

COMPARISON OF TRANSVAGINAL AND TRANSABDOMINAL SONOGRAPHY AND CORRELATION OF ULTRASOUND FINDINGS WITH THE ENDOMETRIAL HISTOPATHOLOGY IN PATIENTS WITH ABNORMAL UTERINE BLEEDING

(Received 28 April, 1993)

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SUMMARY

With the introduction of vaginal sonography, the evaluation of the uterus and the ovaries has become very easy and quick. We undertook this prospective study to determine the value of transvaginal sonography in early detection of endometrial carcinoma, we compared the transvaginal and transabdominal sonograms in 60 patients from our outpatient clinic with abnormal uterine bleeding and we tried to find out the correlation between ultrasonographic findings and the pathology of the tissue obtained by endometrial sampling. The results show that transvaginal sonography is often superior to transabdominal scanning in the evaluation of endometrial abnormalities. Specially in the transvaginal evaluation of our postmenopausal group, taking a 5 mm cutoff limit for endometrial thickness, the PPV was 73,3%, the NPV 100% and the sensitivity 100%. These results are statistically significant and with this simple non-invasive technique, the early detection of endometrial hyperplasia and invasive carcinoma in the postmenopause is possible. However, we would like to emphasize that such a diagnostic accuracy is impossible for the patients in reproductive age.

Key Words: Endometrium, Ultrasonography, Histologic correlation

INTRODUCTION

After breast cancer, carcinoma of the endometrium is the most frequent malignant neoplasm in women (1). Diagnostic curettage has for many years been the method of choice to diagnose endometrial pathologies in women with abnormal uterine bleeding. The technique carries a small but real risk of morbidity and death. Furthermore, curettage causes a great deal of anxiety to the patient. With the knowledge that almost 70% of diagnostic curettages result in a diagnosis of a benign condition, an improved "preoperative" evaluation could reduce the number of curettages (2). Many different methods have been developed to minimize the need for curettage, but all of them are invasive. Vaginal cytology of endometrial cells, endometrial cytology by aspiration, exfoliation, jet washing or brushing all fail to detect early lesions, because early changes affect the basal and not the superficial layers of the endometrium. Dilatation and curettage still remains

the definitive technique for the diagnosis or exclusion of endometrial cancer (3).

Diagnostic ultrasonography is a very good method for evaluation of endometrial growth in menstruating women. With the introduction of endovaginal sonography, the ultrasonographic examination of the uterus and the ovaries has become very easy and quick (4,5).

We undertook this prospective study to determine the value of transvaginal sonography in early detection of endometrial carcinoma, we compared the transvaginal (TV) and transabdominal (TA) sonograms in patients with abnormal uterine bleeding and we tried to find out the correlation between ultrasonographic findings and the pathology of the tissue obtained by endometrial sampling.

MATERIAL AND METHODS

The study included 60 patients from our outpatient clinic with abnormal uterine bleeding. 40 of them were in reproductive age and 20 in the postmenopause and were not receiving estrogen replacement therapy. Transabdominal (TA) sonography with standard full-bladder technique, was performed first by using 3,5 Mhz convex probe from Aloka 630. The uterus was scanned longitudinally and transversely. The patients were then asked to void, and transvaginal (TV) sonograms were obtained with the 7,5 Mhz TV probe from the same equipment Aloka 630. The probe was placed inside a condom that contained couplant gel. Additional gel was placed on the covered probe. The transducer was introduced into the posterior vaginal fornix and the uterus was scanned longitudinally and transversely. In both scanning methods, endometrial thickness was measured at the thickest part in the longitudinal plane. The measurement included both endometrial layers. The hypoechoic layers surrounding the hyperechoic endometrium were not included in the measurement.

After the ultrasonographic examination, the women underwent a fractioned curettage. The tissue sample from the endocervix and cavum uteri was sent to our pathology department for microscopic examination. We then compared the ultrasonographic findings with the pathology reports.

