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Original Research Article

Correlation between endometrial thickness and histopathological report in patients with abnormal uterine bleeding: a prospective study

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) refers to any bleeding from the uterus that is irregular in volume, duration, or frequency and does not fall within the normal menstrual cycle pattern. The objective of this study was to find the correlation between endometrial thickness on transvaginal or transabdominal ultrasound with histopathological assessment of the endometrial assessment on Dilatation and curettage in patients with AUB.
Methods: It was a prospective Cohort study. A total of 102 women in reproductive and peri-menopausal age (taking inclusion and exclusion criteria into account) who underwent dilatation and curettage for abnormal uterine bleeding during the period March 2023- March 2024 were taken and analysed and correlated their HPR reports with their endometrial thickness measured with ultrasound.
Results: Mean age of patients was 37.83±9.43. Mean endometrial thickness (mm) was 9.15±3.474. For pathological abnormalities in ultrasonography the cutoff point that delineates the abnormal histology and normal histology for endometrial thickness was 14.50 mm area under the curve (AUC) was 0.783 and sensitivity, specificity of 100%, 70% respectively.
Conclusions: A positive correlation between endometrial thickness and histopathological findings was observed, underscoring the importance of endometrial evaluation in patients presenting with abnormal uterine bleeding.

Keywords: Abnormal uterine bleeding, Dilatation and curettage, Endometrial hyperplasia and cancer, Endometrial thickness, Ultrasound

INTRODUCTION

One third of gynaecological consultation is due to Abnormal uterine bleeding (AUB). It is responsible for almost two-thirds of hysterectomies.[1-8]

The prevalence of AUB is estimated to be 11-13% in the general population. AUB affects 10-30% of reproductive age group women and up to 50% of women in perimenopausal age group.[9,10] Incidence varies with age and reproductive status of the women.

A universally accepted system of nomenclature and classification has been developed by the FIGO.[11] The classification system proposed by FIGO is as follows.

Ultrasound (USG), a non-invasive imaging technique plays a crucial role in the evaluation of AUB and helps in diagnosing the underlying cause. The endometrial thickness observed on ultrasound can provide valuable insight into the potential underlying pathology, guiding further diagnostic steps and management. A thicker endometrial lining (as seen on ultrasound) is commonly associated with endometrial hyperplasia, polyps, fibroids, or endometrial carcinoma.

Endometrial sampling is considered essential in AUB to confirm the benign nature of the disease and excluding malignancy by histopathological examination. This is important to decide the treatment modality.

The study aimed at finding the corelation between endometrial thickness on TVS and histopathology report of endometrial sample after D&C in patients with abnormal uterine bleeding.

METHODS

The present study was conducted on 102 women attending the Gynaecology OPD/IPD in tertiary care hospital, Mumbai with abnormal uterine bleeding.

Period of data collection – 12 months (March 2023- March 2024).

Inclusion criteria

Women in the reproductive (20–60 years) and peri-menopausal (>40 years) age group attending the gynaecology OPD/IPD with complaints of abnormal uterine bleeding were included.

Exclusion criteria

Those with pelvic infection, puberty menorrhagia, those having cervical cancer with post-menopausal bleeding and those having medical contraindications to any invasive procedure were excluded from the study.

The sample size was calculated as 102 at 90% confidence and 80% power. The study was approved by institutional ethical committee, and informed consent was obtained from all the participants.

The study population was subjected to a thorough physical examination and routine investigations (haemoglobin, ABO and Rh, blood sugar, urine routine and microscopy) followed by transvaginal sonography (TVS) with endometrial thickness after obtaining post-counselling informed consent. All the procedures and measurements were performed under the direct supervision of the supervisor of the study using a structured data collection form. Patient was taken to the procedure room and placed in lithotomy position under spinal anaesthesia. After a bimanual examination, cervix is visualized with sims speculum and anterior vaginal wall retractor. The cervix was cleaned with using of 10% povidone-iodine or 4% chlorhexidine gluconate solution and held with vulsellum. Hysteroscopy is followed by dilatation and curettage and endometrial sample sent for histopathological examination.

