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THE ROLE OF ENDOMETRIAL VOLUME IN THE PREDICTION OF ENDOMETRIAL HYPERPLASIA IN PERIMENOPAUSAL ABNORMAL UTERINE BLEEDING

By

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is a broad term that describes irregularities in the menstrual cycle involving frequency, regularity, duration, and volume of flow outside of pregnancy. The gold standard for diagnosis of AUB is the endometrial biopsy for accurate detection of the exact pathological cause for bleeding. However, due to the invasive nature of this procedure, most of the cases are not complaint for this technique. Ultrasonography is non-invasive technique for evaluating the endometrium. However, using this technique to measure the thickness of the endometrium itself is not sufficient. 3D Transvaginal ultrasound enables an assessment of uterine and endometrial volume.

Objective: To assess the accuracy of 3D trans-vaginal Ultrasound in diagnosis of endometrial hyperplasia in women with perimenopausal abnormal uterine bleeding.

Patients and methods: This was a cross sectional study that included 75 patients selected from outpatient clinic of Obstetrics and Gynecology at Al-Hussein Hospital, Cairo, Egypt, from January 2020 till January 2021. Detailed history was obtained and full examinations were done for every patient included in the study. In addition, transvaginal ultrasound was done and the endometrial volume was measured, then all patients were submitted to endometrial curettage.

Results: Adenocarcinoma was the most reported findings in 27 cases (36%). The best cut-off value for classification of patients into those with benign endometrial pathology and those with endometrial hyperplasia or carcinoma using endometrial volume was an endometrial volume >12.35 ml with 74.1% sensitivity and 95.2% specificity. The best cut-off value for classification of patients into those with benign endometrial pathology or hyperplasia and those with endometrial carcinoma using endometrial volume was an endometrial volume >12.25 ml with 96.3% sensitivity and 100% specificity.

Conclusion: 3D ultrasound is a reasonably accurate, helpful and non-invasive tool for assessing the endometrium that could replace the endometrial biopsy.

Keywords: Abnormal Uterine Bleeding, Endometrial Volume, Endometrial Hyperplasia, Transvaginal, 3D ultrasound.

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most frequent reasons for a gynecological evaluation *(Sweet et al., 2012)*. It can be caused by structural and nonstructural uterine disorders. According to FIGO system PALM-COEIN, the causes can be the following: polyp, adenomyosis, leiomyoma, malignancy, coagulopathy, ovulatory disfunction, endometrial, iatrogenic, or not yet classified *(Munro et al., 2011)*. Although in most cases AUB is not linked to a malignant or premalignant lesion, it should not be underestimated *(Bignardi et al., 2010)*.

With approaching to age of menopause, as ovarian function is declining, ovulation may not occur. The unopposed estrogen without progesterone will cause the uterine lining to thicken. This thickening will cause endometrial hyperplasia and carcinoma, polyps and fibroids may also cause changes in bleeding pattern *(Nandi and Poretsky, 2013)*.

Endometrial sampling is the gold standard for diagnosing abnormalities in the endometrial tissues with sensitivity ranging from 85-95% *(Holalkere et al., 2010)*. There is a growing trend to use noninvasive procedures such as transvaginal ultrasound (TVUS), to measure the endometrial thickness, diagnose dysfunctional uterine bleeding, adenomyosis, endometrial polyps and leiomyomas *(Alcazar and Galvan, 2010)*.

Another important ability of 3D TVUS is volume calculation using the Virtual Organ Computer-aided Analysis (VOCAL) even in irregularly shaped structures. This method has been demonstrated to be more accurate than 2D-volume estimation *(Goldstein, 2010)*. The differentiation between benign endometrial pathology, endometrial hyperplasia and carcinomas was not possible due to overlap in the endometrial thickness measurements. When 3D volume measurements were performed, the overlap was much smaller which significantly improved the diagnosis of cancer *(Timmermans et al., 2010)*.

The aim of the present study was to assess the accuracy of 3D trans-vaginal Ultrasound in diagnosis of endometrial hyperplasia in women with perimenopausal abnormal uterine bleeding.

PATIENTS AND METHODS

This was a cross sectional study that included 75 patients selected from outpatient clinic of Obstetrics and Gynecology at Al-Hussein Hospital, Cairo, Egypt, from January 2020 till January 2021.

