

Vaginal sonography of the endometrium in postmenopausal women

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Summary: The purpose of this study was to compare transvaginal ultrasound scanning and histology of the endometrium obtained by curettage. One hundred twenty women with postmenopausal bleeding were examined by vaginal sonography, before undergoing curettage. Endometrial thickness, as measured by vaginal sonography, was used as an indicator of endometrial abnormality. The mean endometrial thickness in those women with endometrial cancer was 16.6 ± 5.4 mm as compared with 3.2 ± 1.1 mm in those women with atrophic endometrium, and 9.5 ± 2.3 in those with hyperplasia. If a cutoff limit of 5 mm had been used in this study, 82% of the curettage procedures could have been avoided, without missing a single case of serious endometrial pathology. We conclude that vaginal sonography is a reliable examination in the detection of endometrial abnormality in women with postmenopausal bleeding.

Key words: Postmenopausal bleeding; Vaginal ultrasonography; Endometrium; Histopathology.

INTRODUCTION

Postmenopausal bleeding has always been a red light for the gynecologists because of its correlation with endometrial cancer. This is the reason women with postmenopausal bleeding are always submitted to diagnostic curettage. Curettage has a high diagnostic accuracy but it carries a small risk of morbidity, causes anxiety to the patient, and is quite expensive.

Several investigators have recently reported that ultrasound scanning and especially transvaginal sonography may be useful in monitoring the endometrium and

detecting endometrial carcinoma and other endometrial pathologies in postmenopausal women^(1, 2, 3).

New vaginal sonographic transducers, being of higher frequency and closer proximity to the uterus, produce very clear uterine image and make the examination of the endometrium quick and easy⁽⁴⁾.

The purpose of this study was to correlate the vaginal ultrasonographic findings with the pathology of the endometrium obtained by curettage in women with postmenopausal bleeding.

MATERIALS AND METHODS

One hundred twenty women with postmenopausal bleeding who were admitted to the hospital for curettage, underwent transvaginal ultrasonographic examination the day before operation. None of the women was receiving hormone replacement therapy. The mean age of the women was 64.5 years.

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The sonographic examinations were performed by use of a Toshiba 250 ultrasonography machine equipped with a vaginal transducer.

The examination was performed with the patient in lithotomy position, after having emptied the urinary bladder. The transducer was introduced into the posterior vaginal fornix, and the uterus was scanned longitudinally and transversely. Endometrial thickness was measured at the thickest part in the longitudinal plane. The measurement was performed between the two basal layers of the anterior and posterior uterine wall.

All women underwent D&C, care being taken to attempt to sample all areas of the endometrial cavity. Histologic specimens were evaluated by a pathologist specialized in gynecologic pathology. Comparisons were made between sonographically measured endometrial thickness and endometrial histology in each case.

Statistical analysis was done by using the student's t-test.

RESULTS

Table 1 shows the ultrasound and histological findings in all 120 women with postmenopausal bleeding. In 98 patients ultrasound showed a normal postmenopausal uterus and an endometrial thickness less than 5 mm (mean 3.2 ± 1.1 mm). Atrophic endometrium was found by histopathologic examination in 76 patients while in the rest of 22 patients "tissue insufficient for diagnosis" was reported (Fig. 1).

In 22 patients endometrial thickness was found to be greater than 5 mm, and the pathology revealed endometrial polyp (four cases), hyperplastic endometrium (ten cases) and endometrial cancer (eight

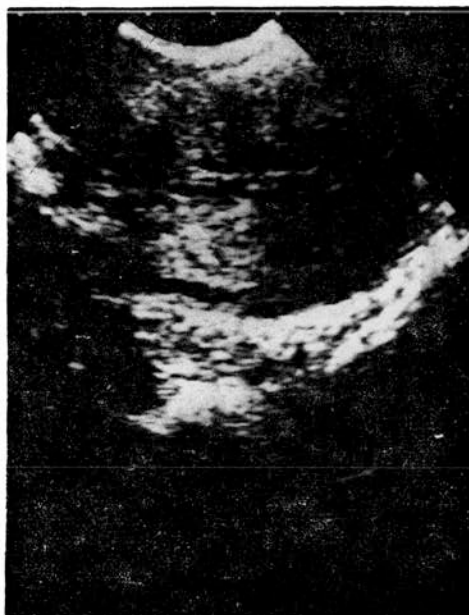


Fig. 1. — Uterus with thin endometrium. Histology showed atrophic endometrium.

cases) (Fig. 2,3). In the 8 patients with endometrial cancer, the endometrial thickness was greater than 10 mm (mean 16.6 ± 5.4 mm) while in the other 14 patients with polyps or hyperplasia the endometrial thickness was between 5 and 15 mm (the mean was 10.6 ± 4.3 mm in the cases with polyps and 9.5 ± 2.3 mm in the cases with hyperplasia) (Table 2).

Statistical analysis showed that differences in endometrial thickness between cases with atrophy and cases with hyperplasia, are significant (t -values = 8.63, $p < 0.001$). Significant differences were also found in the comparison between atrophy and polyps as well as between atrophy and cancer. On the contrary no difference was found in the comparison between polyps and cancer and between hyperplasia and cancer (t -value = 1.73, $p > 0.1$).

