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Study To Correlate Histopathological Findings With Endometrial Thickness Evaluated By Transvaginal Sonography In Post-Menopausal Indian Females Having Symptoms Of Uterine Bleeding

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Abstract: *Nearly ninety percent of post-menopausal females with endometrial cancer report a vaginal bleeding experience.*
Objectives: *To find correlation of radiological and histopathological findings so that early evaluation of malignancy can be done in a rural population of eastern India.*
Materials And Methods: *The Present Study included 50 Patients with abnormal uterine bleeding in postmenopausal women, aged between 45-70 years. All patients were subjected to transvaginal-utlrasonographic evaluation of the endometrium and the results were correlated to the histopathological picture of the endometrium after curettage in an attempt to discriminate normal endometrium from abnormal pathological patterns.*
Results And Analysis: *Thirteen patients (26%) had pathological findings. There was significant difference in the mean endometrial thickness of non-pathological and abnormal endometrium in postmenopausal patients with Pvalue <0.001**. Among the thirteen patients with pathological findings eight had endometrial hyperplasia, two had polyp and three had malignancies.*
Conclusions:*It may be concluded that vaginal sonographic measurement of endometrial thickness is an acceptable less invasive alternative to hysteroscopy and D & C and needs to be popularized as first line investigation in the management of Postmenopausal bleeding in rural population.*
Keywords:*Postmenopausal vaginal bleeding, transvaginal ultrasonography, clinical correlation*.

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I. Introduction

Nearly ninety percent of post-menopausal females with endometrial cancer report a vaginal bleeding experience. Post-menopausal vaginal bleeding is a common complaint and is associated with a 1-10% risk of endometrial cancer. Trans-vaginal-sonography (TVS) has been advocated as the initial test in the evaluation of post-menopausal bleeding. TVS is minimally invasive, has a high cancer detection rate, and the cost is similar to biopsy. If the endometrium is thin by TVS, most commonly defined as a thickness of <5 mm, the risk of cancer is sufficiently low that a biopsy may be deferred. Because most women with endometrial cancer are symptomatic with vaginal bleeding, the risk of endometrial cancer is very low among women without vaginal bleeding. It is therefore impractical to use TVS as a screening test to detect endometrial cancer in asymptomatic postmenopausal women[1-5].

However, TVS is performed as part of a pelvic sonogram in post-menopausal women referred for a variety of symptoms, such as suspicion of a pelvic mass, and image of the endometrium are frequently obtained. In postmenopausal women without vaginal bleeding and thus at a low risk for endometrial cancer, the threshold that separates normal from pathologically thickened endometrium is not known, and there is no consensus regarding what constitutes a 'thickened endometrial stripe' in these women. If an endometrial thickness threshold cut-off of>5 mm was used to define an abnormal test result, as is used in women with vaginal bleeding[6-9].

Cervical cancer, the most common malignancy in Indian females, is the second most common and fifth most fatal cancer in women world-wide[10]. Cervical cancer is still highly prevalent and remains as a major cause

of mortality in India.Cervical carcinoma not only has a biomedical spectrum, but also has a wide cultural and socio- economic background. Extensive screening campaigns needs to be implemented with immediate effect to early diagnose cases to decrease the social burden of the disease. In a study conductedin eastern India among 300 rural females, 63.4% (190/300) were aged between 40 and 59 years. Unaided visual examination of the women showed 62.7% of them had visible growth and 48.7% of them had bleeding erosions. Visible growths along with bleeding erosions were present in 11.3% cases. Histopathological examination of cervical biopsy specimens revealed mild, moderate and severe dysplasia in 14, 22 and 36 cases, respectively. A total of 212 patients had invasive squamous cell carcinoma. Only 16 patients had normal histopathology findings. Nearly, 56.61% had Stage II disease; among them 27 had Stage IIa and 33 had Stage IIb disease, 26 patients had Stage I disease. Stage IIIa and IIIb have been found in 50 and 12 cases respectively. Four cases had cancer extending to urinary bladder and rectum (Stage IVa)[10].

The present study was conducted to find correlation of radiological and histopathological findings so that early evaluation of malignancy can be done in a rural population of eastern India.