We included perimenopausal females in the age group 40-55 years and with symptoms of abnormal bleeding, e.g. menorrhagia, metrorrhagia, and polymenorrhea. The cases with the following conditions were excluded; general cause that can cause abnormal uterine bleeding, history of drug use that can cause vaginal bleeding, local cause of bleeding such as: cervical or vaginal lesion and history of recent hormonal contraception.

After approval from the local Ethical Scientific Committee of Faculty of Medicine, Al-Azhar University and obtaining an informed written consent from the patients included in the study, all

cases were subjected to complete history taking and thorough full general and local pelvic examination. The patients underwent 3D-transvaginal ultrasonography measuring endometrial volume using VOCAL. 3D vaginal ultrasound was done to study uterine size and shape and endometrial volume and exclude any uterine or ovarian pathology.

Technique: With an empty bladder, the patients were examined at Dr/Samir Abbas unit at Al-Hussein Hospital by the same doctor in the lithotomy position using Vulson s6 sonar.

The 3D image was obtained by switching the 3D volume mode and defining the region of interest by a movable sector on the screen. This sector has the shape of a truncated cone which can be manipulated to ensure that the whole of the endometrial cavity was included in the volume sampling while the patient remain still and the probe is held stationary. Volume sampling lasted about 4 seconds, during that time the conventional 2D plane was rotated through 180 degrees with the rotation axis oriented exactly along the longitudinal axis of the vaginal probe.

The data were stored digitally on the internal disk drive for subsequent analysis after the ultrasound probe is removed. The 3D-data were retrieved and presented in multi-planer display mode which simultaneously displays 3 perpendicular planes on the screen.

The actual volume was calculated by the built-in computer program using the Virtual Organ Computer-aided Analysis (VOCAL). This was a rotational method based on rotation in given steps (6,9,15,30) on a given orthogonal plane (A,B or C).The endometrial volume was measured in plane A by delineating the endometrial margin at the endometrial-myometrial interface from the fundus to the internal cervical OS in a number of parallel slices which are 1-2 mm apart.

Endometrial curettage: Endometrial curettage was performed using a sharp-ended curette under general anesthesia. The sample was placed in formalin 10% and sent for histopathological identification of the nature of the endometrium or of the pathological lesion. Pathological examination of the biopsy was done at Al-Hussien Hospital pathology department.

Sample size calculation: From a previous study by *(Odeh et al., 2010)*, the percentage of women with endometrial hyperplasia or endometrial carcinoma is expected to be approximately 20.1% among those presenting with perimenopausal bleeding. Using endometrial volume as a predictor, this sample size of 75 patients would have a power of 80% to detect a difference of 0.228 between an area under the ROC curve (AUC) of 0.5 under the null hypothesis and an AUC of 0.728 under the alternative hypothesis.

Statistical analysis:

Data were coded and entered using the statistical package for the Social Sciences (SPSS) version 26 (IBM Corp., Armonk, NY, USA). Data were summarized using mean and standard deviation for quantitative variables and frequencies (number of cases) and relative frequencies (percentages) for categorical variables. Comparisons between groups were done using (ANOVA) with multiple comparisons post hoc test for quantitative

variables. For comparing categorical data, Chi square test was performed. ROC curve was constructed with area under curve analysis performed to detect best cutoff value of endometrial volume for detection of cancer. P-values less than 0.05 were considered statistically significant.

RESULTS

According to the histopathological results, atrophic endometrium was detected in 14 cases (18.7%), disordered proliferative endometrium in 7 cases (9.3%), hyperplastic polyp in 8 cases (10.7%), simple endometrial hyperplasia without atypia in 13 cases (17.3%), complex endometrial hyperplasia and simple endometrial hyperplasia with atypia in 3 cases each (4%) and adenocarcinoma was the most reported findings in 27 cases (36%) **(Table 1)**.

