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TRANSVAGINAL SONOGRAPHY OF ENDOMETRIUM IN POSTMENOPAUSAL WOMEN

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ABSTRACT

Objective: The study was done to compare transvaginal sonographic endometrial assessment with histology obtained by endometrial curettage in postmenopausal patients. It was also addressed whether the technique might have application as either a diagnostic or screening tool for postmenopausal women. **Material and methods**: The study was performed on 50 postmenopausal women over a period of one year. The transvaginal sonography was performed followed by endometrial curettage. Specimens were sent for histopathological examination. The endometrial thickness measured by transvaginal sonography was correlated with histopathology in each case. Sensitivity, specificity, positive and negative predictive values and accuracy of transvaginal sonography in diagnosing endometrial abnormality at certain cut-off level of endometrial thickness was calculated. **Results**: Of the 50 postmenopausal women studied 40 had ultrasound measured thickness of 4mm or less. All 40 had histologic diagnosis of atrophic endometrium or low estrogen stimulation or samples were found insufficient for histologic evaluation. Only two women with evidence of atrophic endometrium on histology exhibited transvaginal sonographic endometrial measurements greater than 4mm (5mm and 6mm). Taking 4mm endometrial thickness as cut-off, the sensitivity of transvaginal scan to detect endometrial histology consistent with low estrogen stimulation was 95.2%. The 10 women with TVS measured endometrial thickness greater than 4mm exhibited various histologic diagnosis like proliferative endometrium, endometrial hyperplasia, polyps or

endometrial carcinoma.With endometrial thickness greater than 4 mm as measured by TVS, the positive predictive for significant endometrial pathology was 60%. **Conclusion:** Transvaginal sonography is a simple, safe, non-invasive technique which can be used for evaluating endometrium in both symptomatic and asymptomatic postmenopausal women.

KEYWORDS: Transvaginal sonography; endometrium; postmenopausal; carcinoma.

1. INTRODUCTION

Vaginal bleeding is the presenting sign in more than 90% of postmenopausal patients with endometrial carcinoma.[1] The majority of patients with postmenopausal vaginal bleeding experience bleeding secondary to atrophic changes of the vagina or endometrium. However, depending on age and risk factors, 1–14% will have endometrial cancer.[2–5] Thus, the clinical approach to postmenopausal bleeding requires prompt and efficient evaluation to exclude or diagnose carcinoma. Transvaginal sonography has been explored as an alternative technique to indirectly visualize the endometrium. Many investigators have suggested that transvaginal scanning may be useful in monitoring endometrium in postmenopausal women.[6] Several studies have shown a relationship between endometrial thickness as measured by transvaginal sonography and endometrial abnormality in postmenopausal women.[7] Transvaginal ultrasonography can be useful in the triage of patients in whom endometrial sampling was performed but tissue was insufficient for diagnosis.[8]

2. MATERIAL AND METHODS

2.1. Gynaecological examination

50 postmenopausal women who came to hospital for gynaecological examination were evaluated for a period of one year. The women were considered menopausal if atleast one year passed since their last menstrual period. Those presenting with postmenopausal bleeding were considered symptomatic. None of women were on hormone replacement therapy. Ages range from 44 to 70 years, with maximum number of women in age group of 56 to 60 years. Maximum number of women had a parity of P4-6. Transvaginal sonography was performed on each patient using vaginal transducer. Endometrial curettage of all patients was performed using endometrial biopsy curette. Specimens were sent for histopathological examination. The histopathological diagnosis was grouped as atrophic, hormonal effect, proliferative endometrium, endometrial polyp, endometrial hyperplasia and endometrial carcinoma. Curetting specimen insufficient for histopathological examination was included in atrophic group. Atrophic and hormonally influenced endometrium were considered normal, whereas

other histopathological diagnosis were considered abnormal. The endometrial thickness measured by transvaginal sonography was correlated with histopathology in each case. Sensitivity, specificity, positive and negative predictive values and accuracy of transvaginal sonography in diagnosing endometrial abnormality at certain cut-off level of endometrial thickness was calculated.

3. RESULTS

Of the 50 postmenopausal women studied 40 had ultrasound measured thickness of 4mm or less. All 40 had histologic diagnosis of atrophic endometrium or low estrogen stimulation or samples were found insufficient for histologic evaluation. Only two women with evidence of atrophic endometrium on histology exhibited transvaginal sonographic endometrial measurements greater than 4mm (5mm and 6mm). The 10 women with TVS measured endometrial thickness greater than 4mm exhibited various histologic diagnosis like proliferative endometrium, endometrial hyperplasia, polyp or endometrial carcinoma. Although one case of endometrial carcinoma presented irregular endometrial myometrial borders with variable echogenicity, there were no distinct morphological features on sonography that could distinguish between proliferative endometrium, hyperplastic endometrium or endometrial carcinoma.

