ORIGINAL ARTICLE

Transvaginal Ultrasound for Diagnosing Endometrial Hyperplasia in Perimenopausal Women with Abnormal Uterine Bleeding

SIDRA AFZAL[1], RUKHSANA MANZOOR [2], SHAZIA TAZION[3], *MAIMOONA HAFEEZ[4], NAZIA BADAR[5]*

ABSTRACT

Aim: To determine the diagnostic accuracy of transvaginal ultrasonography for endometrial hyperplasia in perimenopausal women presenting with abnormal uterine bleeding, taking histopathology as gold standard.

Study design: This was a cross-sectional observational study.

Place and duration of study: It was conducted in the Department of Obstetrics and Gynaecology; Sharif Medical City Hospital affiliated with Sharif Medical and Dental College, Lahore from January 2015 to December 2017.

Methodology: Perimenopausal patients with age between 45-55 years, complaining of abnormal uterine bleeding (AUB) and who gave consent, were included in this study. Patients with history of hormone therapy in last six months/ symptoms suggestive of acute pelvic inflammatory disease, having clinically abnormal cervix/uterus larger than 12 week size or having abnormal result of previous endometrial biopsy/ cervical smear were excluded from this study.

Results: A total of 200 patients were included in this study. Among participants, 118 (59%) patients fulfilled our criteria for diagnosing endometrial hyperplasia on TVS (screen positive) and 82(41%) were screen negative. Histopathology revealed endometrial hyperplasia in 49% (n 98) patients and atypical hyperplasia in 19.5% (n 39).Out of 118 TVS positive patients for hyperplasia, 92 were found to be true positive with hyperplasia being confirmed on histopathology and 26 were found to be false positive with hyperplasia being absent on histopathology.

Conclusion: TVS has 84% diagnostic accuracy for detecting endometrial hyperplasia. We can recommend TVS for prediction of endometrial hyperplasia in perimenopausal females with AUB as an early and first line assessment tool.

Keywords: Endometrial hyperplasia; perimenopausal patients; abnormal uterine bleeding;

INTRODUCTION

Abnormal uterine bleeding (AUB) is experienced by up to 30% of premenopausal and perimenopausal women during their reproductive life[1]. Main concern in these patients is to diagnose or rule out endometrial hyperplasia (EH) or endometrial cancer (EC). Although endometrial cancer is primarily a disease of postmenopausal women, but 14% of it occurs in premenopausal women and among these 4% are younger than 40 years[2].Precursor of this malignancy is endometrial hyperplasia[3]. It is about three times more common than endometrial cancer and if not treated, it may progress to carcinoma[4]. Endometrial hyperplasia is irregular proliferation of the endometrial glands with an increase in the gland to stroma ratio when compared with proliferative endometrium[5]. The revised 2014 WHO classification separates endometrial hyperplasia into two groups[6] (one is hyperplasia without atypia and other is atypical hyperplasia).

It commonly presents as abnormal uterine bleeding (AUB).The menstrual bleeding which is excessive, persisting longer, occurring irregularly or even in between periods, unscheduled bleeding on HRT (hormone replacement therapy) and postmenopausal bleeding all are included in it. Endometrial hyperplasia develops due to unopposed oestrogen. Increased body mass index[7], anovulation associated with polycystic ovary syndrome or perimenopause, oestrogen-secreting ovarian tumours and medications like long-term tamoxifen or systemic oestrogen therapy[8] are identifiable risk factors. Patients, who present with AUB and those who are at high risk, should undergo clinical evaluation and investigations to timely diagnose and manage this pre-malignant condition. Endometrial biopsy is the gold standard for diagnosis. Hysteroscopy should be done where outpatient sampling fails or is not

[1]SR, Obs & Gynae, Sharif Medical and Dental College, Lahore
[2,3]Assistant Professor, Obs & Gynae, Sharif Medical and Dental College, Lahore
[4,5]Professor, Obs & Gynae, Sharif Medical & Dental College, Lahore
Correspondence to Dr Rukhsana Manzoor,
Email rukhsanaz@hotmail.com

diagnostic or hyperplasia has been diagnosed within a polyp or other discrete focal lesion[5].