Table (1): Histopathological result distribution of the study group

Histopathological results	Count	%
Atrophic endometrium	14	18.7%
Disordered proliferative endometrium	7	9.3%
Hyperplastic polyp	8	10.7%
simple endometrial hyperplasia without atypia	13	17.3%
complex endometrial hyperplasia	3	4.0%
simple endometrial hyperplasia with atypia	3	4.0%
Adenocarcinoma	27	36.0%

There was a statistically significant difference between benign endometrium, endometrial hyperplasia and adenocarcinoma as regard of age, parity and endometrial volume ($p< 0.001$). There was no statistically significant difference between the cases in the three study groups as regards of BMI. By using intergroup significance, there was a statistically significant difference between cases with benign endometrium compared to endometrial hyperplasia and endometrial carcinoma as regard age, parity and endometrial volume. Also, there was a statistically significant difference between cases with endometrial hyperplasia and endometrial carcinoma as regard parity and endometrial volume, but no in age. The number of previous abortions was 8 (38.1%) in cases with benign endometrial pathology, 10 cases (37%) in cases with endometrial hyperplasia and 12 cases (44.4%) in cases with adenocarcinoma. There was no statistically significant difference between the cases in the three study groups ($p=0.838$) **(Table 2)**.

Table (2): Characteristics of patients with benign endometrial pathology, endometrial hyperplasia, or endometrial carcinoma

Histopathology results / Parameters		Benign endometrial pathology N=29		Endometrial hyperplasia N=19		Adenocarcinoma N=27		P value
AGE		48.48 ± 1.54 a		50.93 ± 1.64 b		50.85 ± 1.79 b		< 0.001
BMI		34.70 ± 5.31		34.19 ± 3.88		34.84 ± 3.91		0.846
Parity Median (IQR)		4 (3-5) a		3 (2-4) b		2 (1-2) c		< 0.001
Endometrial Volume (ml) by 3D vaginal US		9.78 ± 1.77 a		11.96 ± 2.02 b		20.16 ± 2.62 c		< 0.001
Previous Abortions	**yes**	8	38.1%	10	37.0%	12	44.4%	0.838
	no	13	61.9%	17	63.0%	15	55.6%	
a, b, c: Similar letters indicate no statistically significant difference between the adjacent groups different letters indicate a statistically significant difference between the adjacent groups								

The results of receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology and those with endometrial hyperplasia or carcinoma using endometrial volume. The best cut-off value was an endometrial volume >12.35 ml. This had a sensitivity of 74.1% and a specificity of 95.2. This was highly statistically significant value (p< 0.001) and AUC (0.894) **(Table 3 and Figure 1)**.

Table (3): Receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology and those with endometrial hyperplasia or carcinoma using endometrial volume

Area Under the Curve	P value	95% Confidence Interval		Cut off	Sensitivity %	Specificity %
		Lower Bound	Upper Bound			
0.894	< 0.001	0.823	0.965	12.35	74.1	95.2

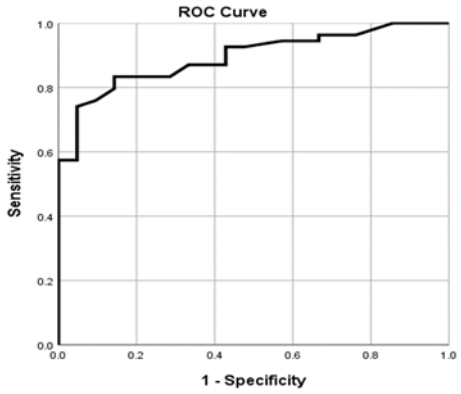

Figure (1): Receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology and those with endometrial hyperplasia or carcinoma using endometrial volume

The results of receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology or hyperplasia and those with endometrial carcinoma using endometrial volume. The best cut-off value was an endometrial volume >12.25 ml. This had a sensitivity of 96.3% and a specificity of 100%. This was highly statistically significant value (p< 0.001) and AUC (0.997) **(Table 4 and Figure 2)**.

Table (4): Receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology or hyperplasia and those with endometrial carcinoma using endometrial volume

Area Under the Curve	P value	95% Confidence Interval		Cut off	Sensitivity %	Specificity %
		Lower Bound	Upper Bound			
0.999	< 0.001	0.997	1.000	15.25	96.3	100

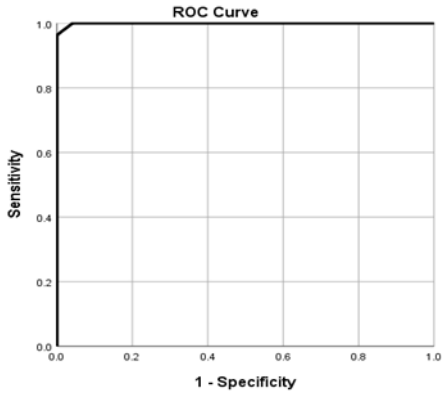

Figure (2): Receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology or hyperplasia and those with endometrial carcinoma using endometrial volume