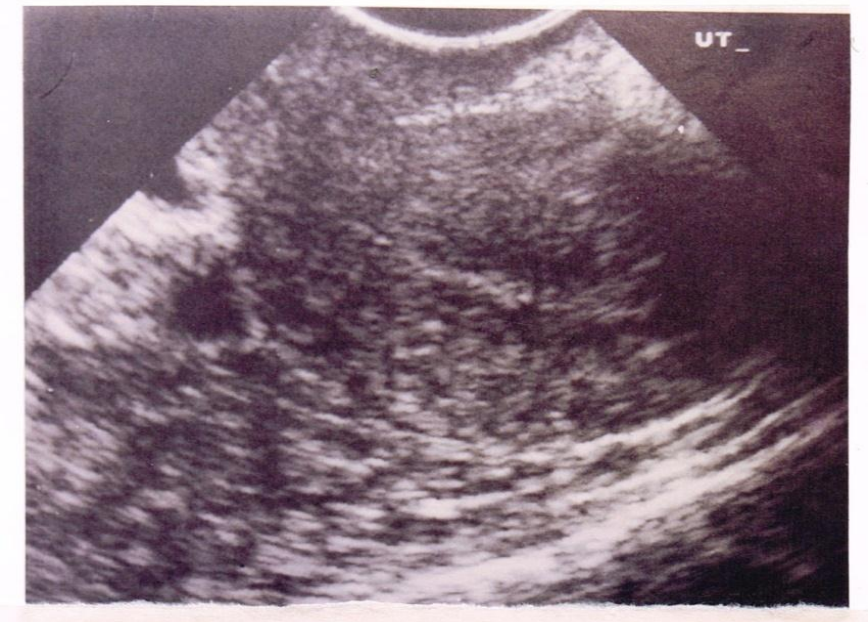

Fig 1: TVS of postmenopausal atrophic endometrium

Fig 2(A): TVS of endometrial hyperplasia.

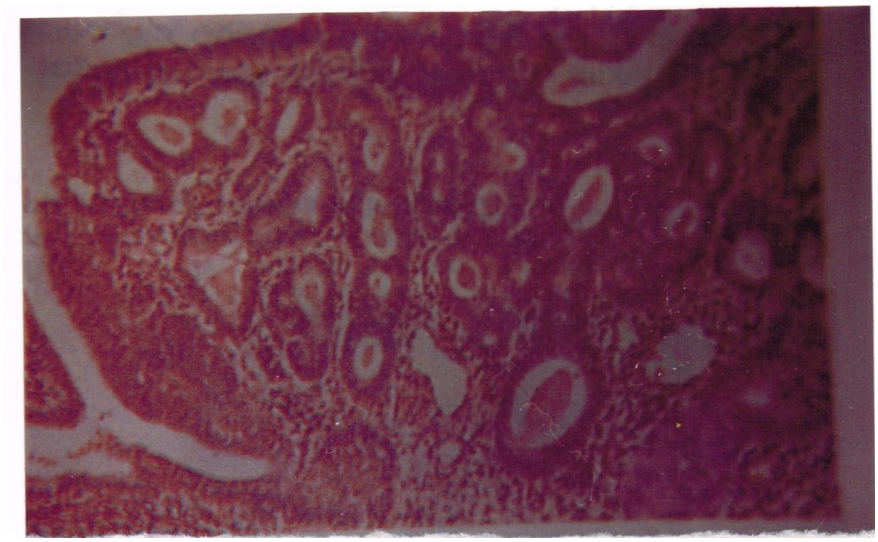

Fig 2(B) Histopathological examination showing complex cystic hyperplasia.

