ROLE OF TRANSVAGINAL SONOGRAPHY IN ASSESSMENT OF ABNORMAL UTERINE BLEEDING IN PERIMENOPAUSAL AGE GROUP

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Background: Abnormal uterine bleeding (AUB) is a common problem which prompts more than 20% of all visits to outpatient clinics, and may account for more than 25% of all hysterectomies. The objective of this study was to determine the role of transvaginal ultrasonography in women of perimenopausal age group presenting with abnormal uterine bleeding. **Methods:** This descriptive study was conducted in Department of Obstructs and Gynaecology, Railway General Hospital, Rawalpindi. One hundred and forty-one women who attended the gynaecology clinic with abnormal uterine bleeding (menorrhagia, intermenstrual bleeding, or postcoital bleeding) between 40–47 years of age from January 2006 and April 2007 were included in this study. The mean age was 44 years. **Results:** Among 141 women endometrial lesions were detected in 77 cases on histopathology after Dialatation and Curettage (D&C), while 57 (40.42%) of these were confirmed on transvaginal ultrasongraphy as an endometrial pathology prior to this invasive procedure. Among the 64 remaining patients, showing normal proliferative endometrium on histopathology, 46 cases (71.87%) showed no abnormality on tranvaginal examination. **Conclusion:** Transvaginal sonography can be safely used as an initial investigation in the management of abnormal uterine bleeding as it is a non-invasive procedure for the detection of endometrial pathology. The incidence of detection of an abnormal pathology by ultrasongraphy is high when focal lesions as fibroids, polyps or foreign body is concerned. Dilatation and curettage being a blind procedure requires hospitalization and general anaesthesia which can be safely replaced by an alternate valid, safe and non-invasive technique for evaluating the endometrial pathology in women of perimenopausal age group with abnormal uterine bleeding.

Keywords: Abnormal Uterine Bleeding (AUB), Transvaginal Sonography (TVS), Dilatation and Curettage (D&C), Perimenopasual

INTRODUCTION

Abnormal uterine bleeding (AUB) is a common problem which prompts more than 20% of all visits to outpatient clinics, and may account for more than 25% of all hysterectomies.[1,2] AUB refers to a symptom of excessive, prolonged, unexpected or acyclic bleeding regardless of diagnosis or cause. AUB not only affects the quality of life such as intimate relationships, day-to-day living but can have serious adverse consequences as anaemia or malignancy.[3,4] An accurate method of determining whether AUB is functional or structural, one needs a minimally invasive accurate method. D&C under general anaesthesia was once considered as gold standard investigation in the evaluation of AUB. It can however miss 2–6% of cases of cancer or hyperplasia.[5] Uterine cancer, the most serious cause of uterine bleeding is diagnosed in fewer than 10% of endometrial biopsies in women presenting with AUB. This means that more than 90% of endometrial biopsies reveal benign findings.[6,7] Ultrasound imaging can help gynaecologists diagnose various problems related to female genital tract. It allows us to see inside a patient. It involves a transmitter that sends high frequency sound waves into the body where they bounce off different tissues to produce a distinctive pattern of echoes. A receiver picks up the returning echo pattern and forwards it to a computer, which translates the data into an image on a screen.[8]

Ultrasound includes all sound waves above the frequency of human hearing, about 20,000 Hz per second. Abdominal ultrasound is generally performed at a frequency between 2–5 MHz. All nuclear radiations like x-rays, gamma rays and beta rays are potentially ionising which can damage living tissue by disrupting and destroying individual cells at the molecular level. Sound waves physically vibrate the material through which they pass but do not ionise it.[9]

In the past, D&C was the ultimate investigation to exclude endometrial pathology. This procedure has two main drawbacks: first, it is an invasive procedure and has to be done under general anaesthesia, so it cannot be applied repeatedly in high-risk patients and those with recurrent bleeding. Second, it may miss lesions such as polyps or endometrial carcinoma in not less than 10% of cases.[10] Thus it would be valuable to develop a method which should be safe, less or non-invasive, cheap, and simple with a quick result. Hysteroscopy is another method that allows direct visualisation of the uterine cavity that could be used as an office technique in the evaluation of

endometrial disorders. Recently transvaginal sonography has permitted the use of higher frequency ultrasound waves at greater proximity of the uterus. It is relatively cheap, needs no anaesthesia and being non-invasive and can be a first diagnostic step in evaluation of AUB.[11,12]

The present study is designed to establish the role of TVS in the diagnosis of AUB in perimenopausal women.

PATIENTS AND METHODS

One hundred and forty-one women who attended the gynaecology clinic with AUB were included in this study. The mean age was 44 years (range 40–47 years). Women on any form of hormonal treatment, known gynaecological malignancy or endocrinological disorders were excluded. The local ethical committee approved this study and each participating woman gave informed consent. Transvaginal sonography was performed using vaginal transducer of 6.5 MHz frequency on Logic Pro 100-GE USA. Endometrial thickness was measured in postmenstrual period (7–10 day) at the thickest part of endometrium 1 Cm from the endometrial-myometrial interface at the fundus in the longitudinal plane as described.[13,14] The thickness measured included both the endometrial layers and a cut off value of 8 mm was taken, followed by an in-patient D&C. Histopathology of endometrial currettings was correlated with the sonographic features. Detection of a hyperechoic area within the endometrial layers was taken as suggestive of endometrial pathology. Endometrial malignancy was suspected when echoes were clearly dishomogenous and the endometrio-myometrial interface was irregular.