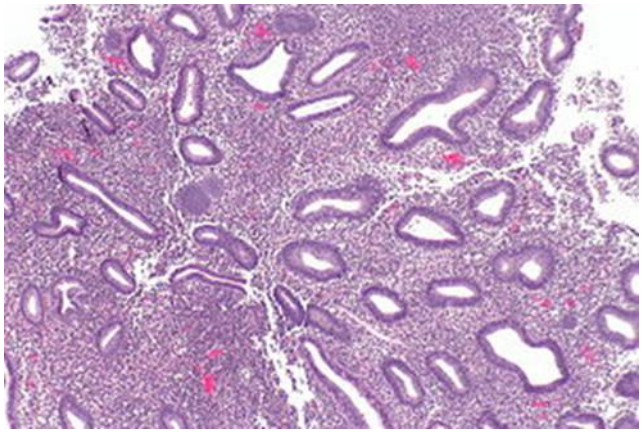

Figure (3): Ultrasound of endometrial hyperplasia: TVUS demonstrating a well-defined, thick and highly reflective layer occupying the whole of the endometrial cavity and surrounded by a symmetrical

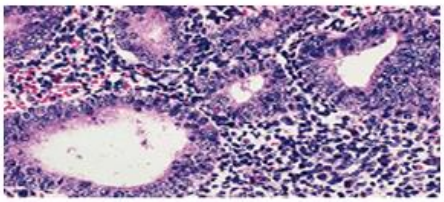

Figure (5): Microscopic picture of simple hyperplasia with atypia

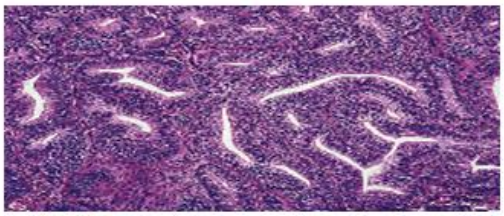

Figure (6): Microscopic picture of complex hyperplasia

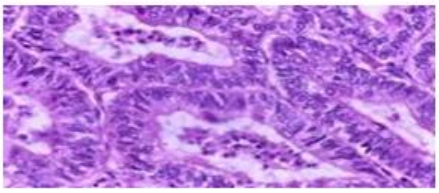

Figure (7): Microscopic picture of endometrioid adenocarcinoma

Figure (8): Microscopic picture of senile atrophic endometrium

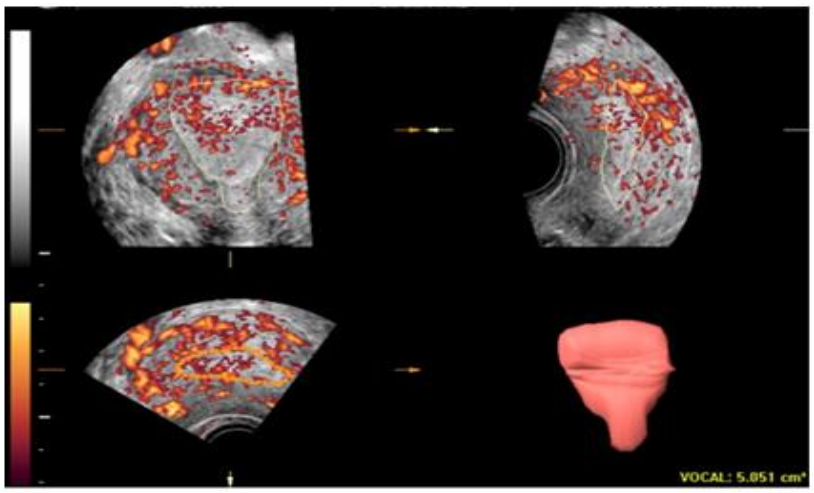

Figure (9): Endometrial volume by vocal technique.

DISCUSSION

In this study, we tried to assess the accuracy of 3D Trans-vaginal Ultrasound in diagnosis of endometrial hyperplasia with endometrial volume measurement in women with perimenopausal abnormal uterine bleeding.

According to the histopathological results, atrophic endometrium was detected in 18.7%, disordered proliferative endometrium in 9.3%, hyperplastic polyp in 10.7%, simple endometrial hyperplasia without atypia in 17.3%, complex endometrial hyperplasia and simple endometrial hyperplasia with atypia in 4% and adenocarcinoma was the most reported findings in 36%.

