



Diagnostic Accuracy of Transvaginal Ultrasound in Perimenopausal and Postmenopausal Bleeding (ORIGINAL ARTICLE)

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ABSTRACT

Aim: To study the endometrial pathology in patients with perimenopausal and postmenopausal bleeding by using transvaginal ultrasound, hysteroscopy and histopathology

To compare the sonographically measured endometrial thickness and morphology and hysteroscopic finding with histopathologic diagnosis in women with perimenopausal and postmenopausal bleeding

Materials and methods: Sample size is 50 and study was conducted between January 2008 and December 2014.

Inclusion criteria—perimenopausal women beyond 40 years and postmenopausal women,

Exclusion criteria—any use of hormone replacement therapy or progesterone therapy and patients with fibroids and adnexal mass. All patients underwent transvaginal ultrasound (TVS), hysteroscopy and endometrial biopsy in that order. Histopathological report was compared with TVS and hysteroscopic findings

Observations: Endometrial thickness measured by transvaginal ultrasound. Thickness above 4 mm is taken as abnormal. Endometrium studied by hysteroscopy and findings compared with transvaginal ultrasound and histopathological findings

Conclusions: TVS was complementary to hysteroscopy in the diagnosis of endometrial pathology. A 5 mm cut-off for endometrial thickness in postmenopausal women could reliably be ruled out endometrial pathology. Hysteroscopy was superior to TVS in the detection of focal pathology like polyps. Both TVS and hysteroscopy are complementary diagnostic methods to histopathology and could be accurately used to discriminate between normal and pathologic endometrial conditions in women with postmenopausal and perimenopausal bleeding.

Keywords: Perimenopausal bleeding, Postmenopausal bleeding, transvaginal ultrasound, hysteroscopy, histopathological examination, endometrial thickness, endometrial polyp

INTRODUCTION

Perimenopausal and postmenopausal bleeding are two important symptoms of aging women. In all cases an early diagnosis of carcinoma endometrium should be ruled out. Evaluation of perimenopausal bleeding is by transvaginal ultrasound and hysteroscopy. Diagnosis is by dilatation and curettage. In the present study

reveals the significance of more non-invasive transvaginal ultrasound in evaluating perimenopausal and postmenopausal bleeding

AIM OF STUDY

1. To study the endometrial pathology in patients with perimenopausal and postmenopausal bleeding by using

transvaginal ultrasound and histopathology.

- To compare the sonographically measured endometrial thickness and morphology with histopathological diagnosis in women with perimenopausal and postmenopausal bleeding.

MATERIALS AND METHODS

Between January 2008 and December 2014, 50 women in the postmenopausal and perimenopausal age group (29 postmenopausal and 21 perimenopausal women) were enrolled in this prospective study at the department of Obstetrics and Gynecology Kannur Medical College. These patients were recruited from the gynecologic outpatient department for the evaluation of postmenopausal or perimenopausal bleeding according to a previously defined protocol. Approval and informed consent were obtained from the patients before they participated in the study. These patients first underwent a standard outpatient evaluation

Inclusion criteria—Perimenopausal women beyond 40 years and postmenopausal women,

Exclusion criteria—(1)Any use of hormone replacement therapy or progesterone therapy.

(2) Patients with fibroids and adnexal mass.

Transvaginal sonography was performed with the use of a 5 MHz transducer. Endometrial thickness was measured as a double layer in the longitudinal

plane at the widest point within the fundus and with the entire endocervical and endometrial stripe visible. In postmenopausal women ≤ 5 mm endometrial thickness was taken as a cut off for endometrial pathology. Endometrial ultrasound findings were classified as suggestive of atrophy, focal abnormality (benign or suspicious) and diffuse thickness (benign or suspicious).

Dilatation and curettage was done on all cases and specimen sent for histopathologic examination. Histopathologic diagnosis was performed in the department of Pathology at Kannur College. The histopathologic diagnosis was given as atrophy, normal, polyps (endometrial or endocervical), hyperplasia and endometrial carcinoma. Patients whose collected specimens were classified as scanty material were included in the atrophy group. Once the histopathologic diagnosis was obtained, it was compared with the ultrasonographic findings, and the sensitivity, specificity, positive predictive value and negative predictive values were calculated.

All procedures followed the ethical guidelines approved by the authorities in our institution.

ANALYSIS OF RESULTS

The results of this study which included a total of 50 patients, 29 postmenopausal (58%) and 21 perimenopausal women (42%) are summarized below.