Endometrial thickness measured by ultrasonography may be a good predictor of histopathological diagnosis in pre- and postmenopausal patients. In postmenopausal women a cut-off of 3 mm or 4 mm is suggested for ruling out endometrial cancer (probability of cancer being less than 1%). In premenopausal women a cut-off of 7 mm is suggested to rule out endometrial hyperplasia[9]. Due to its close proximity to the uterus, TVS shows greater details of endometrial lining (including its thickness and pathologies) as compared to transabdominal scan. In the diagnosis of pelvic pathologies, transvaginal ultrasound is more sensitive and specific than the transabdominal scan[10].

In perimenopausal phase (a six to ten year phase ending 12 months after the last menstrual period[11]), women have decline in their ovulatory functions, shift in hormone levels and irregular menstruation[12].Resulting anovulatory cycles may lead to endometrial hyperplasia and carcinoma. It is more common in western countries but with the changing lifestyle, increase in obesity and decline in fertility rate, its incidence in our country is increasing gradually. We need to work on relatively cheap and less invasive method like TVS which can help in identifying those ladies in whom early endometrial sampling is more strongly indicated and thus increasing their opportunity to be cured. Relatively few studies are available on the role of transvaginal ultrasound in diagnosing endometrial hyperplasia. This study was planned to find out diagnostic accuracy of TVS, taking endometrial histopathology as gold standard in the diagnosis of endometrial hyperplasia in perimenopausal women.

MATERIAL AND METHODS

This cross-sectional descriptive observational study, based on the non-probability convenient sampling technique, was conducted in the Department of Obstetrics and Gynaecology; Sharif Medical City Hospital affiliated with Sharif Medical and Dental College, Lahore from January 2015 to December 2017. Permission was taken from our ethical committee. Sample size of 192 was calculated with expected sensitivity and specificity of 100% and 62.7% respectively, considering expected prevalence of atypical hyperplasia as 4.2%[17]. The desired precision was kept at 5% with 95% confidence interval.

Perimenopausal patients with age between 45-55 years, complaining of abnormal uterine bleeding and who gave consent, were included in this study. Patients with history of hormone therapy in last six months/ symptoms suggestive of acute pelvic inflammatory disease, having clinically abnormal cervix/uterus larger than 12 week size or having abnormal result of previous endometrial biopsy/ cervical smear were excluded from this study.

After the consent patient's demographic details were noted. Transvaginal ultrasound was done in the presumed follicular phase of the menstrual cycle, for pelvic pathologies with special emphasis on endometrial cavity which was examined from the internal cervical os to the uterine fundus in both sagittal and coronal planes. Endometrial thickness of more than 10 mm was considered positive for endometrial hyperplasia and thickness of 10 mm or less was regarded as negative. It was followed by endometrial sampling which was either OPD based Pipelle sampling or conventional dilatation and curettage. The biopsy sample was sent to the pathology laboratory for histopathology. The presence or absence of endometrial hyperplasia or malignancy was noted. Collected data was analysed using SPSS 23.

RESULTS

A total of 200 perimenopausal women with abnormal uterine bleeding were included in this study. Their ages ranged from 45 to 55 years with mean age of 50.1±3.1.The parity of participants is shown in Fig. 1.

Among participants, 118(59%) patients fulfilled our criteria for diagnosing endometrial hyperplasia on TVS (screen positive) and 82(41%) were screen negative. Histopathology revealed endometrial hyperplasia in 98(49%) patients (positive), whereas 102(51%) were negative (Fig. 2). Out of these 98 patients, 39(39.8%) had atypical hyperplasia and 59(60.2%) had hyperplasia without atypia. Overall incidence of hyperplasia in our study is 49% and that of atypical hyperplasia 19.5%.

