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Transvaginal Sonography and Progesterone Challenge Test for Identifying Endometrial Pathology in Post Menopausal Women

P. Reddi Rani, J. Krithika Devi, D. Papa, S. Jayanthi

Department of Obstetrics & Gynaecology and Department of Pathology, Jawaharlal Institute of Post Graduate Medical Education and Research, Pondicherry-605 006, India

Summary

One hundred postmenopausal women, 50 asymptomatic forming control group (Group A) and 50 with postmenopausal bleeding forming study group (Group B) underwent TVS. Asymptomatic group with ET of > 5mm underwent progesterone challenge test (PCT). Women who had +ve PCT and all women with bleeding underwent curettage. Sixtyfour percent of women in Group A had ET < 5mm whereas 70% of women in group B had ET > 5mm. PCT was positive in 11% of women, but histopathology was proliferative phase. ET was greater than 5mm in all cases of cystoglandular, adenomatous hyperplasia and endometrial carcinoma. Twelve percent of women in Group B had endometrial carcinoma with a mean ET of 17.6 + 7.5mm. The sensitivity of detecting endometrial pathology by TVS with ET cut off value of 5mm was 100% and the negative predictive value was 100%. The specificity and positive predictive value are less at 42.85%.

Introduction

Health care of Post-menopausal women is one of the most important aspects in geriatric gynaecology, 75-80% of endometrial carcinomas occur in post menopausal women. The incidence of endometrial carcinoma varies between 60-175/100,000 in post menopausal women when compared with an incidence of 20/10,000 in premenopausal women (Creasman, and Weedj, 1992) Endometrial carcinoma does not develop suddenly but is preceeded by histopathological changes such as adenomatous and atypical hyperplasia (Novak, 1979). While screening for cervical cancer is very well established and reliable. Endometrial curettage is the only accurate procedure available for diagnosing endometrial pathology. However 80% of all curettage procedures performed in post menopausal bleeding result in diagnosis of benign conditions (Granberg et al 1991). Transvaginal Sonography (TVS) combined with progesterone challenge test (PCT) is a non-invasive procedure and is emerging as a useful tool in visualization of minimal changes in the endometrium (Nasri et al, 1991; Macia et al, 1993).

Present study was undertaken to evaluate the usefulness of Transvaginal Sonographic (TVS) measurement of endometrial thickness combined with progesterone challenge test (PCT) to detect endometrial pathology in postmenopausal women and also compare the endometrial thickness with endometrial histopathological appearances

Material and Methods

The study comprises one hundred postmenopausal women, fifty asymptomatic women (Group A) and fifty with postmenopausal bleeding (Group B), patients with cervical pathology were excluded from the study. All patients underwent transvaginal sonography to assess the thickness of

endometrium. Endometrial thickness was measured by including the thickness of both the layers of endometrium at its maximum thickness in both longitudinal and transverse sections of uterus.

Group A:

Patients having endometrial thickness of <5 mm were followed up every 6 months by TVS; and patients having endometrial thickness of 5 mm were given oral medroxyprogesterone acetate 10mg od for 10 days. Any bleeding which occurred after progesterone ingestion was considered as positive test and the women were subjected to fractional curettage. If progesterone challenge test (PCT) was negative they were followed up with repeat TVS every 3 months for one year.

Group B:

Women having postmenopausal bleeding were subjected to TVS followed by fractional curettage irrespective of the thickness of endometrium. The histopathological findings were correlated with the thickness of endometrium. All patients were followed up for a minimum period of one year.

Results

Majority of patients in both the groups were between 50-55 years of age and the mean age of menopause was 45 years.

High risk factors like obesity, diabetes mellitus hypertension were more commonly seen in group B women who had postmenopausal bleeding (Table I).

Table I
Profile of patients

	Group A (N:50)	Group B (N:50)
Mean age	49.6 yrs	51.7 yrs.
Mean age at menopause	44.1 yrs.	45.8 yrs.
Hypertension	5 (10%)	10 (20%)
Diabetes	2 (4%)	6 (12%)
Obesity	6 (12%)	16 (32%)

The endometrial thickness was less than 5mm in majority of women in Group A where as it was more than 5mm in 70% of women in Group B. Table II shows the endometrial thickness in both the groups of women on TVS.

Table II – Endometrial Thickness on TVS

Endometrial thickness	Group A (N=50)	Group B (N=50)
0 < 5mm	32 (64%)	15 (30%)
5 < 10mm	16 (32%)	23 (46%)
10 < 15mm	2 (4%)	7 (14%)
15 < 20mm	0	4 (8%)
> 20 mm	0	1 (2%)
Mean	4.7 + 2.5mm	7.99 + 5.57mm

Table III
Correlation of HPE and Mean endometrial thickness (Group B)

HPE	NO	Endometrial Thickness		
		> 5mm No	> 10mm No	Mean No
Adenocarcinoma	6	6	5	17.6 + 7.51
Polyp	4	4	2	9.6 + 1.87
Secretory endometrium	1	1	-	9.2
Endometritis	4	3	1	8.4 + 4.68
Adenomatous hyperplasia	4	4	-	8.2 + 1.38
Proliferative endometrium	15	12	3	7.62 + 4.17
Cystoglandular hyperplasia	1	1	-	7.4
Scanty curettings	10	3	-	4.4 + 2.74
Poorly preserved endometrium	1	1	-	5.7

Progesterone challenge test (PCT) was done in 18 women in group A who had endometrial thickness of > 5mm. It was positive in 2 patients and they underwent fractional curettage. Histopathological examination revealed proliferative phase of endometrium. No bleeding was noticed on follow up. The 16 patients who were PCT negative also did not show any increase in endometrial thickness/pathology during follow up using TVS and endometrial aspiration.