Our results came in agreement with *Elsokkary et al. (2016)* stated that women with benign endometrial pathology were 29.33%, which included atrophic and disordered proliferative endometrium.

Women with endometrial hyperplasia were 36% which included hyper plastic polyp, simple endometrial hyperplasia without atypia and others with atypia and complex endometrial hyperplasia, while endometrial carcinoma was found in 34.67%.

Our results disagreed with *Nasir et al. (2010)* who reported that women with benign endometrial pathology were 58.2%, which included atrophic and disordered proliferative endometrium, while women with endometrial hyperplasia were 38.2% which included hyperplastic polyp, simple endometrial hyperplasia without atypia and others with atypia and complex endometrial hyperplasia while endometrial carcinoma was found in 3.6%.

Our results also came in disagreement with *Pyari et al. (2010)* who showed that normal endometrium was found in 18%, myomas in 32%, endometrial polyps in 12%, endometrial hyperplasia in 22%, and endometrial carcinoma in 4%.

Ebrashy et al. (2010) examined 65 cases by both TVS 2D and 3D ultrasound and the results are by 2D ultrasound: 20% are normal, 10.67% showing endometrial polyps, 44.61% having myomas either single or multiple, 18.46% had thickened endometrium while by 3D ultrasound: 13.84% are normal.

Odeh et al. (2010) evaluated the accuracy of endometrial volume measurement in the diagnosis of endometrial carcinoma and endometrial hyperplasia, and found that 17.9% of patients had an endometrial polyp, 12.5% had hyperplasia and 7.6% had endometrial carcinoma.

Our results contradicted those reported by *Khare et al. (2012)* and *Damle et al. (2013).* This could be explained as these results included only cases in premenopausal period and the incidence of carcinoma increase after menopause.

In this study, there was a statistically significant difference between benign endometrium, endometrial hyperplasia and adenocarcinoma as regard of age. There was a statistically significant difference between cases with benign endometrium compared to endometrial hyperplasia and endometrial carcinoma as regard age; however, there was a statistically significant difference between cases with endometrial hyperplasia and endometrial carcinoma. *Nasir et al., (2010)* reported that there was a statistically significant difference as regards the mean age between women with benign endometrial pathology compared to that of either endometrial hyperplasia or carcinoma. This came in agreement with *Elsokkary et al. (2016)* who reported that there was a statistically significant difference between benign endometrium compared to endometrial hyperplasia and to endometrial carcinoma as regard age.

In this study, there was a statistically significant difference between benign endometrium, endometrial hyperplasia and adenocarcinoma as parity. The median number of parity in cases with benign endometrial pathology was 4 (IQR 3-5), in cases with endometrial hyperplasia was 3 (IQR 2-4) and in cases with adenocarcinoma was 2 (IQR 1-2). The cases with benign conditions had higher number of parity. This came in accordance with *Nasir et al. (2010)* who

showed that there was a statistically significant difference between benign endometrium compared to endometrial hyperplasia and to endometrial carcinoma as regard parity.

In this study, there was a statistically significant difference between benign endometrium, endometrial hyperplasia and adenocarcinoma as regard of endometrial volume. There was a statistically significant difference between cases with benign endometrium compared to endometrial hyperplasia and endometrial carcinoma and there was a statistically significant difference between cases with endometrial hyperplasia and endometrial carcinoma. This came in agreement with *Nasir et al. (2010)* who showed that the difference between patients with benign endometrium, compared to endometrial hyperplasia and endometrial carcinoma was highly statistically significant. Also, the difference between patients with benign endometrial pathology and endometrial hyperplasia compared to endometrial carcinoma was statistically significant. Also, *Elsokkary et al. (2016)* showed that there was a highly statistically significant difference between patients with benign endometrium, endometrial hyperplasia and endometrial carcinoma, as regarding endometrial volume.

A study was done by *Gruboeck et al. (2010)* analyzed the diagnostic value of endometrial volume in patients with postmenopausal bleeding for diagnosing endometrial cancer in women with postmenopausal bleeding. In patients with endometrial cancer. The endometrial volume and thickness were significantly lower in patient with benign lesions. Thickness were the same in polyps and hyperplasia, however endometrial volume in hyperplasia was significantly higher than ployp. *Galván et al. (2010)* stated that EV and VI were related independently to myometrial infiltration and tumor stage in endometrial carcinoma; VI was associated alone with tumor grade and EV had a correlation with lymph node metastases.

