Does Transvaginal Ultrasonography Have Good Diagnostic Value in Endometrial Pathology?

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ABSTARCT

Introduction: Endometrial biopsy is usually considered unnecessary in post-menopausal uterine bleeding when the endometrial thickness (ET) is less than 5 mm because the risk of endometrial hyperplasia or cancer is low. However, there is still much controversy from this as some believe that the diagnostic value of ET in diagnosis of endometrial pathology (EP) in postmenopausal bleeding is necessary. In this study, the diagnostic value of ET for diagnosis of EP in post-menopausal bleeding was evaluated. Materials and methods: Sixty post-menopausal women with uterine bleeding were evaluated. Transvaginal ultrasonography (TVS) was used for measurement of ET followed by dilatation and curettage in a one-day interval. According to the EP, patients were divided in two groups, normal and abnormal. Endometrial atrophy was considered as normal and hyperplasia, polyps and carcinoma was considered as abnormal. Results: Twenty nine cases had ET more than 6 mm, among them, 25 cases had abnormal pathology (hyperplasia, polyp, cancer) and 4 cases were normal (atrophy). Thirty-one patients had ET equal or less than 6mm, among them, 26 cases were normal (atrophy) and 5 cases had abnormal pathology. The sensitivity, specifity, positive and negative predictive values of TVS in the diagnosis of uterine pathology were 83.3%, 86.7%, 86.2%, 83.9% respectively. Conclusion: We suggest that an ET of less than 6 mm in TVS is unlikely to indicate EP in post-menopausal women with uterine bleeding.

KEYWORDS: Endometrial hyperplasia, endometrial neoplasm, ultrasonography, pathology, postmenopause, endometrial bleeding associated factors.

INTRODUCTION

Post-menopausal bleeding has several causes, such as exogenous estrogens usage, atrophic endometritis/ vaginitis, endometrial cancer, endometrial or cervical polyps and endometrial hyperplasia.[1] Several methods are present for finding the cause of postmenopausal bleeding and one of them is pelvic ultrasonography and especially vaginal ultrasonography. [2]The cost-effectiveness of transvaginal ultrasonography (TVS) has not been well studied. It has been suggested that an endometrial thickness (ET) of less than 6 or 5 mm measured by TVS in peri-menopausal and post-menopausal women with abnormal bleeding is unlikely to indicate endometrial cancer and endometrial biopsy considered unnecessary. [3-6] The biopsy is indicated in cases with history of long-term unopposed estrogen exposure.[1,7]

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ET Measurement by TVS can be utilized in post-menopausal women to avoid unnecessary biopsies.[8] In patients with thickened or highly echogenic endometrium, TVS can suggest the presence of abnormal histology such as hyperplasia or endometrial polyps. Many studies have discussed whether there is an optimal cut-off ET below which one can safely presume a low likelihood of pathology and avoid invasive diagnostic procedures to assess endometrial histology.[7] Earlier meta-analysis concluded that using 5mm as the cut-off point resulted in a sensitivity of 92% in identifying any endometrial pathology (EP) and 96% respectively in detecting carcinoma. More recent literatures suggest that this 5mm guideline is not reliable for this reason and tissue sampling should always be considered.[7]

For diagnosis of EP in women with post-menopausal bleeding, TVS is a valuable tool.[8] This method is a very suitable tool for the determination of whether a further investigation with curettage or some form of endometrial biopsy is necessary and with an ET less than or equal to 4 mm, no woman is diagnosed as having endometrial cancer.[9]

In this study, our aim was to determine the diagnostic accuracy of ET measurements by TVS for predicting EP in post-menopausal bleeding.

MATERIALS AND METHODS

This study was carried out on 60 post-menopausal patients with uterine bleeding in Amir University hospital, Sunman, Iran, between Oct 2008 and Dec 2009. A written informed consent was obtained from each patient. The first visit included a detail history and patients with more than one-year cessation of menstruation were considered as post-menopause. The exclusion criteria were those who are using hormone-replacement therapy, diabetics and obesity (BMI>25).

All patients underwent careful pelvic, abdominal examinations and then ET was measured using TVS (Toshiba mark instrument). TVS was done by the same sonographer. Diagnostic dilatation and curettage was performed in a one day interval by the same gynecologist and all the biopsy samples were assessed by the same pathologist. Based on the pathologic reports we divided the patients into two groups. Endometrial atrophy was considered as a normal group whereas hyperplasia, polyps and carcinomas were considered as an abnormal group. In this study, the diagnostic value of ET and the sensitivity, specificity, positive and negative predictive values of TVS in the diagnosis of uterine pathology in post-menopausal bleeding were evaluated. Receivers Operating Characteristics (ROC) curve were used to determine the best cut-off point.

RESULTS

The mean (±SD) age of the study group was 60.3 ± 4.8 and the median age of post-menopausal lady in atrophic and endometrial polyp groups were 51 and in hyperplasia group was 53 years old.

