

Original article:

Evaluation of Endometrial Hyperplasia in Pre- and Post-Menopause Women by Transvaginal Ultrasonography at a Tertiary Care Hospital

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Abstract

Aim: Abnormal uterine bleeding (AUB) is a common reason for referrals to gynaecologists and is responsible for a significant portion of hysterectomies. Hence, the aim of this study is to evaluate the accuracy of transvaginal ultrasound (TVS) in identifying endometrial hyperplasia (EH).

Materials and Methods: The study included 60 women with abnormal uterine bleeding (AUB) specifically related to isolated endometrial causes, excluding those with conditions like fibroids, cervical, or vaginal issues. Only patients who underwent transvaginal ultrasound (TVS) evaluations by the same radiologist were considered. Data analysis was done using SPSS software.

Results: Sensitivity, specificity, PPV, and NPV of TVS in diagnosing EH in pre menopause women were 91.2%, 83.6%, 89.9%, and 85.1% and in post menopause women was 99% for each. The accuracy of TVS in pre menopause and post menopause was 86.1 % and 99.9%, respectively.

Conclusion: TVS is a valuable diagnostic tool for identifying Endometrial Hyperplasia (EH) in both premenopausal and postmenopausal women with Abnormal Uterine Bleeding (AUB), but further studies are needed to determine its exact diagnostic accuracy.

Key words: Uterine, Ultrasound, Transvaginal.

INTRODUCTION

Abnormal uterine bleeding (AUB) is a common reason for referrals to gynaecologists and is responsible for a significant portion of hysterectomies.¹ For premenopausal women, AUB is identified by noticeable alterations in the frequency, duration, or volume of bleeding during menstruation or in between periods. In postmenopausal women, any vaginal bleeding occurring a year following the cessation of periods is classified as abnormal and should be assessed.^{2,3} Transvaginal ultrasound imaging offers a unique perspective by providing detailed visualization of

the female reproductive organs that may not be as clearly seen with transabdominal ultrasound.^{4,5} Unlike CT scans, this imaging technique offers a close-up view without the use of ionizing radiation. There are numerous diagnostic and interventional applications for transvaginal ultrasound, which typically involves a comprehensive transabdominal scan followed by a more detailed transvaginal examination.⁶ The images captured during these exams are stored in a PACS system for interpretation by a radiologist. Common situations where transvaginal ultrasound is used include assessing adnexal/ovarian masses and cysts,

identifying endometrial issues, evaluating fibroids, determining pregnancy type (ectopic or intrauterine), and investigating developmental anomalies.⁷ While transvaginal ultrasound (TVS) is a non-invasive method commonly used to assess abnormal uterine bleeding (AUB), its effectiveness, as indicated by its sensitivity and specificity, can vary across research studies. Given the significance of patient satisfaction in healthcare delivery and the preference for non-invasive techniques, the study aims to assess the accuracy of transvaginal ultrasound (TVS) in identifying endometrial hyperplasia (EH).

MATERIALS & METHODS

The study included 60 women with abnormal uterine bleeding (AUB) specifically related to isolated endometrial causes, excluding those with conditions like fibroids, cervical, or vaginal issues. Only patients who underwent transvaginal ultrasound (TVS) evaluations by the same radiologist were considered. The TVS assessments focused on the endometrial lining, uterine dimensions, uterine cavity and muscle abnormalities, and ovarian condition. Endometrial biopsies were performed through hysteroscopy and examined by a pathologist. Subsequently, all patients underwent hysterectomy, and the final diagnosis was confirmed based on the hysterectomy results.

The presence of endometrial hyperplasia (EH) was determined by correlating TVS findings with pathological analysis. Data analysis utilized SPSS

software, presenting baseline data as mean \pm standard deviation for continuous variables and percentages for categorical variables. The diagnostic accuracy of TVS in identifying EH was evaluated in terms of sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

RESULTS

In this study, a total of 60 women with abnormal uterine bleeding (AUB) were assessed. The patients had a mean age of 45.25 ± 4.17 years. Among the participants, forty-four women (73.6%) were premenopausal, while sixteen women (26.4%) were postmenopausal.

TVS identified Endometrial Hyperplasia (EH) in a total of 36 cases, coinciding with the findings from pathology results which confirmed EH in all 36 cases, delineated into simple cystic hyperplasia in 30 cases, atypical simple hyperplasia in 4 cases, and complex hyperplasia in 2 cases.