Table 1 Age distribution of patients (n=50)

Sl. No.	Age	PeM	%	PoM	%
1.	40-49	18	85.7	5	17.2
2.	50-59	3	14.28	15	51.7
3.	60-69	0	0	7	24.1
4.	>70	0	0s	2	6.9

PeM—perimenopausal

PoM—postmenopausal

Most of the perimenopausal women were between 40-49 years (85.7%) and most of the postmenopausal women were between 50-59 years (51.7%). This mean age in the perimenopausal group was 45.71+1.44 years and in the postmenopausal group was 56.1+2.83 years.

Table 2 Age distribution of patients (n=50)

Sl. No.	Parity	PeM	%	PoM	%
1.	Nulli	0	0	1	3.4
2.	P1	1	4.8	2	6.9
3.	P2	15	71.4	6	20.7
4.	P3	2	9.5	8	27.6
5	>P4	3	14.3	12	41.4
	Total	21	100	29	100

PeM—perimenopausal

PoM—postmenopausal

Majority of the women were multiparous (41.4%) in the postmenopausal group. Only one woman was nulliparous (3.4%). There were no nulliparous women in the perimenopausal group. Most of the women were para 2 and above.

Table 3 Age of menopause

SL.No.	Age of menopause	No:	%
1	40-45 years	4	13.8
2	46-50 years	16	55.2
3	51-55 years	9	31
	TOTAL	29	100

The mean age of menopause in the postmenopausal group was 49.2+1.1 years and they had been postmenopausal for an average of 7+0.14 years, ranging from 1 to 25 years.

Table 4 endometrial morphology (n=50)

Sl.No	Morphology	PeM	%	PoM	%	Total	%
1.	Normal	2	9.52	4	13.8	6	12
2.	Atrophic	0	0	5	17.2	5	10
3.	Benign diffuse	14	66.7	17	58.6	31	62
4.	Benign focal	5	23.8	2	6.9	7	14
5.	Suspicious	0	0	1	3.5	1	2
	Total	21	100	29	100	50	100

The ultrasonographic findings were normal in 6 (12%), suggestive of atrophy in 5 (10%), benign focal abnormality in 7 (14%), benign diffuse thickness in 31 (62%) and suspicious pathology in one (2%).

Table 5 Endometrial thickness

Sl. No	Endometrial thickness	No.	%
1.	<5mm	5	17.2
2.	>5mm	24	82.8
	Total	29	100

The mean endometrial thickness was 13.19+2.2mm in perimenopausal women and 10.12+2.2mm in postmenopausal women. In the postmenopausal women five had an endometrial thickness less than 5 mm (17.2%).

Table 5 Histopathologic finding

Sl. No.	Finding	PeM	%	PoM	%	Total	%
1.	Secretory	2	9.5	0	0	2	4
2.	Proliferative	7	33.3	2	6.9	9	18
3.	Atrophic	0	0	5	17.2	5	10

4.	Endometrial polyps	6	28.6	10	34.5	16	32
5.	Endocervical polyps	1	4.8	3	10.4	4	8
6.	Simple Hyperplasia	5	23.8	7	24.1	12	24
7.	Adenocarcinoma	0	0	2	6.9	2	4
	Total	21	100	29	100	50	100

Histologic findings consisted of normal endometrium in 11 (22%), atrophic endometrium in 5 (10%), benign polyps in 20 (40%), simple hyperplasia in 12 (24%) and adenocarcinoma in 2 (4%). Both cases of adenocarcinoma were detected in postmenopausal women.

Table 6 comparison between ultrasonography and histopathologic findings

Sl No	Finding	TVS	%	Histopathology	%
1.	Normal	6	12	11	22
2.	Atrophic	5	10	5	10
3.	Benign focal	7	14	20	40
4.	Benign diffuse	31	62	12	24
5.	Suspicious	1	2	2	4
	Total	50	100	50	100

Table 7 Comparison between ET and Histopathology

ET	Normal	%	Atrophic	%	Benign	%	Malignant	%	Total
<5mm	0	0	5	100	0	0	0	0	5
>5mm	2	8.3	0	0	20	83.3	2	8.3	24

ET—endometrial thickness

DISCUSSION

Most commonly performed diagnostic method in perimenopausal and postmenopausal bleeding is dilatation and curettage which is an inpatient procedure^{1,2}. Prior reports suggest that in 60% women submitted for curettage, less than half of the endometrial cavity was sampled with the curette³. Furthermore, focal benign abnormalities are usually missed by this procedure and may be a source of continued or recurrent bleeding. Recent reports showed that the combined assessment of endometrial thickness with some morphological parameters improve the diagnostic accuracy of transvaginal sonography¹.