The positive predictive value of a sonographically determined endometrial thi-

Table 1. — *Ultrasound and histological findings in 120 women with postmenopausal bleeding.*

Histological findings of curettage	No.	Endometrial thickness (mm) ($\bar{x} \pm 1SD$)
Atrophy	98	3.2 ± 1.1
Hyperplasia	10	9.5 ± 2.3
Endometrial polyp	4	10.6 ± 4.3
Carcinoma	8	10.6 ± 5.4



Fig. 2. — Hyperplastic endometrium in a postmenopausal uterus.

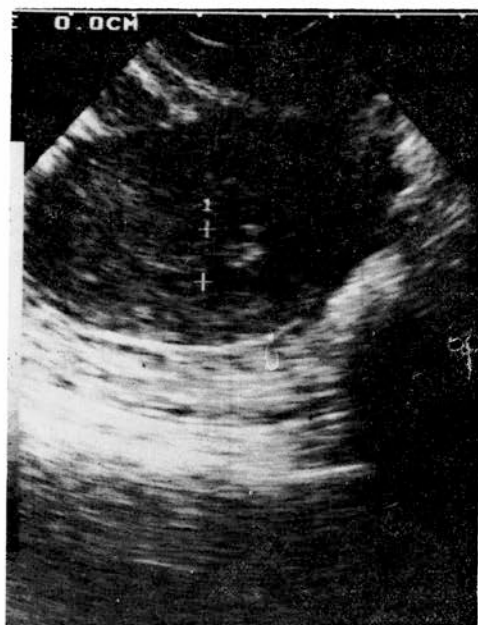


Fig. 3. — Adenocarcinoma of the endometrium, with irregular borders (at the right side of the uterus).

Table 2. — Histologic diagnosis of endometrium as related to thickness measured by vaginal scanning.

Histologic diagnosis	Endometrial thickness (mm)					Total No.
	<5	5-10	11-15	16-20	>21	
Atrophy	98	—	—	—	—	98
Hyperplasia	—	6	4	—	—	10
Polyp	—	1	3	—	—	4
Cancer	—	—	2	4	2	8
Total	98	7	9	4	2	120

thickness greater than 5 mm for endometrial pathology was 100% (22 in 22 cases) and the negative predictive value of a thickness less than 5 mm for endometrial cancer was also 100% (8 in 8 cases). On the other hand, in the 22 cases with endometrial thickness greater than 5 mm, there were no obvious morphologic features on sonography that could clearly distinguish between hyperplastic endometrium, polyps, or non invasive carcinoma. However in three cases with invasive endometrial cancer an irregular outlining in the endometrium was noted.

DISCUSSION

The purpose of this study was to compare transvaginal sonographic endometrial assessment with endometrial histology in women with postmenopausal bleeding. The study data show a significant correlation between a sonographically measured endometrial thickness less than 5 mm and atrophic endometrium as well as a correlation between a thickness more than 5 mm and pathologic endometrium. So the thickness of 5 mm could be used as a cutoff point for the diagnosis of endometrial pathology, as some other investigators have already proposed (^{3, 5}).

Some other recent studies have shown that thicker sonographic endometrial measurements (up to 8 or 9 mm) could be associated with inactive endometrium on

biopsy, and that endometrial pathology was associated with much thicker endometrium⁽⁶⁾.

In this study the cause of bleeding in the 98 postmenopausal women with atrophic endometrium could have been the result of the lack of epithelial stimulation and a consequent senile endometritis⁽⁷⁾.

In our material no endometrial cancer was found with endometrial thickness <10 mm and mean endometrial thickness in those with endometrial carcinoma was 16.6 mm. These data are in agreement with some previous reports⁽²⁾. The different thickness between atrophic endometrium and endometrial cancer as measured by vaginal sonography, indicates that ultrasonography could be used as a very simple method to exclude endometrial carcinoma as the cause of postmenopausal bleeding. Some authors refer that an irregular outlined thick endometrium has been noted in several cases with endometrial cancer⁽¹⁰⁾. Three out of eight of our cases with endometrial cancer had this abnormal appearance, while the rest of them had only the appearance of a thick endometrium. We believe that there are no obvious morphologic features on sonography that could clearly distinguish between early neoplasia development and simple endometrial hyperplasia. Abnormal endometrial appearance is probably related to invasive endometrial cancer.

We recommend that all women with postmenopausal bleeding should have an ultrasound examination. If the endometrial thickness is <5 mm a curettage is not necessary. It has been shown that approximately 80% of all curettages performed because of postmenopausal bleeding results in a benign diagnosis^(8, 9, 10). In this study, 82% of curettages (98 out of 120) performed could have been avoided if the 5 mm limit had been used. We also suggest that transvaginal sonography may be used to screen periodical-

ly women who are in relatively high risk for endometrial cancer, such as PCO syndrome, obese women, and diabetes mellitus.

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