Mansour and Co-workers (2011) assessed endometrial volume as a predictor of endometrial malignancy in women with postmenopausal bleeding. 50% of cases in the study group had benign disease, 35% had atypia and 15% had cancer.

Saarelainen et al. (2012) suggested that endometrial indices and EV correlate with the myometrial invasion depth of endometrial carcinoma. These results matched completely with our results.

El-Mekkawi et al. (2015) stated that 53.3%women had benign endometrial lesions, and 46.7% had endometrial malignancy. Women with malignancy tended to have significantly larger endometrial volume.

However, *Elgarhy et al. (2019)* reported in their study that endometrial volume was not significant in diagnosis of the endometrial cancer in women with postmenopausal bleeding (p-value was >0.05). This could be explained as these results included only cases in postmenopausal period and our study in perimenopausal period.

In this study, according to the results of the receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign

endometrial pathology and those with endometrial hyperplasia or carcinoma using endometrial volume. The best cut-off value was an endometrial volume >12.35 ml. This had a sensitivity of 74.1% and a specificity of 95.2. This was a statistically significant value and AUC (0.894).

Also, our results showed that the results of receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology or hyperplasia and those with endometrial carcinoma using endometrial volume. The best cut-off value was an endometrial volume >12.25 ml. This had a sensitivity of 96.3% and a specificity of 100%. This was highly statistically significant and AUC (0.997).This came in accordance with *Nasir et al. (2010)* who showed that by the results of receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology and those with endometrial hyperplasia or carcinoma using endometrial volume that endometrial volume had a good predictive value. The best cut-off value was an endometrial volume >12.2 ml. Also, the results of receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology or hyperplasia and those with endometrial carcinoma using endometrial volume had shown that endometrial volume had a very good predictive value. The best cut-off value was an endometrial volume >13.1 ml.

Elsokkary et al. (2016) reported that according to the results of receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology and those with endometrial hyperplasia or carcinoma that the best cut-off value was an endometrial volume >13.2 ml. This had a sensitivity of 67.9%, a specificity of 81.8, a positive predictive value (PPV) of 90.0%, and a negative predictive value (NPV) of 51.4%. in the same study, the results of receiver-operating characteristic (ROC) curve analysis for classification of patients into those with benign endometrial pathology or hyperplasia and those with endometrial carcinoma revealed that the best cut-off value was an endometrial volume >13.5 ml. This had a sensitivity of 100%, a specificity of 75.5%, a positive predictive value (PPV) of 68.4%, and a negative predictive value (NPV) of 100%.

Volume was more sensitive than thickness for predicting malignancy, and a cutoff value of 1.35 mL was found to provide the best sensitivity (*Mansour et al. 2011).*

CONCLUSION

Endometrial adenocarcinoma was the most cause of AUB among the cases included in the study. Increased age was associated with higher risk for adenocarcinoma while parity was associated with lower risk of endometrial carcinoma. 3D ultrasound is a reasonably accurate, helpful and non-invasive tool for assessing the endometrium that could replace the endometrial biopsy.