Some morphological parameters improve the diagnostic accuracy of transvaginal sonography⁴. Several studies have assessed the accuracy of transvaginal ultrasonography in evaluating the endometrium for malignancy^{5,6}. Transvaginal ultrasonography is a highly sensitive test for detecting endometrial disease, but carries a false negative rate of 8% for endometrial carcinoma⁷.

Recent reports showed that the combined assessment of endometrial thickness with some morphological parameters improve the diagnostic accuracy of transvaginal sonography⁸. In the present study, transvaginal sonography was performed in all the patients. Findings were classified according to endometrial thickness and morphological criteria in postmenopausal women and according to morphological criteria in perimenopausal women. Endometrial abnormalities by TVS showed a sensitivity of 88.2% and a specificity of 43.8% with a positive predictive value of 76.9% and a negative predictive value of 63.6%. In postmenopausal women the sensitivity was 81.8% and specificity was 71.4% with a positive predictive value of 90% and a negative predictive value of 55.6%. In perimenopausal women the sensitivity was 100% and specificity was 22.2% with a positive predictive value of 63.16% and a negative predictive value of 100%. Endometrial thickness alone had a sensitivity of 100% and a specificity

of 71.4% with a positive predictive value of 91.67% and a negative predictive value of 100% in postmenopausal women.

Saidi MH⁹ et al compared transvaginal sonography, sonohysterography and hysteroscopy in the evaluation of abnormal uterine bleeding in 68 perimenopausal women over 40years. Transvaginal ultrasonography revealed a sensitivity and specificity of 95% and 65% respectively. In perimenopausal women in the present study, the sensitivity was 100% and specificity was 22.2% with a positive predictive value of 63.16% and a negative predictive value of 100% by transvaginal ultrasound

Table 8 Accuracy of TVS in perimenopausal women

Study	Total No.	Sensitivity	Specificity
Saidi et al	68	95	65
Present study	21	100	22.2

Table 9 Accuracy of endometrial thickness in postmenopausal women

Study	Total No.	Sensitivity	Specificity	Positive predictive value	Negative predictive value
Haller H et al	80	95.8	45.5	71.9	88.2
Present study	29	100	71.4	91.67	100

SouzaR¹¹ et.al determined the diagnostic value of transvaginal ultrasonography and histopathology in 88 women with postmenopausal bleeding. According to morphological criteria ultrasonography revealed a sensitivity, specificity, positive predictive value and negative predictive value of 79.5%, 88%, 92.1% and 71% respectively.

Table 10 Accuracy of endometrial morphology in postmenopausal women

Study	Total No.	Sensitivity	Specificity	Positive predictive value	Negative predictive value
Souza R et al	88	79.5	88	92	71
Present study	29	81.8	71.4	90	55.6

CONCLUSION

A total of 50 patients in the perimenopausal and postmenopausal age group were selected for transvaginal ultrasonography followed by

In postmenopausal women endometrial thickness 5 mm was taken as cut off for endometrial pathology. Haller H¹⁰ et al compared the endometrial thickness determined by transvaginal sonography with histologic findings obtained by dilatation and curettage. Using a cut-off limit for endometrial pathology of 5mm. the sensitivity was 95.8% the specificity was 45.5% positive predictive value was 71.9% and negative predictive value was 88.2%

In the present study, endometrial thickness alone had a sensitivity of 100% and a specificity of 71.4% with a positive predictive value of 91.6% and a negative predictive value of 100% in postmenopausal women. All women with endometrial thickness <5mm were found to have atrophic endometrium subsequently.

In the postmenopausal women in the present study, TVS morphology has a sensitivity of 81.8% and specificity of 71.4% with a positive predictive value of 90% and a negative predictive value of 55.6%. Thus transvaginal ultrasonography revealed a good sensitivity in picking up endometrial pathology

hysteroscopy for the evaluation of abnormal uterine bleeding in this study. Majority of patients were in the 40-49 age group in perimenopausal women and in the 50-59 age group in the postmenopausal women.

In the detection of endometrial abnormalities transvaginal ultrasound showed a sensitivity of 88.2% and a specificity of 43.75% with a positive predictive value of 76.9% and a negative predictive value of 63.63%. A 5mm cut off for endometrial thickness in postmenopausal women could reliably be ruled out endometrial pathology.

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