II. Materials and methods

This pilot project was conducted in a rural population of eastern India in a time span of 6 months. The study was conducted in a tertiary care hospital after taking Institutional ethical clearance and informed consent of the patients. Fifty cases were studied and patients aged between 45-70 years were included.

Inclusion criteria: Women presenting with vaginal bleeding after 1 year of cessation of regular period.

Exclusion criteria:

Patients with following problems were excluded

- Patients having known bleeding Disorder or on anticoagulant therapy.
- Known cases of urogenital malignancy.
- Co-morbid patient with critical disease.
- Post-menopausal bleeding with diabetes and cardiological disease.
- Post menopausal women with Hormone Replacement Therapy.

Detailed history was taken with special emphasis upon the following points :-

- Age
- Parity
- Number of years since menopause (period of menopause) Onset, duration cause, and amount of bleeding.
- History of hormonal replacement therapy.
- History of current medication or anticoagulant therapy.
- History of systemic disease or medical disorders e.g.; diabetes, hypertension, renal or hepatic diseases.
- History of pervious gynecological pathological conditions.
- History of pervious curettage.
- History of similar attacks.
- History of associated symptoms as vaginal discharge, urinary symptoms, rectal symptoms, abdominal pain and swelling.

General Examination

Height, weight, general appearance, vital signs (pulse, temperature, blood pressure) were recorded and cardiorespiratory examination was done.

Proper abdominal and Pelvic examination :-

Including speculum and per-rectal examination to assure freedom of any organic clinically detectable pathological lesions (cases in which an evident organic cause was found were excluded from the study).

Following Laboratory investigations were done :-

- Complete blood picture.
- Hematocrit value.
- Platelet count.
- Bleeding and coagulation time.
- Liver function tests. (SGOT, SGPT, Alkaline Phosphatase, A/G ratio).
- Kidney tests. (Serum creatinine and urea)
- Fasting and two hours post-prandial blood sugar.

Evaluation of endometrial echogenicity by endovaginal Sonography which suggests evaluation in all symptomatic cases with an endometrial thickness >4 mm. Color Doppler ultrasound machine of PHILIPS made (HD7) was used. Endometrial thickness was measured endovaginally by using Trans vaginal probe (5-7MHz) . Each post-menopausal women with vaginal bleeding was subjected to trans vaginal ultra sound. The later examination was performed using 5-9 MHz vaginal transducer and the thickest part of the antero-posterior bi-layer endometrial thickness was measured in the sagittal plane.

Evaluation of the endometrium was done regarding:
a) Thickness.
b) Structure and echogenicity.
c) The presence of intrauterine fluid.

Endometrial sampling: This was done by full curettage of the endometrium under general/regional anaesthesia, in the operating theatre of Gynaecology&Obstetrics Department.
The data obtained by the transvaginal ultrasound examinations were compared
with the results of the curettage and the main clinical findings.

III. Results And Analysis

The Present Study included 50 Patients with abnormal uterine bleeding in postmenopausal women, aged between 45-70 years. All patients were subjected to transvaginal-utlrasonographic evaluation of the endometrium and the results were correlated to the histo-pathological picture of the endometrium after curettage in an attempt to discriminate normal endometrium from abnormal pathological patterns. Thirteen patients (26%) had pathological findings. The age, menarche, menopause, gravida and parity of all patients are shown in table 1. Endometrial thickness (mm) measured by transvaginal ultrasonography with respect to histopathologic diagnosis of curettage specimens in all studied women are shown in table 2. Histopathologic Diagnosis of Endometrium as related to endometrial thickness measured by transvaginal sonography are shown in table 3.Mean endometrial thickness of pathological and non- pathological endometrium in postmenopausal patients are shown in table 4.There was significant difference in the mean endometrial thickness of non-pathological and abnormal endometrium in postmenopausal patients with P value $<0.001^{**}$. Among the thirteen patients with pathological findings eight had endometrial hyperplasia, two had polyp and three had malignancy shown in table 5.