The mean (±SD) age of menopause in the study group was 51.7 ±1.7 years. Most endometrial abnormal pathology was present between 50 to 53 years old and the mean duration of vaginal bleeding was 14.9 ±10.5 days.

A total of 60 women with post-menopausal uterine bleeding were evaluated. Twenty nine cases had ET more than 6 mm, and 25 of these cases had abnormal pathology consisting of endometrial hyperplasia (11 cases), endometrial polyp (13 cases) and endometrial cancer (one case). Four cases had endometrial atrophy with normal pathology.

Thirty one cases had ET less than or equal to 6mm and 26 of these cases had normal pathology (endometrial atrophy), five cases had abnormal pathology consisting of an endometrial hyperplasia (2 cases) and endometrial polyp (3 cases).The distribution of endometrial pathology based on ET is summarised in Table I.

ROC curve was used to determine the performance of ET by TVS in the detection of endometrial athologies in our cases. The area (±Standard Error) under the curve (AUC) was 0.927±0.035 (95% Confidence Interval 0.858-0.995). The most sensitivity and specifity was present in ET of 6 mm. Sensitivity and specifity of TVS were 83.3 (95% CI: 73.9-92.7%) and 86.7 (95% CI: 78.1-95.3%) and the positive and negative predictive values were 86.2 and 83.9 percent respectively.

Table I. Distribution of endometrial pathology based on endometrial thickness

Endometrial Pathology	**Endometrial thickness > 6mm**		**Endometrial thickness ≤6mm**	
	N:29	**%**	**N:31**	**%**
Atrophy	4	13.3	26	86.7
Hyperplasia	11	84.6	2	15.4
Endometrial polyp	13	81.3	3	18.8
Carcinoma	1			
Total (percent)	29(48.3%)		31(51.7%)	

DISCUSSION

Post-menopausal bleeding should be considered as an important symptom and the principal aim of the investigation of post-menopausal bleeding is to identify or exclude any EP. Osman and Amer found that ET is the most valuable parameter to differentiate both endometrial cancer and any EP.10 TVS has been proposed to be the test of first choice in post-menopausal bleeding because of its almost perfect accuracy,[4] although in another report, this accuracy is said to be lower.11 In our study, there was a good accuracy for TVS for the diagnosis of EP.

Measurement of ET by TVS can be utilized in post-menopausal women to avoid unnecessary biopsy, but biopsy is indicated when the clinical history suggests long-term unopposed estrogen exposure.[12,13] The optimal cut off ET for the diagnosis of pathology in this study was less than or equal to 6mm. Gupta et al. have demonstrated that less than or equal to 5mm cut off level could rule out EP with good certainty.[6] So, the result of our study is in agreement with the Gupta's study. Goldstein found that the risk of malignancy is one in 917 when the endometrial thickness in women with post-menopausal bleeding is less than or equal to 4.[14] Karlsson et al. reported that no EP was found at the histopathology examination after dilatation and curettage when the ET is less or equal 4 mm.[15] Other studies reported a range of 5 to 8 mm (pre-menopausal) cut off ET shall be considered to rule out endometrial pathology in abnormal uterine bleeding.[16,17,18]

Gull et al. suggested that no endometrial cancer is missed when the ET cut off value of less than or equal to 4 is used. They concluded that TVS scanning is an excellent tool for the determination of whether a further investigation with curettage or some form of endometrial biopsy is necessary.[5] Timmermans et al. found that transvaginal ultrasonography is the first-line test in assessment of postmenopausal bleeding.[19] Auslender et al. reported that all women with an ET of 3mm or less have atrophic endometrium and ET of 3mm or less would have reduced the number of dilatation and curettage procedures by 45%, and no cases of endometrial pathologies would have been missed.[20]

Therefore, in comparison to our study, there are different cut off levels of ET suggested in other studies. 14-20 But, it is approved that TVS is an appropriate tool for diagnosis of EP. This study demonstrates a cut off level of 6mm of ET for diagnosis of EP and the result of this study is not in agreement to some other studies that proposed the cut off point of 4 and 5 mm. [21, 22]

We conclude that ET at less than or equal to 6mm cut-off level rules out EP extensively with good certainty. Our study with a cut-off level 6mm for ET had sensitivity 83/3%, specificity 86/7%, positive and negative predictive value 86/2% and 83/9% respectively. Weber et al.[23] have reported sensitivity of 94%, specificity of 48% and positive and negative predictive value of 69% and 87% respectively with cut off level of 5mm for ET. So, based on ours and Weber's studies, measurement of ET by TVS has a high sensitivity for detecting of EP and the evaluation of ET is very helpful for detecting of EP in women with post-menopausal bleeding. In our study, we excluded diabetes and obese women since Vandoorn et al. study reported that in obese women and in women with diabetes it might be preferable to perform endometrial sampling irrespective of the finding at TVS.[24]

CONCLUSION

We conclude that in post-menopausal vaginal bleeding women, ET at less than or equal to 6mm cut-off levels rules out EP. TVS could be a routine evaluation method for post-menopausal vaginal bleeding.

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