

Diagnostic accuracy of transvaginal sonography to detect endometrial hyperplasia and endometrial carcinoma in cases of abnormal uterine bleeding (AUB)

Shalini Singh^{1*}, Gunjan²

^{1,2}Secondary DNB Student, Department of Obstetrics and Gynecology, National Institute of Medical Science, Jaipur, Rajasthan, INDIA.

Email: shalinisingh729@gmail.com, drgunjanhims@gmail.com

Abstract

Introduction: Abnormal uterine bleeding (AUB) is defined as any bleeding that does not correspond with the frequency, duration or amount of blood flow of a normal menstrual cycle. Endometrial hyperplasia is a precursor of endometrial carcinoma, the most common malignancy of female reproductive tract. This study was done to evaluate the role of transvaginal ultrasound in cases of endometrial hyperplasia and endometrial carcinoma in abnormal uterine bleeding in terms of its diagnostic accuracy. **Study Design:** This prospective study was conducted in the Department of Obstetrics and Gynaecology, National Institute of Medical Sciences (NIMS), Jaipur, over a period from June 2013 to May 2014. **Method:** All patients presenting to the Gynaecology OPD with complaints of abnormal uterine bleeding. between age group 40-60 yrs were subjected to Transvaginal sonography (TVS) and histopathological examination and results were compared. **Result:** On the basis of TVS for endometrial hyperplasia, sensitivity was 93.75%, sepecificity 99.24%, with positive predictive value 78.95% and negative predictive value 98.77% and diagnostic accuracy 95%. While in Endometrial cancer, sensitivity and specificity both were 100% with diagnostic accuracy 100%. **Conclusion:** TVS has high sensitivity for detecting endometrial disease which can reduce unnecessary endometrial biopsy.

Keyword: Endometrial hyperplasia, endometrial cancer, Abnormal uterine bleeding, transvaginal sonography.

*Address for Correspondence:

Dr. Shalini Singh, BW-70 C, Shalimarbagh, New Delhi-110088, INDIA.

Email: shalinisingh729@gmail.com

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INTRODUCTION

Abnormal uterine bleeding (AUB) is defined as any bleeding that does not correspond with the frequency, duration or amount of blood flow of a normal menstrual cycle¹. Annually, 5-10% of women of reproductive age seek medical care for AUB, which negatively impacts quality of life². AUB in reproductive-age women is common, leading to one-third of out patient visits and this

proportion crosses the two-third threshold in peri or post-menopausal group³. In 2011 FIGO introduced PALM COEIN classification for the causes of AUB in non gravid women of reproductive age. The categories were developed based on the group recommendations. Each was designed to facilitate the development of subclassification systems, as necessary.⁴ Endometrial hyperplasia represents a spectrum of morphologic and biologic alterations of the endometrial glands and stroma, ranging from an exaggerated physiologic state to carcinoma.⁵ Hyperplasia evolve within a background of proliferative endometrium as a result of protracted estrogen stimulation in absence of progestin influence⁵. Ultrasonography is considered to be an important diagnostic tool in present day gynecological practice. In the recent years, transvaginal sonography (TVS) has emerged as an important modality in investigating AUB. Transvaginal probe provides high resolution image of pelvic organs providing reliable information⁶. Transvaginal sonography (TVS) is a non invasive

diagnostic test that may help to determine which women should undergo endometrial biopsy.

AIMS AND OBJECTIVES

To evaluate the role of transvaginal ultrasound in cases of endometrial hyperplasia and endometrial carcinoma in abnormal uterine bleeding in terms of its diagnostic accuracy.

MATERIAL AND METHODS

This prospective study was conducted in Deptt. Of Obst. and Gynec. NIMS Medical College and Hospital, Jaipur

with sample size of 100 patients presenting with complaints of AUB between age group 40-60 yrs and subjected to TVS and diagnostic curettage as part of the treatment. After obtaining informed consent from the patients, transvaginal sonography was performed by using a 7.5 MHz Voluson PRO transducer probe (as part of the pre operative evaluation).TVS findings were subsequently compared with the final diagnosis after diagnostic curettage and HPE study. The sensitivity, specificity and predictive value of TVS in diagnosis of endometrial hyperplasia and carcinoma was calculated accordingly.