Statistical analysis

The data were analysed using Statistical Package for Social Sciences version 20.0. Chi-square test was used for comparing categorical results. For evaluation of quantitative outcomes, for continuous parameters independent samples “t” test was used. A “p” value less than 0.05 was considered to indicate statistically significant association.

RESULTS

Mean age of patients was 37.83±9.43. mean endometrial thickness ET (mm) was 9.15±3.474. Majority (60.7%) presented within 6 months of complaints. Clinically, 78 (76.5%) were diagnosed as menorrhagia, 23 (22.5%) intermenstrual bleeding and 1% as frequent bleeding. On transvaginal sonography (TVS) it is diagnosed adenomyosis in 33 (32.4%), submucosal fibroid in 32 (31.4%), as polyps in 21 (20.6%), intramural in 13 (12.7%), CA endometrium in 2% and bulky uterus in 1%. On histopathology/HPR disordered proliferative endometrium in 28 (27.5%), secretory endometrium in 22 (21.6%), calcified in 14 (13.7%), 13 (12.7%) inadequate sample, simple hyperplasia in 10 (9.7%), 8 (6.9%) polypoidal endometrium and atrophic and adenocarcinoma in 3 (2.9%) each, endocervical polyp in 1%.

Table 1: Patient’s demographic profile and other characteristics.

Age group (years)	Frequency	Percentage
21-30	25	24.5
31-40	43	42.2
41-50	20	19.6
51-60	14	13.7
Total	102	100.0

Table 2: Patient’s chief menstrual complaint.

Clinical presentation	Frequency	Percentage
Frequent	1	1.0
Intermenstrual bleeding	23	22.5
Prolonged	78	76.5
Total	102	100.0

Table 3: Transvaginal sonography.

Ultrasound	Frequency	Percentage
Adenomyosis	33	32.4
Bulky uterus	1	1.0
CA endometrium	2	2.0
Intramural	13	12.7
Polyps	21	20.6
submucosal	32	31.3
Total	102	100.0

The correlation between ultrasonography and histopathology findings was 0.233 and p value is 0.018 significant at the 0.05 level (2-tailed).

Table 4: Histopathology/HPR findings.

Findings	Frequency	Percentage
Adenocarcinoma	3	2.94
Atrophic endometrium	3	2.94
Calcified endometrium	14	13.7
Disordered proliferative endometrium	28	27.5
Endocervical polyp	1	1.02
Inadequate sample	13	12.7
Polypoidal endometrium	8	6.9
Secretory endometrium	22	21.6
Simple hyperplasia	10	9.8
Total	102	100.0

(p</=0.05) For pathological abnormalities in ultrasonography the cutoff point that delineates the abnormal histology and normal histology for endometrial thickness was 14.50 mm AUC was 0.783 had sensitivity, specificity, of 100%, 70% respectively.

Ultrasonography missed one case of endometrial carcinoma.

DISCUSSION

Abnormal uterine bleeding is one the most frequently encountered conditions in gynecology. As quoted the incidence is 30–40% of all gynecological cases.

Sharp curettage, dilatation and curettage or various other intrauterine sampling devices like Pipelle canulla was considered to be the most commonly used methods of diagnosis of abnormal uterine bleeding before the use of hysteroscope.[12-15] The success rate of these procedures has been viewed in two ways: first is in most of the studies, the success rate of the specific method is determined by its ability to diagnose endometrial carcinoma. Second is there is no comparative studies between endometrial sampling of these studies with hysteroscopic endometrial sampling to find out the comparison.

The incidence of endometrial malignancy was 1% in Nagele's study and 0.6% by Sciarra and Valle. In our study 2% patients had endometrial carcinoma. 5 patients (10%) of them were above 50 years and out of which 1 patient in the study was shown to have endometrial carcinoma, although peak incidence of endometrial cancer was found in women in their 70s.