Fig 3(A) TVS of endometrial carcinoma

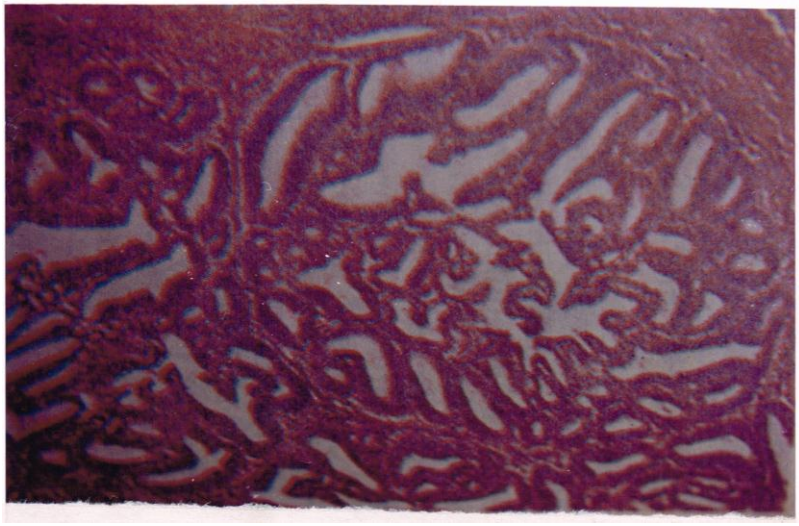

Fig 3 (B) Histopathlogical examination showing well differentiated endometrial adenocarcinoma.

Table 1 Distribution of patients according to endometrial thickness

Endometrial thickness (mm)	Number of patients
0-2	18
2-4	22
4-6	02
6-8	02
8-10	02
10-12	03
12-14	-
14-16	01
TOTAL	50

Table 2 Distribution of patients according to histologic diagnosis

Histological diagnosis	No of patients	Percentage (%)
Insufficient for diagnosis	13	26
Atrophic/Minimal oestrogenic effect	29	58
Proliferative	02	04
Polyp	01	02
Hyperplasia	03	06
Carcinoma	02	04
Total	50	

Table 3 Endometrial thickness measurements by TVS versus pathological diagnosis in symptomatic and asymptomatic postmenopausal women

	Total no. of patients	No. of patients with endometrial thickness > 4 mm	No. of patients with significant pathologic diagnosis
Symptomatic	10	6	5
Asymptomatic	40	4	1
Total	50	10	6

With endometrial thickness greater than 4mm as measured by TVS, the positive predictive for significant endometrial pathology was 60% for total group, 83% for symptomatic group and 25% for asymptomatic group.

Table4. Accuracy of sonography in predicting low estrogen stimulation of the endometrium

TVS Measured thickness of endometrium	A	B	TOTAL
<4mm	40	-	40
>4mm	02	08	10
Total	42	08	50

A = Sample insufficient for diagnosis or atrophic endometrium.

B = Proliferative, polyp, hyperplasia or endometrial carcinoma.

The sensitivity of prediction of endometrial histology consistent with low estrogen stimulus using endometrial thickness < 4mm as measured by TVS as cut-off value was 95.23%, specificity 100%, positive predictive value 100% and negative predictive value 80%.

In our study significant endometrial pathology shows a positive correlation with advancing age and negative correlation with increasing parity (correlation coefficient = -0.41)

4. DISCUSSION

In our study two women with sonographically measured endometrial thickness of more than 4mm (5mm and 6mm) exhibited histopathological diagnosis of atrophic endometrium. This discrepancy between sonographically measured endometrial thickness and histologic diagnosis may be explained by the fact this may be because of tangential measurements of endometrial thickness or presence of a polyp which is often difficult to remove on curettage. Further of 10 patients presenting with postmenopausal bleeding (symptomatic) 5 revealed endometrium consistent with low estrogen stimulation on histopathology, the possible explanation for bleeding in these women is that, with menopause endometrium becomes thin and atrophic. The atrophic endometrium is prone to superficial punctate ulcerations. This can result in senile endometrium which probably represents the cause of bleeding.

None of the four women with postmenopausal bleeding and sonographically measured endometrial thickness of 4mm or less had endometrial pathology, whereas five out of six bleeding women with measurements greater than 4mm had significant endometrial pathology.The study suggests that transvaginal sonography has practical clinical utility in selecting women with postmenopausal bleeding for histologic evaluation of endometrium.

Similar study conducted by Kekre AN et al. showed that with 4mm endometrial thickness as cut-off, the sensitivity of transvaginal scan to detect endometrial pathology was 97%.[9] Karlsson B et al. concluded that in women with postmenopausal bleeding and an endometrium less than 4mm, it would seem justified to refrain from curettage.[10]

CONCLUSION

The study concludes that transvaginal sonography is a simple, safe, easy to learn, non-invasive technique which can be used for evaluating endometrium in both symptomatic and asymptomatic postmenopausal women. The endometrial thickness of 4mm or less as measured by transvaginal sonography is asuitable threshold for screening postmenopausal women for endometrial hyperplasia and carcinoma and selecting women for histologic evaluation.

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