OBSERVATION

Table 1: Diagnostic Efficacy of TVS for Endometrial hyperplasia and Endometrium cancer

	HPR	TVS	TVS								
			TN	TP	FP	FN	SENS	SPECF	PPV	NPV	DA
Endometrial hyperplasia	16	20	80	15	4	1	93.75%	99.24%	78.95%	98.77%	95%
Endometrial carcinoma	1	1	0	1	0	0	100%	100%	-	-	100%

On the basis of TVS for endometrial hyperplasia, sensitivity was 93.75%, specificity 99.24%, with positive predictive value 78.95% and negative predictive

value 98.77% and diagnostic accuracy 95%. While in Endometrial cancer, sensitivity and specificity both were 100% with diagnostic accuracy 100%.

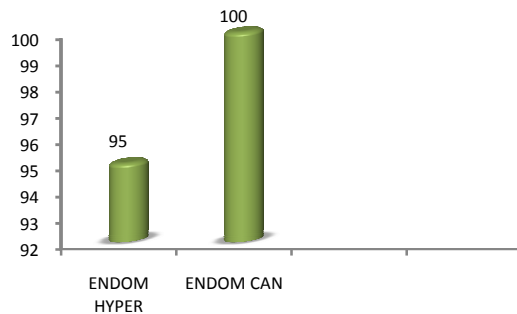


Figure 1: Graphical representation of Diagnostic Accuracy of Endometrial Hyperplasia and Endometrial carcinoma.

DISCUSSION

AUB includes both dysfunctional uterine bleeding and bleeding from structural causes. Over the years, TVS has emerged as a useful diagnostic tool in detecting the serious pathology responsible for AUB. In present study, endometrial thickness played a significant role in differentiating endometrial cancer cases from endometrial hyperplasia. During different phases of menstrual cycle endometrial thickness changes but in normal healthy women the defined cut-off level is maximum at 14 mm.⁷ TVS is found to be 93.75% sensitive and 99.24% specific in diagnosis of endometrial hyperplasia. One of the reasons for these differences in sensitivity and specificity could be due to overlapping normal values of endometrial thickness and difficulty in identifying the echo pattern suggested as normal.⁷ With respect to malignant cases –

presence of any three or more of the following i.e. indistinct endometrial junction, endometrial morphological abnormalities, increased endometrial thickness (>14 mm), and increased Doppler findings were found to have an absolute agreement between histopathological examination and TVS findings. Sensitivity and specificity of endometrial cancer was 100% and 100% respectively by TVS. The reason for better sensitivity and specificity in present study might be attributed to the additional use of Doppler flowmetry. Endometrial hyperplasia was the most common histopathological finding seen in 16% cases. Although Salem *et al.* (2011)⁷ have questioned the diagnostic accuracy of TVS for diagnosis of simple hyperplasia owing to its nonspecific sonographic appearance. Mukhopadhyay *et al* (2007)⁸ reported the sensitivity of TVS to diagnose hyperplastic endometrium to be only

43.75%, However, Islam and Ghazala, (2009)⁹ reported sensitivity of TVS to be as high as 100% for endometrial hyperplasia, which is similar to our study. The findings in present study are similar for endometrial carcinoma to those observed by Islam and Ghazala (2009), who reported them to be 100% sensitive and 99% specific. Jaiswar *et al.* (2006)¹⁰ also found endometrial thickness >14 mm to be 100% sensitive but found it to be 72.9% specific.

CONCLUSION

The findings of present study suggested that transvaginal sonography is useful in ascertaining the cause of abnormal uterine bleeding with a very high level of accuracy. Overall TVS had a sensitivity of 93%, specificity of 96.5%, positive predictive value of 93%, negative predictive value of 96.5% and accuracy of 95.3%.

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ABBREVIATIONS

TP: True positive, TN: True negative, PPV: Positive predictive value, NPV: Negative predictive value, SENS: Sensitivity, SPECIF: Specificity, DA: Diagnostic accuracy.

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