Clark et al proved in his study that the diagnostic hysteroscopy is accurate in diagnosing endometrial cancer.[16] It has been said that a thick endometrium hinders the view of the uterine cavity in diagnosing the uterine pathology. So, hysteroscopy alone is not sufficient. Hysteroscopy along with biopsy is needed. Hysteroscopy without biopsy is therefore unreliable in diagnosing the endometrial malignancy since the difference between premalignant lesion and malignant lesion of the endometrium may be subtle, and hysteroscopy alone is not sufficient. Moreover, endometrial biopsy and histopathology of the endometrium is definitely needed to establish the diagnosis of endometrial carcinoma, its type and grade. Also, for optimal visualization, diagnostic hysteroscopy to be scheduled in the follicular phase.

The specificity and sensitivity of TVS in diagnosing intrauterine pathology showed considerable variation. Some studies showed it as an accurate test with more than 95% sensitivity for intrauterine lesions. In several other studies it was shown to have sensitivity between 60-77%.[16,17]

Loeffer in his study showed the diagnostic specificity and sensitivity of dilatation and curettage against the hysteroscopic assessment and biopsy and showed 65% sensitivity for dilatation and curettage and 98% sensitivity for hysteroscopy and biopsy.[18] The sensitivity for submucous myoma was 100% in our study when correlated with histopathological analysis. The finding of hyperplasia was in 9 (20%) patients through hysteroscope and in histopathological analysis it was in 7 patients (16%). The positive predictive value was 80%.

In our study, mean age of patients was 37.83±9.43. Majority (60.7%) presented within 6 months of complaints. Clinically, 78 (76.5%) were diagnosed as menorrhagia, 23 (22.5%) intermenstrual bleeding and 1% as frequent bleeding

On transvaginal sonography (TVS) it is diagnosed adenomyosis in 33 (32.4%), submucosal fibroid in 32 (31.4%), as polyps in 21 (20.6%), intramural in 13 (12.7%), CA endometrium in 2% and bulky uterus in 1%.

On histopathology/HPR disordered proliferative endometrium in 28 (27.5%), secretory endometrium in 22 (21.6%), calcified in 14 (13.7%), 13(12.7%) inadequate sample, simple hyperplasia in 10 (9.7%), 8 (6.9%) polypoidal endometrium and atrophic and adenocarcinoma in 3 (2.9%) each, endocervical polyp in 1%.

Transvaginal sonography (TVS) allows detailed assessment of anatomical abnormalities of the uterus and endometrium. In addition, pathologies of the myometrium, cervix, tubes, and ovaries may be assessed. This investigative modality may assist in the diagnosis of endometrial polyps, adenomyosis, leiomyomas, uterine anomalies, and generalized endometrial thickening associated with hyperplasia and malignancy

This study was undertaken to correlate the ultrasonography findings with histopathologic report. For pathological abnormalities in ultrasonography the cutoff point that delineates the abnormal histology and normal histology for endometrial thickness was 14.50mm AUC was 0.783 had sensitivity, specificity, of 100%, 70% respectively.

This study has several limitations that should be considered when interpreting the findings. First, the sample size was limited to 102 participants, which may not fully represent the broader population. Additionally, data collection was conducted over a short period, potentially overlooking long-term trends. Ethical considerations also restricted the inclusion of certain sensitive data. Future research with a larger and more diverse sample, conducted over an extended period, is recommended to validate these findings

CONCLUSION

In this study, a positive correlation between endometrial thickness and histopathological findings was observed, underscoring the importance of endometrial evaluation in patients presenting with abnormal uterine bleeding, particularly in those over 40 years of age. Increased endometrial thickness, as measured via ultrasound, is strongly associated with various pathological conditions, including endometrial hyperplasia and carcinoma, as confirmed by histopathological examination.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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