RESULTS

Patients In Reproductive Age: In 7 from 40 patients in reproductive age, the TA measurement of endometrial thickness was impossible. In 2 of them, an intrauterine solid mass was identified and in 5 patients no endometrial echo was seen. By the TV examination of the same group, only in 3 patients endometrial thickness was impossible to be measured. Two of them were the same patients in whom an intrauterine solid mass was identified. In the third patient a tumor was seen in the cervix, which was histopathologically identified as poorly differentiated epidermoid carcinoma. So the evaluation rate was 87,5% for TA method, and 97,5% for the TV way. Table I shows the correlation between the endometrial thickness measured transvaginally and the pathologic findings in 37 of 40 patients with abnormal uterine bleeding in reproductive age.

Table II summarizes the endometrial thickness measured by TA sonography and the histopathologic findings in the same group of patients. In this group, in 87% of the patients the two methods were equal; only in 13% of them the TV approach was superior to the TA technique.

Patients In Postmenopause: Out of 20 patients in the postmenopause, 2 were not included in the TA study group. In 5 out of 18 patients TA scanning of the endometrium was impossible. Only in 13 of them, endometrial thickness was measured precisely. The TA evaluation ratio was 72% (13 out of 18 patients). In 1 of the 13 patients, a mass of 4 cm in size in the anterior uterine wall was diagnosed. This mass was also confirmed transvaginally. In the TV evaluation of the same patient group, the endometrial thickness could be measured in 19 patients. One patient whose TV measurement of the endometrial thickness was impossible, was one of the patients who could not be evaluated transabdominally, and her histological diagnosis was chronic endometritis. The TV evaluation ratio was 95% (19 out of 20 patients). Table III and table IV summarize the correlation between the TA and TV scanning and the histological findings in the group of the patients with postmenopausal bleeding.

The endometrial thickness of a patient was measured 6 mm transabdominally while it was 8 mm transvaginally. In the uterine cavity of this patient a cystic mass of 3x3.3 cm in size was found out. The histological diagnosis of this mass was chronic endometritis with abscess formation.

Taking into account the evaluation results of all 60 patients; 58 patients were evaluated transabdominally. The endometrial thickness of 12 out of 58 could not be measured. The evaluation ratio was 79%. In 2 of the 60 patients who were evaluated transvaginally, the endometrium thickness could not be measured. The evaluation ratio was 96%.

DISCUSSION

Closeness of the transducer to the pelvic organs producing high resolution sonograms even when there is abundant gas-filled bowel, adhesions or obesity; good patient acceptance without the discomfort of a full bladder are the main advantages of TV scanning. The most important disadvantage of TV sonography is seen in patients with a large pelvic or lower abdominal mass, such as a myoma, that extends beyond the reach of the TV transducer (4,6).

Franklin N. Tessler et al. scanned 108 nonpregnant, women, and compared 34 endometrial sonograms obtained with TA and TV techniques. In 55 % of the cases, the two techniques were equal, in 35,5% the TV approach was superior and in 3% TA technique was considered better (6). In our study, after the comparison of 56 of 60 scans the TA and TV sonograms were considered equal in 46 patients (82%). TV approach was thought to be superior in 10 patients (18%). These results are parallel to those of Mendelson E.B. et al., who found the TA and TV scanning equal in 83% of the cases, in 16% TV superior and in 1% TA better (4).

To evaluate the diagnostic accuracy of the sonography in the detection of endometrial hyperplasia and invasive carcinoma, we studied the correlation between the endometrial thickness measured ultrasonographically and the histological findings. Taking 10mm as upper limit of the endometrial thickness, in the group of the TA scanned 33 patients in reproductive age, the positive predictive value (PPV) for identifying endometrial hyperplasia is 35,7%, the negative predictive value (NPV) is 80%, the sensitivity 62,5% and the specificity 57,1%. In the same group, taking 10 mm as upper limit of the endometrial thickness measured in transvaginally scanned 37 patients, the PPV for identifying endometrial hyperplasia is 35,7%, the NPV 80,9 %, sensitivity 55,5% and the specificity 65,1%. Malpani A. et al., compared the histological findings and the endometrial thickness measured with TA scan, in 11 patients with endometrial hyperplasia and 19 patients with normal endometrium. They found the specificity 100% and the sensitivity 81% when the upper limit of the endometrium was 10 mm. (8). Our results have no correlation with these findings and are not statistically significant.