In Group B, all patients underwent fractional curettage. Six patients had endometrial carcinoma. All these women had endometrial thickness varying from 7.5 to 30.9mm (mean 17.6mm). Similarly endometrial thickness was > 5mm in all precancerous lesions (4 women had adenomatous hyperplasia and 1 woman had cystoglandular hyperplasia (Table III).

The sensitivity of the study for detection of endometrial pathology was as follows:

When a cut off value of 5mm was taken the sensitivity of TVS was 100% and specificity was 42.85% but when a cut off value of 10mm was taken the sensitivity was less (46.6%) but specificity was high (85.7%) (Table IV).

For a diagnosis of Carcinoma endometrium with a cut off value of 5mm and 10mm sensitivity was 100% and 83.3% whereas specificity was 20% and 84% respectively (Table V).

Discussion

The incidence of endometrial carcinoma has been on the increase due to increased life expectancy, improved diagnostic facilities and wide usage of hormone replacement therapy. Early diagnosis of endometrial carcinoma and premalignant conditions is the subject of continuous research. Transvaginal Sonography (TVS) has found widespread acceptance in assessing the endometrial structure and several authors have suggested that TVS may serve as a tool for detection of endometrial pathology and have attempted to define an endometrial thickness cut off value below which no pathology is found and suggested thickness ranging from 4 to 7mm as ideal cut-off value (Karlsson et al, 1994; Shipley et al, 1994; Wolman et al, 1996). In the present study we found 5mm cut-off value had 100% sensitivity but specificity was only 42.85%. The sensitivity decreased as we increased the cut off value to 10mm but specificity improved by almost two times. Nasri and

Table IV
Sensitivity – Endometrial Pathology

TVS Endometrial Thickness	Histopathological Findings	
	Presence of endometrial Pathology	Normal
A) 5 mm cut off value		
< 5 mm	0- false negative	15 – True negative
> 5mm	15 – True positive	20- False positive
Sensitivity-100%	Specificity – 42.85%	
B) 10 mm cut off value		
< 10mm	8- False negative	30- True negative
> 10mm	7- True positive	5-False positive
Sensitivity 46.6% Specificity 85.7%		

Table V
Sensitivity – Endometrial Cancer

TVS Endometrial Thickness	Histopathological Findings	
	Adeno Carcinoma	Others
A) 5mm cut off value		
> 5mm	6 True positive	35 False positive
< 5 mm	0 False negative	9 True negative
Sensitivity – 100%		
Specificity – 20.45%		
B) 10 mm cut off value		
> 10 mm	5 True positive	7 False positive
< 10 mm	1 False positive	37 True negative
Sensitivity – 83.3%		
Specificity – 84%		

Coast (1989) could not find any abnormality in women with ET of < 5mm in 59 patients with postmenopausal bleeding. Osmers and Volksen (1990) examined 103 women with postmenopausal bleeding and found that all women with endometrial pathology had ET greater than 4mm. Wolman et al (1996) used a cut-off value of 5mm and reported its sensitivity as a predictor of endometrial pathology was 89%. Varner et al (1991) compared TVS endometrial assessment in 80 postmenopausal women and found significant correlation between endometrial thickness on TVS and histopathology.

In asymptomatic postmenopausal women various studies (Shipley et al 1994; Malinova and Pehlivanov 1996) have shown that endometrial thickness is usually < 5mm. In our study too it was < 5mm in 73% women. Progesterone challenge test (PCT) was used in women who had ET > 5mm but were asymptomatic. In our study only 2 women had withdrawal bleeding who had only proliferative phase of endometrium on curettage. In a study by Toppazoda et al (1988) 7/30 asymptomatic postmenopausal women showed withdrawal bleeding with PCT 5 of whom had adenomatous hyperplasia. Malinova and Pehlivanov (1996) found PCT positive in 86% who had an endometrial thickness of > 5mm and who were asymptomatic. Majority of these had atrophy of endometrium or polyp. However women with negative PCT remained without any gynaecologic complaint and maintained same or lower ET during one year followup. They concluded that endometrial thickness of < 5mm of TVS and a negative PCT reliably excludes any endometrial pathology in postmenopausal women. Nasri et al (1991) made similar conclusion. While PCT does not give a diagnosis, it aids in identifying women at a higher risk for endometrial pathology.

In postmenopausal women with bleeding per vaginum we found that those who had endometrial abnormalities such as polyp, hyperplasia and carcinoma had ET of > 5mm thickness. Women who had ET of < 5mm did not reveal any endometrial pathology on curettage. In Nordic trial (Karlsson et al, 1995) which was a multicenter study of 1100 high risk women, endometrial abnormalities found by TVS were polyp, hyperplasia, carcinoma. When a cut off value of 4mm was used they reported a sensitivity rate of 96% and specificity of 68%. Thickness of endometrium was usually greater than 9 mm in endometrial carcinoma in any of the studies reported (Granberg et al, 1991; Woman et al 1996). In the present study it varied between 7.5mm to 30 mm in endometrial cancer. Similarly the mean thickness of endometrium was greater in all cases of precancerous lesions such as cystoglandular and adenomatous hyperplasia and endometrial polyps. Endometrial thickness as measured on TVS correlates well with endometrial pathology and appears to be an appropriate method for screening postmenopausal women.

To conclude TVS should be a screening test in all postmenopausal women who are at risk for endometrial malignancy. With 5 mm of endometrial thickness as cut-off value, the sensitivity to detect endometrial pathology is 100 percent which is ideal for a screening test. In asymptomatic postmenopausal women with ET of > 5mm. progesterone challenge test can be carried out and if it is positive, endometrial sampling be done. This will avoid unnecessary curettages. TVS combined with PCT is a simple, well tolerated, safe and reliable method for identifying endometrial pathology in postmenopausal women.

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