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REFERENCES

1. **Alcazar JL and Galvan R. (2010):** Three-dimensional power Doppler ultrasound scanning for the prediction of endometrial cancer in women with postmenopausal bleeding and thickened endometrium. American Journal of Obstetrics and Gynecology, 200(1):44- 50.
2. **Bignardi T, Van den Bosch T and Condous G. (2010):** Abnormal uterine and post-menopausal bleeding in the acute gynaecology unit. Best Practice & Research Clinical Obstetrics & Gynaecology, 23(5):595-607.
3. **Damle RP, Dravid N, Suryawanshi KH, Gadre AS, Bagale PS and Ahire N. (2013):** Clinicopathological spectrum of endometrial changes in peri-menopausal and post-menopausal abnormal uterine bleeding: A 2 years study. Journal of Clinical and Diagnostic Research, 7(12):2774-78.
4. **Ebrashy AN, Momtaz M, Shawky OA, Soliman EM and Maaty ZA. (2010):** Three Dimentional Transvaginal ultrasound in the assessment of uterine lesions: when do we really need it? Gynecologic Oncology, 16(2):90-95.
5. **Elgarhy EMT, Kassem MAE and Alzayat MAE. (2019):** Three-Dimensional Endometrial Volume and Power Doppler Angiography for Prediction of Endometrial Carcinoma in Woman with Postmenopausal Bleeding. The Egyptian Journal of Hospital Medicine, 77(5):5542-8.
6. **El-Mekkawi SF, Bahaa AM, Akl SA and Sorour RM. (2015):** Three-dimensional power Doppler ultrasound with a three-dimensional multislice view: is it a new modality in endometrial evaluation in women with postmenopausal bleeding? Journal of Evidence-Based Women's Health Journal Society, 5(3):143-9.
7. **Elsokkary M, Shafik A and Nader S. (2016):** The Role of Endometrial Volume in the Prediction of Endometrial Hyperplasia. Obstet Gynecol Int J., 4(6):136-142.
8. **Galván R, Mercé L, Jurado M, Mínguez J, López-García G and Alcázar JL. (2010):** Three-dimensional power Doppler angiography in endometrial cancer: correlation with tumor characteristics. Ultrasound in Obstetrics and Gynecology, 35(6):723-9.
9. **Goldstein SR. (2010):** Modern evaluation of the endometrium. Obstetrics & Gynecology, 116(1):168-76.
10. **Gruboeck K, Jurkovic D, Lawton F, Savvas M, Tailor A and Campbell S. (2010):** The diagnostic value of endometrial thickness and volume measurements by three-dimensional ultrasound in patients with postmenopausal bleeding. Ultrasound in Obstetrics and Gynecology, 8(4):272-6.
11. **Holalkere N-S, Katur AM and Lee SI. (2010):** Issues in imaging malignant neoplasms of the female reproductive system. Current Problems in Diagnostic Radiology, 38(1):1-16.
12. **Khare A, Bansal R, Sharma S, Elhence P, Makkar N and Tyagi Y.**

(2012): Morphological spectrum of endometrium in patients presenting with dysfunctional uterine bleeding. People's J Sci Res., 5(2):13-6.

13. **Mansour G, El-Lamie I, El-Kady M, El-Mekkawi S, Laban M and Abou-Gabal A. (2011):** Endometrial volume as predictor of malignancy in women with postmenopausal bleeding. International Journal of Gynecology & Obstetrics, 99(3):206-10.
14. **Munro MG, Critchley HO, Broder MS and Fraser IS. (2011):** Disorders FWGoM. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. International Journal of Gynecology & Obstetrics, 113(1):3-13.
15. **Nandi A and Poretsky L. (2013):** Diabetes and the female reproductive system. Endocrinology and Metabolism Clinics, 42(4):915-46.
16. **Nasir A, Boulware D, Kaiser H, Lancaster J, Coppola D and Smith P. (2010):** Cyclooxygenase-2 (COX-2) expression in human endometrial carcinoma and precursor lesions and its possible use in cancer chemoprevention and therapy. In Vivo, 21(1):35-43.
17. **Odeh M, Vainerovsky I, Grinin V, Kais M, Ophir E and Bornstein J. (2010):** Three-dimensional endometrial volume and 3-dimensional power Doppler analysis in predicting endometrial carcinoma and hyperplasia. Gynecologic Oncology, 106(2):348-53.
18. **Pyari JS, Rekha S, Srivastava P, Goel M and Pandey M. (2010):** A comparative diagnostic evaluation of hysteroscopy, transvaginal ultrasonography and histopathological examination in cases of abnormal uterine bleeding. Journal of Obstetrics and Gynecology of India, 56(3):240-3.
19. **Saarelainen S, Vuento M, Kirkinen P and Mäenpää J. (2012):** Preoperative assessment of endometrial carcinoma by three-dimensional power Doppler angiography. Ultrasound in Obstetrics & Gynecology, 39(4):466-72.
20. **Sweet MG, Schmidt-Dalton TA, Weiss PM and Madsen KP. (2012):** Evaluation and management of abnormal uterine bleeding in premenopausal women. American Family Physician, 85(1):35-43.
21. **Timmermans A, Opmeer BC, Khan KS, Bachmann LM, Epstein E and Clark TJ. (2010):** Endometrial thickness measurement for detecting endometrial cancer in women with postmenopausal bleeding: a systematic review and meta-analysis. Obstetrics & Gynecology, 116(1):160-7.

