ORIGINAL ARTICLE

Role of transvaginal ultrasonography in diagnosing endometrial hyperplasia in pre- and post-menopause women

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is the most common presenting symptom of endometrial hyperplasia (EH). Transvaginal ultrasonography (TVS) is a diagnostic tool in the evaluation of AUB and EH with various sensitivity and specificity. However, the exact accuracy of TVS in diagnosing EH had not been evaluated. In this study, we aim to evaluate the accuracy of TVS in detecting EH. **Materials and Methods:** In this retrospective study, 120 women (mean age of 48.64 ± 6.74 years) with AUB with suspicious/or possible EH were evaluated. TVS and pathology findings of possible EH were recorded. Sensitivity, specificity, positive, and negative predictive value (PPV and NPV) was calculated. **Results:** Sixty-eight patients were premenopause, and 52 were postmenopause. TVS reported EH in 85 cases (70.83%). Pathology results showed EH in 85 cases (70.83%) including simple cystic hyperplasia in 82 cases, atypical, simple hyperplasia in one case and complex hyperplasia in two cases. Among these 85 cases, EH was confirmed by pathology in 81 cases. The accuracy, sensitivity, specificity, PPV, and NPV were 88.25%, 90.7%, 84%, 97.7%, and 84% in premenopause and 100% in postmenopause women. **Conclusion:** TVS is an appropriate diagnostic tool in premenopause and postmenopause women presenting with AUB, especially in detecting EH. However, further studies are needed to determine the exact accuracy of TVS in diagnosing TVS.

Key words: Abnormal uterine bleeding, endometrial hyperplasia, transvaginal ultrasonography

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INTRODUCTION

Abnormal uterine bleeding (AUB) is the most common presenting symptom of endometrial hyperplasia (EH).[1,2] EH is clinically important as it can progress to endometrial carcinoma or occur concurrently with it.[3-5] EH is typically diagnosed by endometrial biopsy or curettage during normal evaluations for AUB in premenopause and postmenopause women. Hysteroscopic evaluation is the gold standard for AUB, and endometrial sampling is a preferred procedure for diagnosis of the endometrial pathology.[6]

Transvaginal ultrasonography (TVS) has been used as a diagnostic tool for various gynecological disorders including the disease of ovaries, uterus, and endometrium[7,8] and plays an important role in the evaluation of AUB.[9,10] It is a noninvasive and relatively inexpensive diagnostic procedure with good accuracy in the diagnosis of endometrial abnormalities.[11-13]

In our region, most patients do not agree with invasive evaluation and prefer noninvasive methods. Although TVS is a noninvasive method for evaluating AUB, its sensitivity and specificity is varied in different studies.[14-17] As patient satisfaction is a key factor in patient care and they prefer noninvasive methods, in this study, we aim to evaluate the accuracy of TVS in detecting EH.

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MATERIALS AND METHODS

In this retrospective study, 120 women with AUB who were evaluated at Alavi Hospital, Ardebil, Iran during 2010–2012 were selected. Subjects with isolated endometrial causes of AUB were included, and those with fibroids, cervical, and vaginal and hemostatic disorders or those receiving hormone therapy were excluded. We also included only patients whom their TVS evaluation was performed by the same radiologist. This study protocol was approved by the Ethics Committee of Ardebil University of Medical Sciences.

The ultrasound was performed transvaginally, and evaluated the endometrial lining, uterine size and volume, and abnormalities in uterine cavity and muscles, in addition to ovaries. Endometrial biopsy was performed using hysteroscopy and was examined by a pathologist. All patients underwent a hysterectomy, and the final diagnosis was based on its results. The final findings by TVS and pathology defined as having EH or not. The pathological findings were then correlated with ultrasonographic findings.

Many classifications of EH have been proposed over the years. The WHO classification[18] is currently preferred and more widely used than other ones which were used in this study.

Data analysis

All data were analyzed using the Statistical Package for Social Sciences, version 17.0 (SPSS, Chicago, Illinois, USA). Baseline data are reported as mean ± standard deviation (continuous data) or percentages (categorical data), depending on the data level. The value of TVS in diagnosing EH was evaluated by sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

RESULTS

In this study, we evaluated 120 women with AUB. Patients' mean age was 48.64 ± 6.74 years (range 24–73 years). Sixty-eight (56.7%) were premenopause and 52 (43.3%) were postmenopause.

