

To Validate The Use Of Trans Vaginal Sonography – A Non Invasive Tool As A Screening Method For Patients With Postmenopausal Bleeding

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Citation

H Kaur, L Goyal, P Kaur. *To Validate The Use Of Trans Vaginal Sonography – A Non Invasive Tool As A Screening Method For Patients With Postmenopausal Bleeding*. The Internet Journal of Gynecology and Obstetrics. 2012 Volume 16 Number 2.

Abstract

Objective:1. To measure the endometrial thickness by transabdominal or trans-vaginal sonography in patients with postmenopausal bleeding.2. To correlate the endometrial thickness with histopathological diagnosis in these patients.Methods70 patients with postmenopausal bleeding were enrolled. Results The mean age of study population was 50 to 80 years. There were 5.71% cases of adenocarcinoma of endometrium. No case of abnormal high risk type of endometrium was diagnosed with an endometrial thickness of less than cut off value of 4mm. The sensitivity and specificity of transvaginal sonography as a screening modality was 100% and 72.73% respectively. Conclusion The study validated the use of transvaginal sonography as a screening tool for patients with postmenopausal bleeding.

INTRODUCTION

Menopause is a permanent cessation of menstruation because of loss of ovarian follicular activity. Natural menopause is said to have occurred after 12 consecutive months of amenorrhoea for which there is no other obvious pathological or physiological cause.

There is a fall in estrogen levels. Complete failure of follicular development finally occurs and estradiol secretion is not sufficient to stimulate the endometrium, thus amenorrhoea occurs.

The circulating levels of estrone are higher than those of estradiol¹.

The average age of menopause in western countries is 51 years. In India the average was found to be 48.3 years². The number of women in postmenopausal age is like to increase from 36 million in 2000 to 63 million in 2020³.

With the increase in life expectancy a third of women's life will be in her post menopausal period so it is imperative to understand and manage the postmenopausal period so as to allow women to enjoy optimum health.

A common clinical problem faced during this period is the

postmenopausal bleeding include endometrial polyp, estrogen replacement therapy, endocervical polyp, submucous leiomyoma, adenomatous hyperplasia, atypical hyperplasia, endometrial carcinoma, papillary adenofibroma, squamous metaplasia, abnormal secretory pattern, pedunculated leiomyoma, foreign body, anovulatory endometrium and cervical carcinoma^{4,5,6}. The commonest cause of postmenopausal bleeding are atrophic endometritis and exogenous estrogens⁷.

Any postmenopausal bleeding should be confronted with a war footing because approximately 5-15% of cases are accounted for by the malignancy of the cervix or the body of the uterus⁸.

The pathophysiology of postmenopausal bleeding can be explained by the fact that even though the amount of estrogen secreted by the post menopausal ovary is negligible, post menopausal women continue to have measurable amounts of both estrone and estradiol⁹. As progesterone production ceases, the unopposed stimulation of the endometrium by circulating estrogens pose a risk of endometrial hyperplasia and cancer. They most commonly present as postmenopausal bleeding.

Dilatation and curettage is the procedure that is being done

for the last few years for the evaluation of postmenopausal bleeding. Though the technique is well accepted and is used as gold standard but it is an invasive and uncomfortable procedure and false negative rate of 1-10% has been reported^{10,11,12}. This procedure is not only expensive but also carries an anaesthetic risk to older patients because most of the patients are overweight, diabetic and hypertensive. Other risks include the risk of spreading of malignant cells, perforation of the uterus, haemorrhage and infection, so a non-invasive method of diagnosis would be valuable to avoid these potential problems.

With the advent of newer diagnostic modalities, vaginal ultrasonography has become an established first step examination in the evaluation of post menopausal bleeding.

In addition to endometrial thickness, transvaginal sonography can provide information about the texture, homogeneity of the endometrium and presence of fluid in the endometrial cavity.

The endometrium in normal atrophic uterus of post menopausal women generally does not exceed 4-5 mm^{13,14}. Higher values usually indicate the presence of endometrial hyperplasia or carcinoma.

Endometrium has been classified as low risks group which include atrophic endometrium, secretory endometrium, proliferative endometrium, menstruating endometrium and other benign conditions and high risk group which include simple hyperplasia, complex hyperplasia, atypical hyperplasia and endometrial carcinoma¹⁵.

It is important to know whether the ultra sound findings regarding the endometrial thickness correlate with the histopathological findings. In the present study an attempt is made to correlate endometrial thickness as measured by vaginal ultrasonography and endometrial histopathology in patients with postmenopausal bleeding.

Conoscenti et al. concluded that most sensitive cut off value for defining normal endometrium in post menopausal women by transvaginal sonography was 4 mm. It showed sensitivity of 69.3%, specificity of 82.7% positive predictive value of 74.1% and negative predictive value of 72.1% in differentiating between normal and pathological endometrium. In detecting pre-malignant and malignant endometrial pathology trans-vaginal sonography showed a sensitivity, specificity, positive predictive and negative predictive value of 55%, 96.1%, 68.75% and 93.2%

respectively¹⁶.