In patients with postmenopausal bleeding, premalign and malign diseases are very common. Studying this group of patients we found the PPV 63,5%, the NPV 100%, the sensitivity 100% and the specificity 33,3%, if we considered the upper limit of the endometrial thickness measured transabdominally as 5 mm. Fleischer, A.C. et al., Nasri M.N. et al. gave the sensitivity 91% and the specificity 100% for this limit (9,10). In the evaluation of our transvaginally scanned postmenopausal group, if a 5 mm cutoff limit was used for endometrial thickness, we had the PPV

Table I: Histologic diagnosis as related to endometrial thickness obtained by endovaginal scanning in 37 out of 40 patients in reproductive age.

Histological findings	n	Mean age	End. thickness (mm) (range)	End. thickness (mm) (mean)
Simple hyperplasia	9	46.7	3-22	11,25(6.15)
Dysf. uterine bleed.	8	42.12	3-16	9.37(4.68)
Proliferative end.	6	41	4-10	6.16(2.63)
Secretory end.	3	46.66	8-11	9(1.73)
Chronic endometritis	6	43.33	5-17	11.66(4.41)
Necrotic decidua	3	34	2-20	11(12.72)
Others	2	41	5-7	6

Table II: Histologic diagnosis as related to endometrial thickness obtained by transabdominal sonography in 33 patients out of 40 patients in reproductive age.

Histological findings	n	Mean age	End. thickness (mm) (range)	End. thickness (mm) (mean)
Simple hyperplasia	8	47.12	3-20	11(6.02)
Dysf. uterine bleed.	7	42.82	3-14	7.6(4.3)
Proliferative end.	6	41	4-12	7.2(3.96)
Secretory end.	3	46.66	8-10	9(1.41)
Chronic endometritis	5	43.50	7-17	13.2(4.14)
Necrotic decidua.	3	34	2-18	10(11.31)
Others	1	37	3	3.0

Table III: The correlation between the endometrial thickness measured transabdominally and the histological findings in 13 out of 20 postmenopausal patients.

Histological findings	n	Mean age (range)	End. thickness (mm) (mean)	End. thickness (mm) (mean)
Simple hyperplasia	6	50.83	6-12	9.83 (2.04)
Chronic endometritis	6	55.33	4-18	8.83(5.30)
Proliferative end.	1	48	9	9

Table IV: The correlation between the endometrial thickness measured transvaginally and the histological findings in 19 out of 20 postmenopausal patients.

Histological findings	n	Mean age	End. thickness (mm) (range)	End. thickness (mm) (mean)
Simple hyperplasia	8	53	7-17	12.12(2.79)
Chronic endometritis	6	55.33	4-19	9.33(5.68)
Atrophic endometrium	2	55.5	3	3
Adeno CA	1	51	16	16
Proliferative end.	2	45.5	7-15	11(5.65)

73,3%, the NPV 100%, the sensitivity 100% and the specificity 50% for identifying an endometrial abnormality. These results are statistically significant. Therefore, we recommend the routine transvaginal scanning of women with postmenopausal bleeding. With this simple non-invasive technique, the early detection of endometrial hyperplasia and invasive carcinoma is possible. However, no absolute distinction between benign or malignant lesions can be made. But a curettage can be avoided in a woman with postmenopausal bleeding showing an endometrial thickness of <5 mm. Yet, we would like to emphasize that such a diagnostic accuracy is impossible for the patients in reproductive age.

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