Table 1: The clinical characteristics of all studied women

CLINICAL VARIABLE	POST-MENOPAUSAL WOMEN (N = 50)	
	RANGE	MEAN ±SD
AGE	50 – 67 (In Year)	56.43 ± 4.25
MENARCHE	11 -13 (In Year)	11.83 ± 0.72
MENOPAUSE	1 – 16 (In Year)	5.52 ± 4.03
GRAVIDITY	0 – 8 (In No.)	3.38 ± 2.1
PARITY	0 – 7 (In No.)	3.83 ± 2.68

Table 2: Endometrial thickness (mm) measured by transvaginal ultrasonographywith respect to histopathologic diagnosis of curettage specimens in allstudied women.

Histopathologic Diagnosis	No.	POST MENOPAUSAL WOMEN (N = 50)	
		RANGE	MEAN ±SD
Atrophy	17	4 – 5.0	4.4 ± 0.39
Hyperplasia	8	7 – 9.5	8.37 ± 0.79
Polyp	2	6.5 – 7.5	7 ± 0.7
Cancer	3	14 – 15.5	14.77 ± 0.76

Table 3: Histopathologic Diagnosis of Endometrium as related to endometrialthickness measured by transvaginal sonography

Histopathologic Diagnosis	Endometrial thickness				Total
	4-5	5 – 10	11 – 15	16 - 20	
Atrophic	35	2	-	-	37
Hyperplasia	_	8	-	-	8
Polyp		2	-	-	2
Cancer	-	-	3	-	3

Table 4: Mean endometrial thickness of pathological and non- pathologicalendometrium in postmenopausal patients with P value.

Histopathologic Diagnosis	No	Range	Mean ±SD	P Value
NON PATHOLOGICAL LOWEST VALUE HIGHEST VALUE	37 4mm 7.5mm	4 – 7.5	5.16 ± 1.22	<0.001 **
PATHOLOGICAL LOWEST VALUE HIGHEST VALUE	13 6.5mm 15.5mm	6.5 – 15.5	10.33±4.13	<0.001 **

Table 5: Distribution of endometrial pathology (n=13)

	Number Of Cases	Percentage (%)
Hyperplasia	8	62
Polyp	2	15
Cancer	3	23
Total	13	100

IV. Discussion

Abnormal uterine bleeding at any stage in woman life is disruptive and worrisome. But postmenopausal bleeding is of special concern because it is the only common clinical indication of the presence of endometrial Carcinoma. Several different approaches have been proved to be clinically useful screening methods for early detection of endometrial abnormality in women with irregular uterine bleeding. These include dilatation and curettage (D&C) and histopathology. However the majority of women with irregular uterine bleeding actually have no endometrial pathology and thus undergo the risk of an unnecessary surgical procedure.

Diagnostic curettage is an invasive and uncomfortable procedure and not without danger, especially in the elderly. It is a costly hospital procedure due to the need for general anaesthesia. The diagnostic accuracy is not optimal, as false negative rates from 1 – 10 % has been reported[1-9]. The aim of the present study was to assess the ability of trans-vaginal sonography to diagnose normal endometrium and thus differentiate it from abnormal endometrium. This study included 50 patients with abnormal postmenopausal uterine bleeding. These patients were initially screened with vaginal ultrasound to obtain endometrial thickness. These results were compared to the histopathological findings. In this study we found that the mean endometrial thickness in women with postmenopausal bleeding the abnormal endometrium were 5.2mm. to 14.5 mm.(13mm +-4.85mm). This study showed that patients with abnormal endometrial pathology had a mean endometrial thickness that was significantly higher than other patients with normal endometrium. That were significantly lower in patients with abnormal endometrial pathology. Studies had shown that if the endometrial thickness is less than 5 mm in post-menopausal women the chance of presence of endometrial pathology is negligible. This cut off limit of endometrial thickness(transvaginal) has been considered 5 mm for endometrial pathology[6-9].The present study suggests a cut off limit of 4mm in postmenopausal patients. These cut off limits were associated with a sensitivity of 60 % while the specificity was 64 %.Accordingly, this study suggests that endometrial thickness measurement is more valuable and accurate in patients with postmenopausal bleeding.

It may be concluded that vaginal sonographic measurement of endometrial thickness is an acceptable less invasive alternative to hysteroscopy and D& C and needs to be popularized as first line investigation in the management of Postmenopausal bleeding in rural population.

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