Guner et al. studied 289 patients with postmenopausal bleeding and concluded that endometrial thickness of 4 mm or less on transvaginal sonography correlated with atrophic endometrium (100%). 25.1% with an endometrial thickness of 6.1 + 3.7mm had tissue insufficient for diagnosis. 74.8% of patients had a positive predictive result. They concluded that endometrial thickness of <4mm may serve as a cut off value with an accuracy of 100%. Also as endometrial thickness increases, the probability of finding endometrial pathology increases linearly with a positive predictive value of 74.6%¹⁷.

According to Ciatto et al., the cut off value of 4 mm had sensitivity of 91.1%, specificity of 79.8%, a positive predictive value of 14.8% and a negative predictive value of 99.6%¹⁸.

Gull et al. concluded that no endometrial cancer was missed when endometrial thickness <4mm was used as cut off, even if the women were followed up for < 10 yrs¹⁹.

MATERIALS AND METHODS

The present study was conducted on 70 patients who presented with post-menopausal bleeding in the department of obstetrics and gynecology in our tertiary care centre.

Thorough per abdominal, per speculum and per vaginal examination was done to rule out any local cause of abnormal bleeding. The patients with palpable pathology like fibroid and ovarian tumours and patients on hormonal treatment were excluded.

Transvaginal ultrasound examination was carried out to calculate endometrial thickness, endometrial morphology, intrauterine collection and adnexa .

The patients were then subjected to dilatation and curettage under short general anesthesia and the curettings were sent for histopathological examination. The histopathology was classified into proliferative endometrium, secretory, mixed, atrophic endometrium, endometrial hyperplasia and adenocarcinoma.

Standard statistical methods were used to establish a relationship between endometrial thickness with endometrial histopathology.

RESULTS

Figure 1

Table I: Basic Clinical Characteristics of screened population

	Range	Mean \pm SD
Age (years)	46-65	50.80 \pm 4.06
Menarche (years)	12-16	14.14 \pm 1.35
Parity	1-7	2.91 \pm 1.62
Time since menopause (years)	1-21	4.74 \pm 3.53

Figure 2

Table II: Showing endometrial histopathology

Histopathology of endometrium	Number of Cases	Percentage (%)
Postoperative endometrium	10	14.28
Mixed endometrium	6	8.57
Atrophic endometrium	22	31.4
Hyperplastic endometrium.....	22	31.4
Adenocarcinoma of the endometrium	4	5.71
Tissue insufficient for diagnosis	6	8.57

Transvaginal ultrasonography was performed in 70 patients who presented with postmenopausal bleeding. Endometrial thickness was measured in all patients. The patients were then subjected to dilatation and curettage.

In 6 (8.57%) of cases the endometrial tissue obtained was insufficient.

The maximum number of cases were of atrophic endometrium and hyperplastic endometrium (22) 31.43% each.

During the study period, out of total 70 patients presenting postmenopausal bleeding that fulfilled the inclusion criteria and in whom tissue diagnosis could be established, there were 4 cases of adenocarcinoma comprising 5.71% of all the cases.

Figure 3

Table III: Correlation between endometrial thickness by transvaginal ultrasonography and histopathology

Histopathology of endometrium	Endometrial thickness (mm)	Mean \pm SD (mm)
Proliferative endometrium	7-14	10 \pm 2.74
Mixed endometrium	6-10	8.33 \pm 2.08
Atrophic endometrium	2-5	3.64 \pm 1.12
Hyperplastic endometrium	10-23	16.45 \pm 3.98
Adenocarcinoma	27-32	29.5 \pm 3.54
Tissue insufficient for diagnosis	3-8	5.33 \pm 2.52

Figure 4

Table IV: Showing transvaginal sonography as a screening modality

No. of cases excluding tissue insufficient cases	Sensitivity	Specificity	Positive predictive value	Negative predictive value
64	100%	72.73%	87.50%	100%

The effectiveness of transvaginal sonography as a screening modality was analysed using the commonly accepted and predetermined value <4mm for normal or atrophic endometrium. This showed a sensitivity of 100%, a specificity of 72.73% and the positive and negative predictive value of 87.50% and 100% respectively.

DISCUSSION

About 90% of women with endometrial carcinoma have vaginal bleeding or discharge as the only presenting complaint. The most common cause of postmenopausal bleeding is atrophic endometrium followed by exogenous estrogen replacement therapy.

However, endometrial carcinoma remains the most important cause of postmenopausal bleeding and - excluding endometrial carcinoma - is the primary aim of the evaluation of phenomenon of uterine bleeding in postmenopausal women.

Dilatation and curettage is an invasive procedure done under anesthesia and carries its own risks.

Transvaginal sonography has been suggested as the screening modality.

In present study using cut off value of endometrial thickness < 4 mm, no abnormal endometrium was found if the cases

with insufficient tissue were excluded from final analysis, i.e. sensitivity was 100%. The specificity was 72.73% and no case of endometrial carcinoma was detected at an endometrial thickness of <4mm. This is similar to findings of Jina et al.²⁰

Similar conclusions were drawn by Kekre et al.²¹ and Ciatto et al.¹⁸.

CONCLUSION

Transvaginal sonography was done on all patients and their endometrial thicknesses were recorded. Subsequently all the patients were subjected to dilatation and curettage and their histopathological diagnosis made.

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