Any abnormal pathology such as polyps, abnormal growth or foreign body was documented. Exact pathogenesis of endometrial polyp is not fully understood and it is thought to originate as a localized hyperplasia of basal layer perhaps secondary to hormonal influences.[5,15]

RESULTS

Histological reports showed that in 64 out of 141 cases there were normal proliferative endometria. An endometrial pathology was found in 77 patients. Endometrial hyperplasia was diagnosed in 27, polyps in 33, and endometrial adenocarcinoma in 8 cases. Endometrial echoes were visualised and measured by TVS in all cases. An abnormal texture on sonography was found in 57 of 77 cases of abnormal histopathology, hyperplasia was labelled in 21 and polyps in 38 others. Five cases of hyperplasia on histopathology were labelled as polyp (n=5) and suspicious looking endometrium (n=1) on TVS.

Results of TVS and histopathology among 141 cases are shown in Table-1. TVS detected polyps in 38 cases as compared to 33 cases, which were confirmed on histopathology. This is shown in Table II and from the results, it could be seen that TVS did not miss any case of uterine polyp.

Table-1: Findings in study group by 2 different methods

Histopathology (n=141)	TVS (n=141)
Normal proliferative (n=64)	Proliferative (n=46)
Polyp (n=33)	Polyp (n=38)
Hyperplasia (n=27)	Hyperplasia (n=21)
Adenocarcinoma (n=8)	Suspicious looking endometrium(n=2)
Atrophy (n=2)	Atrophy (n=10)
IUCD (n=1)	IUCD (n=3)
Myomas (n=6)	Myomas (n=21)

Table-2: Findings Regarding Polyps

		Histopathology		
		+	−	Total
TVS	+	33	5	38
	−	0	103	103
Total		**33**	**108**	**141**

In Table-3 the cases showing hyperplasia are presented. It shows that TVS has to be interpreted with caution as 6 cases were missed. Also from the 8 cases of endometrial carcinoma, two were correctly diagnosed by TVS as suspicious of malignancy while the other 6 were labelled as polyps (n=5) and myoma (n=1). There was however no case of malignancy which was missed by TVS.

Table-3: Findings Regarding Hyperplasia

		Histopathology		
		+	−	Total
TVS	+	27	- 6	21
	−	0	120	120
Total		**27**	**114**	**141**

From the 8 cases of endometrial carcinoma, two were correctly diagnosed by TVS as suspicious of malignancy while the other six were labelled as polyps (n=5) and myoma (n=1). Myomas were diagnosed be TVS in 21 cases. It is noticed that subserous and intramural myomas diagnosed on TVS were missed on histopathology. These findings are shown in Table-IV. It can appreciated that abnormal bleeding secondary to benign uterine lesions could be missed if TVS was not performed.

Table-4: Findings Regarding Myomas

		Histopathology		
		+	−	Total
TVS	+	6	15	21
	−	0	120	120
Total		**6**	**135**	**141**

The cut-off line of endometrial thickness in this study was 8 mm, below which the endometrium was considered atrophic. Findings regarding endometrial atrophy are shown in Table-V. On histopathology two cases showed atrophy which were both detected on prior TVS.

Table-5: Findings regarding endometrial atrophy

		Histopathology		Total
		+	−	
TVS	+	2	8	10
	−	2	129	131
Total		**4**	**137**	**141**

IUCD embedded in uterus was observed in 3 cases on TVS, while only 1 was retrieved after D&C procedure. In the other two, the devices were confirmed embedded in myometrium on hysterectomy specimen which was done due to persistent menorrhagia after medical treatment.

DISCUSSION

This study shows that transvaginal sonography allows detection of an endometrial pathology in the vast majority of cases and as it is easy, relatively cheap, needs no anaesthesia and being non-invasive; it can be used as a first line investigation in evaluation of women with abnormal uterine bleeding. It can be supplemented by procedures like hysteroscopy allowing visualisation of endometrial cavity. This can minimise the cost, time and hospital stay when compared to endometrial sampling technique of dilatation and curettage for evaluating this common complaint in perimenopausal age group.

Transvaginal sonography is an excellent diagnostic tool for the detection of gynaecological diseases. Measurement of endometrial thickness has been proposed as possible non-invasive technique in making an early diagnosis. In general an endometrial thickness of more than 8 mm is considered suspicious of endometrial pathology in perimenopausal women with AUB and further investigation is recommended.[14,15]

Transvaginal sonography has been widely used in investigating women of AUB. Studies using transabdominal ultrasonography has shown that endometrial thickness measured correlated well with results obtained on histopathology.[16] The purpose of this study was to establish the role of transvaginal sonographic assessment of endometrium.

Transvaginal route has greatly improved image resolution due to the proximity of endometrial probe to the endometrium. The absence of full bladder, which compresses the uterus, enhances this improvement and allows detection of abnormal endometrium as well as intracavitory lesions.[17,18] Properly performed ultrasound imaging is virtually without risks or side effects. The value of such imaging as a medical tool can be improved by enhancing the quality of the equipment used and improving the skills of the medical personnel operating it. Sonographic pick up rate of abnormal pathology as malignancy in this study could be improved by Hysteroscopy which involves direct visualisation of the uterine cavity. It can be performed as an office procedure with minimal or no analgesia.[10,19] Studies show that even in the hands of expert sonographers. About 2.5–5% of images are inadequate for interpretation.[20,21] Therefore, TVS can be supplemented when necessary but should be employed in investigation of AUB at an earlier stage.

CONCLUSION

This study shows that TVS allows detection of an endometrial pathology in majority of cases. As it has been reported to be a valid, safe and non-invasive method which needs no anaesthesia so it can be used as the first line diagnostic tool in investigating women with AUB in perimenopausal age group.

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