Out of 118 TVS positive patients for hyperplasia, 92 were found to be true positive with hyperplasia being confirmed on histopathology and 26 were found to be false positive with hyperplasia being absent on histopathology. Among those 82 patients who had negative TVS for hyperplasia, 76 were found to be true negative with hyperplasia being absent on histopathology and 6 were false negative with histopathology showing hyperplasia (Table 1).

The sensitivity of TVS was found 93.88%, specificity was 74.51%, PPV (Positive Predictive Value) was 77.97%, NPV (Negative Predictive Value) was 92.68% and diagnostic accuracy was found 84% taking histopathology as gold standard.

Fig. 1: Distribution of Parity

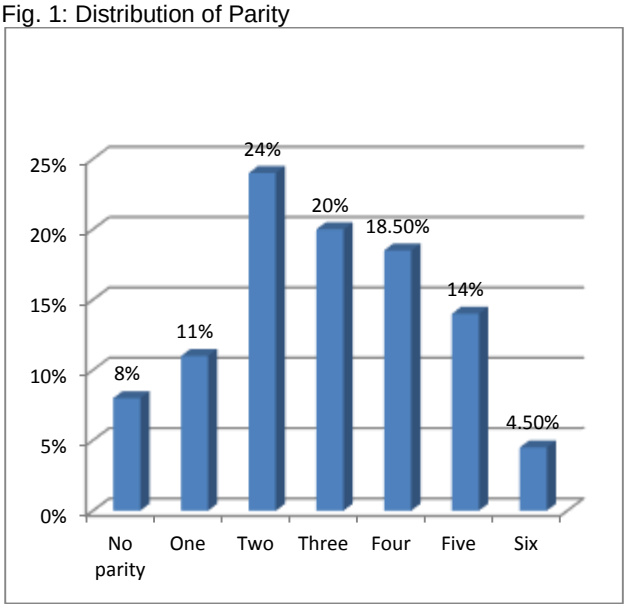

Fig. 2: Findings of Endometrial Hyperplasia on Histopathology

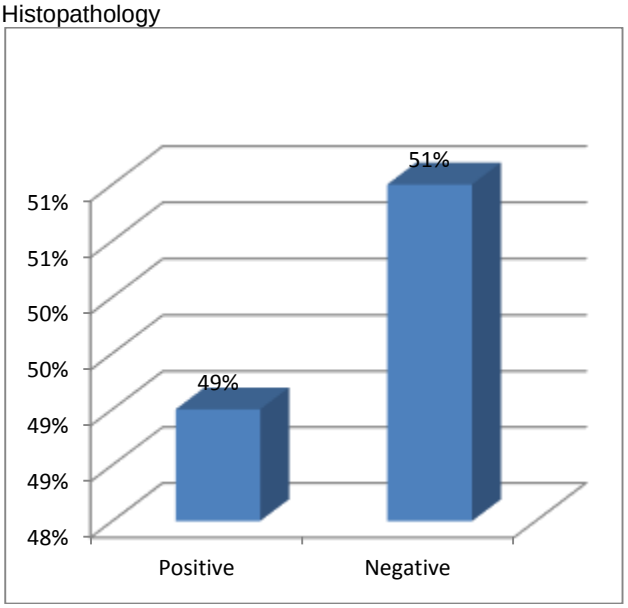

Table 1: Endometrial Hyperplasia TVS Findings versus Histopathology

TVS	Histopathology		Total
	Positive	Negative	
Positive	92	26	118 (59%)
Negative	6	76	82 (41%)
Total	98 (49%)	102 (51%)	200 (100%)

DISCUSSION

Menstrual irregularity is a common presenting problem in women seeking gynaecological consultation. These complaints may affect woman's quality of life significantly both at home and workplace. It may lead to hospitalization, surgical interventions and even hysterectomy and thus have a significant impact on our health care system.

