TRANSVAGINAL SONOGRAPHY FOR THE EVALUATION OF POSTMENOPAUSAL BLEEDING

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ABSTRACT

Objective: To evaluate the effectiveness of transvaginal sonography in assessing the endometrial thickness in patients with postmenopausal uterine bleeding. This will be studied in relation to the histopathological results of the endometrial biopsy, so as to detect its accuracy to diagnose endometrial cancer without the need for dilatation and curettage.

Methods: A total of 123 women with ages varying from 50 to 65 years, who were diagnosed with /or had postmenopausal bleeding. Their history was taken and a general examination was done. However, patients who had the risk of having endometrial carcinoma or those undertaking hormonal therapy were excluded from the study.
All patients were examined with the transvaginal ultrasound to measure the endometrial thickness, and scheduled for endometrial sampling by dilatation and curettage, then compare the histological findings with the sonographic results.

Results: The study was based on a cut-off value of endometrial thickness 5mm or less to exclude malignancy, and the patients were classified according to endometrial measurement into 5.6-19 and more than 20mm.
Seventy two patients had atrophic endometrium; endometrial thickness was 1.7-3mm, while 37 patients with the thickness of 6.3-8.1mm had uterine polyps.
Simple hyperplasia was found in 9 patients and the endometrial thickness was 10.1-13mm, and in four patients complex hyperplasia was found with an endometrial thickness of 14-17.5mm.
One patient had endometrial carcinoma with an endometrial thickness of 25.3mm.

Conclusion: Transvaginal sonography investigation for postmenopausal bleeding may provide useful information for patients under high risks of endometrial abnormalities. When using such a technique for measuring the endometrial thickness in women with postmenopausal bleeding, it is reasonable not to perform a dilatation and curettage if the endometrial thickness is < 5 mm.

Key words: Transvaginal ultrasound, Endometrial biopsy, Endometrial thickness.

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Introduction

Peri and postmenopausal bleeding, with or without the hormone replacement therapy, is a common clinical problem. The exclusion of endometrial hyperplasia and carcinoma are the key issues in the evaluation of patients with abnormal uterine bleeding. Transvaginal ultrasound measurement of endometrial thickness has become an initial investigation in patients with abnormal uterine bleeding. There is a debate as to whether cut-off of 5 or 4 mm endometrial thickness should be employed [(1)].

If the endometrial thickness is above these figures, abnormal endometrial pathology is suspected such as simple polyps, simple and complex hyperplasia, with or without atypia, and finally carcinoma. This abnormal pathology must be clarified with endometrial biopsy, but there is no benefit in taking such biopsies when the thickness is below these figures. This study is conducted to evaluate the accuracy of measuring endometrial thickness in postmenopausal bleeding so as not to expose all such patients routinely to unnecessary invasive diagnostic procedures.

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Methods

One hundred twenty three women complaining of postmenopausal bleeding were presented to the clinic in 3 years period. Their age varied from 50 to 65 and there was no significant difference regarding weight, body mass index (BMI), and parity. Moreover, they were not on hormonal therapy and had no family and personal history of carcinoma, diabetes, or hypertension.

All patients were carefully interviewed as to their history regarding episodes of vaginal bleeding, or any hormonal therapy. Then general and pelvic examinations were done in order to determine the size of the uterus.

The transvaginal examination (5-7.5 MHz vaginal probe) was done measuring the endometrial thickness (double layer), after which all patients were scheduled for dilatation and curettage to take endometrial biopsy for histology, so as to evaluate the sensitivity of transvaginal sonography as a diagnostic test in comparison with the histopathological findings.

Results

Among the 123 patients studied, only one patient had endometrial carcinoma. Total hysterectomy with bilateral oophorectomy was done, and the histology resulted in adenocarcinoma with invasion less than one half of endometrium and grade 2 differentiations.

The mean endometrial thickness was 2.4 mm, whereas the corresponding value for the patient with endometrial carcinoma was 25.3 mm ($P<0.001$). No endometrial cancer was diagnosed in endometrial thickness less than 5mm. The sensitivity for detecting abnormal uterine pathology was 100% and the specificity was 75% if 5mm cutoff limit was used.

The findings, both by ultrasound and by histology results, correlate to each other as shown in the Table I below:

Table I. Endometrial thickness and histopathology reports among the study group.

