetime endometrial cancer risk is 40–60%.¹¹

Several investigators have advised that even an endometrial measurement, by less than 8mm, should prompt biopsy in asymptomatic women.^{12, 13} This recommendation to biopsy a woman with an incidentally found endometrial measurement of 8mm does not take into account the low risk of endometrial cancer between women without vaginal bleeding.^{14,15} In the present study we found that majority of the patients had an endometrium thickness of 9 mm (23%) followed by 8 mm (22%) and 10 mm (14%). That means 59% of the patients had endometrium thickness of ≥ 8 mm.

Intrauterine pathologies in postmenopausal women without symptoms are quite common up to 13%¹³ and appear mostly as polyps. In these cases, no treatment is needed. In another study based on ultrasound screening of postmenopausal women without bleeding, a cut-off of 5mm had a positive predictive value of 1.4%, and for 10mm, the positive predictive value was 4.5% and the negative predictive value was 99.9% for both cut-offs.¹⁶ Authors concluded that polyps of the endometrium are the most frequently encountered lesions in asymptomatic women. In line with that in the present study, we found that 19% of the women with an endometrial polyp.

When TVS is used as a screening test for cancer in postmenopausal women without vaginal bleeding, it is important to think of the low risk of cancer when deciding how to treat an incidental finding such as increased endometrial thickness, and it is not sensible to decide easily to perform unnecessary biopsies in such a high percentage of women.^{10, 17} In a cohort study by Ribeiro et al. 2007, no cases of cancer or hyperplasia were detected with an ET <8mm even if this was expanded to include symptomatic women with vaginal bleeding (n=457). However, in the present study, we found that 2% of women carcinoma endometrium, 16% had endometrial hyperplasia without atypia and 1% of patients had endometrial hyperplasia with atypia. Another retrospective study of 1750 women reported only 1 patient with an endometrial cancer diagnosis, with an endometrial measurement greater than 6mm, but it also had a diagnosis of cancer and 4 cases of atypia with an endometrial measurement less than 6mm.¹⁸

According to the Smith-Bindman et al. 2004, model of risk calculation, in a postmenopausal woman with vaginal bleeding, the risk of cancer is approximately 7.3% if her endometrium is thick (>5mm) and <0.07% if her endometrium is thin (≤ 5 mm) and without vaginal bleeding, the risk of cancer is approximately 6.7% if the endometrium is thick (>11mm) in asymptomatic postmenopausal women and 0.002% if the endometrium is thin (≤ 11 mm). A woman with known risk factors for endometrial cancer like diabetes, which increases the risk of endometrial cancer three-fold, or obesity, which increases the risk of cancer 10-fold, or the use of unopposed estrogen or tamoxifen, which increases the risk two-fold or age >70 years, will have a higher risk of cancer than one without such risk factors, even with the same endometrial thickness measurement.¹⁷ In addition, till now we have to consider only endometrial thickness, and no other components of endometrial appearance such as homogeneity, nodularity, and Doppler flow characteristics. There are insufficient data on

these characteristics to determine how they should be used in screening for endometrial cancer. ¹⁷Jacobs et al did a case-control study of 37 038 postmenopausal women who underwent Transvaginal sonography in the United Kingdom Collaborative Trial of Ovarian Cancer Screening (UKCTOCS) and reported that with an endometrial thickness cutoff of 5 mm, sensitivity was 80.5% and specificity was 85.7% for endometrial cancer. An increased cutoff of 10 mm or greater resulted in reduced sensitivity and increased specificity. The author concluded confirm the strong correlation between TVS findings and subsequent diagnosis of endometrial cancer. ¹⁶

Menon et al did a prospective study on 100 patients to find out the correlation of endometrial thickness by TVS and compared it with the gold standard of histopathological examination (HPE) of the endometrium by fractional curettage (FC). Menon et al found that as per the receiver operating characteristic curve (ROC) analysis, an EMT of 10.8 mm had a high negative predictive value (99.1%) for malignancy with moderate specificity (62.79%) and high sensitivity (92.3%). The authors concluded that TVS can be easily performed and is less expensive and a useful diagnostic tool in the evaluation of PMB with a cut-off value of 10.8 mm EMT gives a high sensitivity (92.3%) and moderate specificity (62.79%). ¹⁹

In our study we have tried by applying strict criteria of inclusion, to achieve the highest possible quality assessment of the evidence. The findings of this review, describe normative values for endometrial thickness, determine serious disease prevalence and estimate diagnostic accuracy at various TVS thresholds in the non-bleeding postmenopausal population.

The main limitation of our study is that although a significant number of asymptomatic postmenopausal women have been included in the review, because of the low prevalence of the disease in our study group, most of the studies had insufficient data with a wide range of sensitivity and specificity, thus making the estimate of the optimal threshold of endometrial thickness not possible.

It is more than obvious that the threshold of 4–5mm endometrial thickness, which is used in symptomatic postmenopausal women, may not be also used as so in postmenopausal women without bleeding as the risk of overtreatment is imminent. The results of our study don't justify the need for routine use of transvaginal ultrasound as a screening test for endometrial cancer as the incidence of this pathology is extremely low in the group of asymptomatic postmenopausal women. We should though consider the rising incidence of endometrial cancer, and the requirement for more and larger prospective trials with surrogate criteria for the thickened endometrial stripe in postmenopausal women in TVS for both symptomatic and asymptomatic women.

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