In peri-menopausal patients with abnormal uterine bleeding, one has to rule out endometrial hyperplasia and malignancy. This is even more important if patient has risk factors like obesity, diabetes mellitus, nulliparity, history of polycystic ovarian disease or family history of endometrial / colorectal cancer[13]. Histological examination of the endometrial tissue is required to diagnose endometrial hyperplasia[5]. Dilatation and curettage is the method which is most widely used to get endometrial sample for histopathology. It is a blind and invasive procedure with its complications and sampling errors. Outpatient endometrial biopsy like Pipelle sampling is also used for this purpose but again being a blind procedure, abnormal areas may be missed and not sampled. Diagnostic hysteroscopy is helpful especially where outpatient sampling is non-diagnostic or it fails[5]. But it is not available in most of our gynaecology set ups.

We need a minimally invasive or non-invasive technique to study the endometrial pathology. TVS is promising in this regard with its ability to better visualise small changes in the endometrium (both thickness and pattern). In addition one can also visualize endo-myometrial junction, myometrium and adnexae. Correct findings are dependent on experience of the operator[13].Being convenient, non-invasive and inexpensive, it is recommended as a first line diagnostic tool for finding uterine pathology in women of reproductive age presenting with abnormal uterine bleeding[14]. It plays an important role in the evaluation and treatment of both symptomatic and asymptomatic women who may have endometrial disorders[15,16].

This study confirmed the findings of many previous studies showing that transvaginal ultrasound can reliably pick up majority of cases of abnormal uterine bleeding in perimenopausal patients having endometrial hyperplasia and can exclude most of cases not having it.

In this study the mean age of patients was 50.11±3.1 years. This is more than the mean age of 45.3, 44.9, 44 and 38.3 reported by Fatima Nazim[17], Min Jeong Kim[18], Najeeb[19] and Aslam[20] respectively.

The overall incidence of hyperplasia was found to be 49%. This is greater than incidence of 31.6%, 15% and 8.02% reported by other authors[17,21,18]. The incidence of atypical hyperplasia in particular was 19.5% in our study as compared to 13.33% reported by AmeraTakreem[21], 4.2% by Fatima Nazim[17]and 1.85% by Min Jeong Kim[18].

Our study revealed sensitivity of TVS to diagnose endometrial hyperplasia as 93.88%. This is

less than 100% sensitivity reported by some authors[17,19] but greater than 81.3% and 22.7% reported by Aslam[20] and Balic[22].

The specificity of TVS is shown to be 74.51% in our study. It is comparable to 73.6% reported by Aslam but less than 100% and 94.7% reported by other authors [22, 19]. It is more than 63.7% reported by Fatima Nazim[17].

In our study PPV (positive predictive value) of TVS is found to be 77.97% and it is less than 56.3% and 46.3% reported by Fatima Nazim and Aslam respectively[17, 20]. Whereas NPV (negative predictive value is found to be 92.68% which is comparable to 93.3% reported by Aslam [20]but less than 100% reported by Fatima Nazim[17].

Diagnostic Accuracy of TVS for endometrial hyperplasia is found to be 84% which is greater than 75.6% and 75.3% reported by other authors[17,20].

Abnormal uterine bleeding in perimenopausal women is often a concern for endometrial hyperplasia and carcinoma. The finding of thickened endometrium on transvaginal ultrasound often raises a physician's concern. The optimal cut-off value of endometrial thickness which will indicate malignancy or hyperplasia in these patients has yet to be established. Like other studies, our study shows that TVS is a useful, non-invasive and inexpensive screening tool for endometrial hyperplasia in gynaecological patients with abnormal uterine bleeding. This needs to be used more widely to screen for endometrial hyperplasia, so that timely diagnosis with histopathology and proper management can prevent hyperplasia to change into maliganancy[3].

CONCLUSION

TVS has 84% diagnostic accuracy for detecting endometrial hyperplasia. We can recommend TVS for prediction of endometrial hyperplasia in perimenopausal females with AUB as an early and first line assessment tool.

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