TVS reported EH also in 85 cases (70.83%). Pathology results showed EH in 85 cases (70.83%) including simple cystic hyperplasia in 82 cases, atypical, simple hyperplasia in one case, and complex hyperplasia in two cases. Among these 85 cases, EH was confirmed by pathology in 81 cases.

We evaluated TVS efficacy in premenopause and postmenopause women, separately. EH was reported in 43 of 68 premenopause and 42 of 52 postmenopause women by TVS, which was confirmed by pathology in 39 and 42 cases, respectively. Sensitivity, specificity, PPV, and NPV of TVS in diagnosing EH in premenopause women were 90.7%, 84%, 90.7%, and 84% and in postmenopause women was 100% for each. The accuracy of TVS in premenopause and postmenopause was 88.25% and 100%, respectively.

DISCUSSION

Common findings in AUB are endometrial polyp, submucosal leiomyomas and EH.[19] Although TVS is used as the evaluation test for AUB, especially in postmenopause women, but its sensitivity and specificity was relatively high ranging from 24–96% to 29–93%, respectively which is mostly depended on the operator's experience.[19-22] Published studies mostly focus on comparing TVS with other methods or on the predictive value of TVS in intrauterine disorders, in general, but few studies have evaluated the subtype disorders. As in some reports, the sensitivity and specificity of TVS for EH differ from the overall reported sensitivity and specificity.[19-23]

In this study, we evaluated the efficacy of TVS in detecting EH in premenopause and postmenopause women visited for AUB. We compared the diagnostic accuracy of TVS in a subgroup of premenopause and postmenopause women, separately. The diagnostic accuracy in premenopause women was lower than postmenopause patients.

In this study, in premenopause women, sensitivity, specificity, PPV, and NPV of TVS in diagnosing EH were 90.7%, 84%, 90.7%, and 84%, respectively. Similar to our findings, Dijkhuizen *et al*.[24] reported similar sensitivity (88%) but lower specificity for diagnosing endometrial abnormalities in premenopause women. Unlike these findings, Mukhopadhayay *et al*.[25] observed lower sensitivity (43.75%) and higher specificity (95.65%) with PPV and NPV of 70% and 88%, respectively. This difference would be because of the difference in the population evaluated in each study, as well as the difference in the years of the studies. As the TVS technique has improved during these recent years, it is not impossible to observe better diagnostic results.

Unlike premenopause women, many studies have studied the accuracy of TVS in diagnosing endometrial abnormalities especially EH among postmenopause women and has become an essential screening in gynecological practice in these women.[11,14,26] However, different studies have yielded different levels of sensitivity and specificity ranging from 59.7%–100% to 7.4%–91.7%, respectively.[14,20,27-32] In this study, we observed a high accuracy for TVS in diagnosing EH in postmenopause women with sensitivity, specificity, PPV and NPV of 100% for each. Similarly, a high NPV (99%) is reported for TVS in untreated postmenopausal women,[16,33] but there is reported poor NPV in some studies.[33]

In this study, we only studied those patients with possible EH as a cause for AUB and patients with other known or possible causes were excluded. Hence, it was possible to observe these results. Overall, it could be concluded that TVS is a good diagnostic and screening method in evaluating AUB and detecting EH with high and acceptable accuracy. However, TVS has some difficulties. There is variability of the technique which has limited the standardization of measurements. As a modality dependent to the operator, TVS quality and accuracy is mostly related to the operators' experience. Moreover, finally, TVS is a diagnostic modality and can indicate some abnormality in the uterine cavity or endometrium, and pathologic evaluation is needed for accurate diagnosis.

CONCLUSION

TVS is an appropriate diagnostic tool in premenopause and postmenopause women presenting with AUB, especially in detecting EH. However, further studies are needed to determine the exact accuracy of TVS in diagnosing TVS.

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Conflicts of interest
There are no conflicts of interest.

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