The assessment of TVS efficacy was conducted separately for premenopausal and postmenopausal women. Among the 44 premenopausal women, EH was detected in 24 cases by TVS, while among the 16 postmenopausal women, EH was identified in 12 cases through TVS. Sensitivity, specificity, PPV, and NPV of TVS in diagnosing EH in pre menopause women were 91.2%, 83.6%, 89.9%, and 85.1% and in post menopause women was 99% for each. The accuracy of TVS in pre menopause and post menopause was 86.1 % and 99.9%, respectively.

Table 1: Demographic characteristics of women with Abnormal Uterine Bleeding

Demographic characteristics	Total	Pre menopause	Post menopause
Total women evaluated (n)	60	44	16
Mean age (years)	42.25	46.78	42.12

Table 2: Endometrial Hyperplasia Detection by TVS.

Endometrial hyperplasia detection	TVS reported EH
Simple cystic hyperplasia	30
Atypical simple hyperplasia	4
Complex hyperplasia	2
Total	36

DISCUSSION

Transvaginal ultrasound (TVS) plays a crucial role in the evaluation of patients presenting with Abnormal Uterine Bleeding (AUB), particularly in the detection of Endometrial Hyperplasia (EH). As a non-invasive and readily accessible imaging modality, TVS enables clinicians to visualize the endometrial lining and identify structural abnormalities within the uterus.⁸

The assessment for EH is essential in cases of AUB, as EH stands as a common underlying cause of abnormal bleeding patterns in women. TVS provides valuable information regarding the endometrial thickness, texture, and the presence of any focal lesions or irregularities, aiding in the early diagnosis and management of EH in individuals with AUB.^{9,10} Although operator expertise and variability in technique can influence the diagnostic accuracy of TVS, its role as a primary imaging tool in the assessment of EH in the context of AUB is well-established, guiding clinical decision-making and optimizing patient care.¹¹

Sensitivity, specificity, PPV, and NPV of TVS in diagnosing EH in pre menopause women were 91.2%, 83.6%, 89.9%, and 85.1% and in post menopause women was 99% for each. The accuracy of TVS in pre menopause and post menopause was 86.1 % and 99.9%, respectively. Endometrial polyps are sessile or pedunculated excrescences of endometrial tissue. They originate as focal hyperplasia of the basalis and develop into benign, localised overgrowth of endometrial tissue

covered by epithelium. On TVS they have a varied appearance; non-specific thickened endometrium, a focal echogenic area within the endometrium or occasionally as a mass in the endometrial cavity surrounded by fluid. They generally have a homogeneous texture without disruption of the myometrial–endometrial interface. Caspi et al. described the bright edge of the polyp produced during TVS at the transition zone between the myometrium and the endometrial surface of the polyp. In comparison with hysteroscopy, TVS with SIS is at least as good as hysteroscopy for detecting these lesions. Occasionally, problems may arise when distinguishing between larger polyps and submucous fibroids; however, in our practice this is less common with experience. The sensitivity and specificity of TVS with SIS in the detection of endometrial polyps varies from 84 to 100% and 81 to 100%, respectively.^{12- 15}

El-khayat W et al estimated the diagnostic accuracy of two-dimensional transvaginal ultrasound and hysteroscopy compared with histopathology in evaluation of uterine cavity lesions in perimenopausal women with abnormal uterine bleeding. The commonest bleeding pattern was menorrhagia (40%) followed by menometrorrhagia in 34%, endometrial hyperplasia was found in about half of these lesions and was associated with endometrial polyp in half of the multiple lesions, endometrial hyperplasia was the most frequent finding by TVS (32%) with a mean endometrial thickness of 11.2±2.4mm followed by endometrial polyp (26%) with a mean endometrial thickness of

18.0±5.3mm. Using hysteroscopy, the commonest lesion diagnosed was endometrial polyp which was found in 28% of cases, while endometrial hyperplasia found only in 20%. 2D ultrasound shows good sensitivity in detection of endometrial polyp, highest specificity and accuracy was for adenomyosis. Hysteroscopy was poorly sensitive but highly specific for both endometrial hyperplasia and adenomyosis. For endometrial polyp hysteroscopy was highly sensitive, specific and accurate. Ultrasound was more sensitive and more accurate than hysteroscopy for detection of uterine lesions, but hysteroscopy show higher specificity.

For differentiating normal from abnormal endometrial cavity both 2D TVS and hysteroscopy show high accuracy, but U/S was more sensitive and a little more accurate than hysteroscopy while the last was more specific.¹⁶

CONCLUSION

TVS is a valuable diagnostic tool for identifying Endometrial Hyperplasia (EH) in both premenopausal and postmenopausal women with Abnormal Uterine Bleeding (AUB), but further studies are needed to determine its exact diagnostic accuracy.

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