Number of Patients	Endometrial Thickness	Histopathology Reports
72	1.7-3 mm	Atrophic Endometrium
37	6.3-8.1 mm	Endometrial Polyps
9	10.1-1-13 mm	Simple Hyperplasia
4	14-17.5 mm	Complex Hyperplasia without Atypical
1	25.3 mm	Adenocarcinoma

The table shows that the results of the endometrial thickness measured by ultrasound gives a clue of the endometrial pathology.

Discussion

The transvaginal sonography is a non-invasive diagnostic method to evaluate the endometrium. It has a high reliability in the diagnosis of endometrial carcinoma, in the assessment of the depth of myometrial invasion as well as in preoperative staging [(2)].

Patients with an episode of postmenopausal bleeding and an endometrial thickness less than 4mm should be followed by transvaginal ultrasound examination after 3 months [(3)].

In case of endometrial thickness > 5 mm or in case of persistent bleeding a histologic assessment should be obtained [(4)].

Vaginal ultrasound has its limitation in the diagnosis of endometrial abnormalities. It cannot always reliably distinguish between proliferation, hyperplasia, polyps, and cancer, so the next step requires tissue sampling [(5)].

The sensitivity of vaginal ultrasound as a diagnostic tool made some authors not to perform endometrial biopsy on all cases with postmenopausal bleeding, because of false negative rate of the biopsy technique, for example office biopsy, they recommend combining transvaginal sonography and cervical cytology examination as long endometrial thickness is $\leq$=4 mm [(6)].

In a study done by Bender R. (2002), on the diagnostic value of ultrasonic endometrial thickness measurement and detecting endometrial pathological changes, he concluded that ultrasound is a sensitive index in detection of endometrial cancer and pathological endometrial hyperplasia [(7)].

A prospective study on transvaginal sonography and hysteroscopy in patients with postmenopausal bleeding showed that both methods are useful screening tests for endometrial carcinoma, where sonographic results again correlate with histologic results obtained with hysteroscope [(8)].

A longitudinal study was conducted on 394 patients with postmenopausal bleeding to evaluate the efficacy of transvaginal sonography and the need for endometrial biopsy [(9)]. It concluded that there was no increased risk of endometrial cancer or atypia in women who did not have recurrent bleeding, whereas women with recurrent bleeding were a high risk group and no endometrial cancer was missed when endometrial thickness measurement less or equal 4 mm was used, so transvaginal scanning is an excellent tool for determination of whether further investigation with endometrial curettage is necessary.

When vaginal ultrasound is used to measure endometrial thickness, it gives a sensitivity of 88.6%, a specificity of 90%, a positive predictive value of 92%, which was a study done by Mateos F, *et al* [(10)]. They concluded that dilatation and curettage can be avoided in postmenopausal bleeding with endometrial thickness under or equal to 6 mm.

As we can see from the results that more than 60% of patients with endometrial thickness <5mm had benign atrophic endomelrium, but when endometrial pathology is obtained, and in particular when thickness > 20mm, endometrial carcinoma is suspected, but we do not have to take endometrial sampling when the thickness is 5mm or less, but follow up is recommended as some invasive cancers and especially poorly differentiated grade 3 lesions in the elderly that may occur in relatively thin endometrium, i.e. between 5 and 15 mm.

In a study done by Briley (1998), there were three cases of hyperplasia or polyps but no carcinomas occurred in the studied group. He further concluded that if a clear symmetrical endometrial stripe measuring less than or equal to 5mm in thickness was seen the probability of malignancy was extremely rare, and endometrial biopsy could be avoided, whereas if thickness was more than 5mm then biopsy was indicated [(11)].

Transvaginal scan allows the detection of endometrial pathology in the majority of patients with postmenopausal bleedings [(12)]. In a patient with a single episode of bleeding and an endometrium less than 5mm, we recommend expectant management, but if the patient developed another bleeding episode it should be reasonable to repeat an ultrasound after a negative hysteroscopy and D&C after approximately 3 months but would also advice further endometrial sampling if there was significant increase in thickness or bleeding. If there is no significant change then a longer period of time could perhaps be left and the patient could only be reassessed and examined with significant symptoms such as bleeding.

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