دور قياس حجم بطانة الرحم فى استنتاج تضخم بطانة الرحم فى حالات النزيف الغير طبيعي فترة ما حول انقطاع الطمث

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خلفية البحث: نزيف الرحم غير الطبيعي هو أحد أكثر الشكاوى شيوعاً ويعرَّف على أنه "نزيف مفرط في الدورة الشهرية أو خارج الدورة الشهرية العادية ويمكن تصنيف نزيف الرحم غير الطبيعي على أنه نزيف قبل انقطاع الطمث، أو ما قبل !نقطاع الطمث، أو نزيف بعد !نقطاع الطمث والموجات فوق الصوتية عبر المهبل تستخدم بشكل روتيني للتمييز بين أسباب نزيف الرحم المختل مثل العضال الغدي والأورام الحميدة في بطانة الرحم والأورام العضلية الملساء. ومع ذلك، في صور الموجات فوق الصوتية عبر المهبل، من الصعب التمييز بين بطانة بطانة الرحم السميكة وغيرها من تشوهات بطانة الرحم المنتشرة أو البؤرية.

الهدف من البحث: تقييم دقة الموجات فوق الصوتية ثلاثية الأبعاد عبر المهبل في تشخيص تضخم بطانة الرحم لدى النساء المصابات بنزيف الرحم غير الطبيعي في فترة ما حول انقطاع الطمث.

المريضات وطرق البحث: هذه دراسة مقطعية شملت 75 مريضة تم إختيارهن من العيادات الخارجية لأمراض النساء والتوليد بمستشفى الحسين بالقاهرة من يناير 2020 حتى يناير 2021. وجميع الحالات ناتجة عن نزيف الرحم غير الطبيعي. وقد تم في هذه الحالات أخذ التاريخ المرضي الكامل و الفحص الشامل. بالإضافة إلى ذلك ،فقد تم إجراء الموجات فوق الصوتية عبر المهبل، وتم قياس حجم بطانة الرحم، ثم إخضاع جميع المرضى إلى كشط بطانة الرحم.

نتائج البحث: كان السرطان الغدي أكثر النتائج التي تم الإبلاغ عنها في 27 حالة (36٪). والنتائج النسيجية المرضية الأخرى التي تضمنت تضخم بطانة الرحم تم إكتشافها في 14 حالة (18.7٪)، واضطراب بطانة الرحم التكاثرية في 7 حالات

(9.3٪)، وورم مفرط التنسج في 8 حالات (10.7٪)، وتضخم بسيط في بطانة الرحم بدون انمطية في 13 حالة (17.3٪)، وتضخم معقد في بطانة الرحم ، وتضخم بسيط في بطانة الرحم مع انمطية في 3 حالات لكل منهما (4٪). ووفقًا لنتائج تحليل منحنى خاصية تشغيل المستقبل (ROC) لتصنيف المرضى إلى أولئك الذين يعانون من أمراض بطانة الرحم الحميدة وأولئك الذين يعانون من تضخم أو سرطان بطانة الرحم باستخدام حجم بطانة الرحم. وكانت أفضل قيمة حدية هي حجم بطانة الرحم> 12.35 مل. هذا كان لديه حساسية 74.1٪ وخصوصية 95.2. وكانت هذه قيمة ذات دلالة إحصائية عالية. وأظهرت نتائجنا أيضًا أن نتائج تحليل منحنى خاصية تشغيل المستقبل (ROC) لتصنيف المرضى إلى أولئك الذين يعانون من أمراض بطانة الرحم الحميدة أو تضخم وتلك المصابة بسرطان بطانة الرحم باستخدام حجم بطانة الرحم. وكانت أفضل قيمة حدية هي حجم بطانة الرحم> 12.25 مل. وكان لهذا حساسية 96.3٪ وخصوصية 100٪. وكانت هذه القيم ذات دلالة إحصائية عالية.

الاستنتاج: الموجات فوق الصوتية ثلاثية الأبعاد هي أداة دقيقة ومفيدة وغير جراحية بشكل معقول لتقييم بطانة الرحم التي يمكن أن تحل محل خزعة بطانة الرحم.

الكلمات الدالة: نزيف الرحم غير الطبيعي، حجم بطانة الرحم، تضخم بطانة الرحم، المهبل، الموجات فوق الصوتية ثلاثية الأبعاد.