

Correlation Between Endometrial Thickness By Ultrasonography and Histopathology in Abnormal Uterine Bleeding

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is the most common presenting complaint of patients in Gynaecology Outpatient department. Early diagnosis of endometrial hyperplasia through ultrasonographic measurement of endometrial thickness and definite diagnosis by histopathologic examination will help the clinicians to give appropriate treatment to the patients. The objective of this study was to correlate the histopathology findings in abnormal uterine bleeding with endometrial thickness by ultrasonography.

Methods: This was a prospective study done from Nov 2016 to June 2018. A total of 382 cases of AUB presenting above 40 years of age were included. Endometrial thickness was measured by ultrasonography. Histopathological findings were studied and compared with the endometrial thickness. Statistical analysis was done using chi square test.

Results: A total of 382 cases were analysed. Maximum number of cases were from perimenopausal age group (68.32%). Majority of the cases were due to non organic causes (85.34%). 46.86% of patients had endometrial thickness of 5-10mm followed by endometrial thickness of 11-15mm in 39.01%. Disordered proliferative endometrium was the most common pattern (38.34%) in our study followed by secretory endometrium (35.58%) and menstrual endometrium (18.71%). These findings were found to be statistically significant.

Conclusion: A thorough histopathological work up and clinical correlation is mandatory in cases of abnormal uterine bleeding above 40 years to find out organic lesions. Careful screening can detect precursor lesions like endometrial hyperplasia and early cases of endometrial carcinoma which has excellent prognosis and it will help in further management.

Keywords: Abnormal Uterine Bleeding, Endometrium, Histopathology, Ultrasonography

Introduction

Perimenopause is the phase, preceding the onset of menopause, generally occurring around 40 years of age during which the regular menstrual cycle of a woman changes from normal cycles to a pattern of irregular cycles.^[1] Menopausal transition includes a period of about 4–5 years before menopause, sometimes even several months, characterized by varying degrees of somatic and psychological changes that reflect the changes in the ovarian cycle.^[1] In some women, the most significant symptom is an irregular menstrual period, which must be carefully evaluated to determine whether it is the consequence of low oestrogen levels or an associated pathology.^[1]

Abnormal uterine bleeding (AUB) is one of the most common and challenging problems presenting to the gynaecologist.^[2] It makes up to one-third of all outpatients presenting to Gynaecology OPD.^[2,3] Any deviation in terms of cycle, duration of bleeding, amount of blood loss or a combination of all, is called abnormal uterine bleeding.^[4]

Ultrasonography (transvaginal or abdominal) is a simple non-invasive procedure to detect the endometrial thickness and also aids in detection of any other organic pathology.^[5]

Ultrasonography followed by endometrial biopsy in women presenting with AUB helps in detection of endometrial carcinoma which is often preceded by endometrial hyperplasia.^[6] Early detection of proper treatment of the endometrial hyperplastic lesions are essential to prevent progression to endometrial cancer.^[7,8]

Materials and Methods

The current study was a descriptive study on 382 patients above 40 years of age who presented with AUB in Department of Gynaecology and Pathology during the study period from Nov 2016 to June 2018.

The study was commenced after ethical clearance. Detailed written informed consent was obtained from patients. Relevant clinical history, menstrual history and treatment history were taken following which they had undergone ultrasonography to detect the endometrial thickness. Endometrial samples were obtained either through dilatation and curettage or fractional curettage.

Samples were received and processed entirely. Histopathology sections were studied in detail and correlated with the endometrial thickness.

Statistics

Statistical analysis was done using SPSS software package version 21(Chicago, Illinois, USA). Qualitative data were analysed using Chi square test. P value <0.05 was taken as statistically significant and values < 0.01 was taken as highly significant.

Results

In our study the age interval of 40-49 years were taken as perimenopausal age group and ≥ 50 years were included in the postmenopausal age group. Out of 382 cases studied majority of the cases were included in the perimenopausal age group (n=261, 68.32%) and remaining were in the postmenopausal age group (n=121, 31.68%).

Endometrial thickness(ET) was assessed using Ultrasonography and were categorised into 5mm thickness intervals. In our study 46.86% of patients had endometrial thickness of 5-10mm followed by endometrial thickness of 11-15mm in 39.01% and 16-20mm in 8.38% cases. The two extremities i.e. <5mm constituted 3.66% and > 20mm seen in only 2.09% of cases. (P value <0.001). In our study

endometrial thickness of <5mm showed normal endometrial patterns of proliferative (4cases), menstrual (4cases) and atrophic (6cases) endometrium. Among the 179 patients with ET of 5-10mm, 67 had secretory endometrium, 53 had menstrual endometrium, 44 had disordered proliferative endometrium(Fig-1), 12 had proliferative endometrium and 1 each had atrophic endometrium, irregular shedding and endometrial polyp. ET of 11-15 mm was seen in 149 patients with 75 of them having disordered proliferative endometrium, 49 having secretory, 11 having hyperplasia without atypia(Fig-2), 9 having endometrial polyp, 3 with menstrual endometrium and 2 with endometrial carcinoma.

Thirty two patients had ET of 16-20 mm out of which 11 patients had hyperplasia without atypia, 8 had endometrial carcinoma, 6 had disordered proliferative endometrium, 4 had endometrial polyp, 2 had atypical hyperplasia(Fig-3) and 1 had menstrual endometrium. Seven out of the 8 patients with ET of > 20 mm had endometrial carcinoma (Fig-4) and 1 had hyperplasia without atypia. These findings were found to be statistically significant ($p < 0.001$).

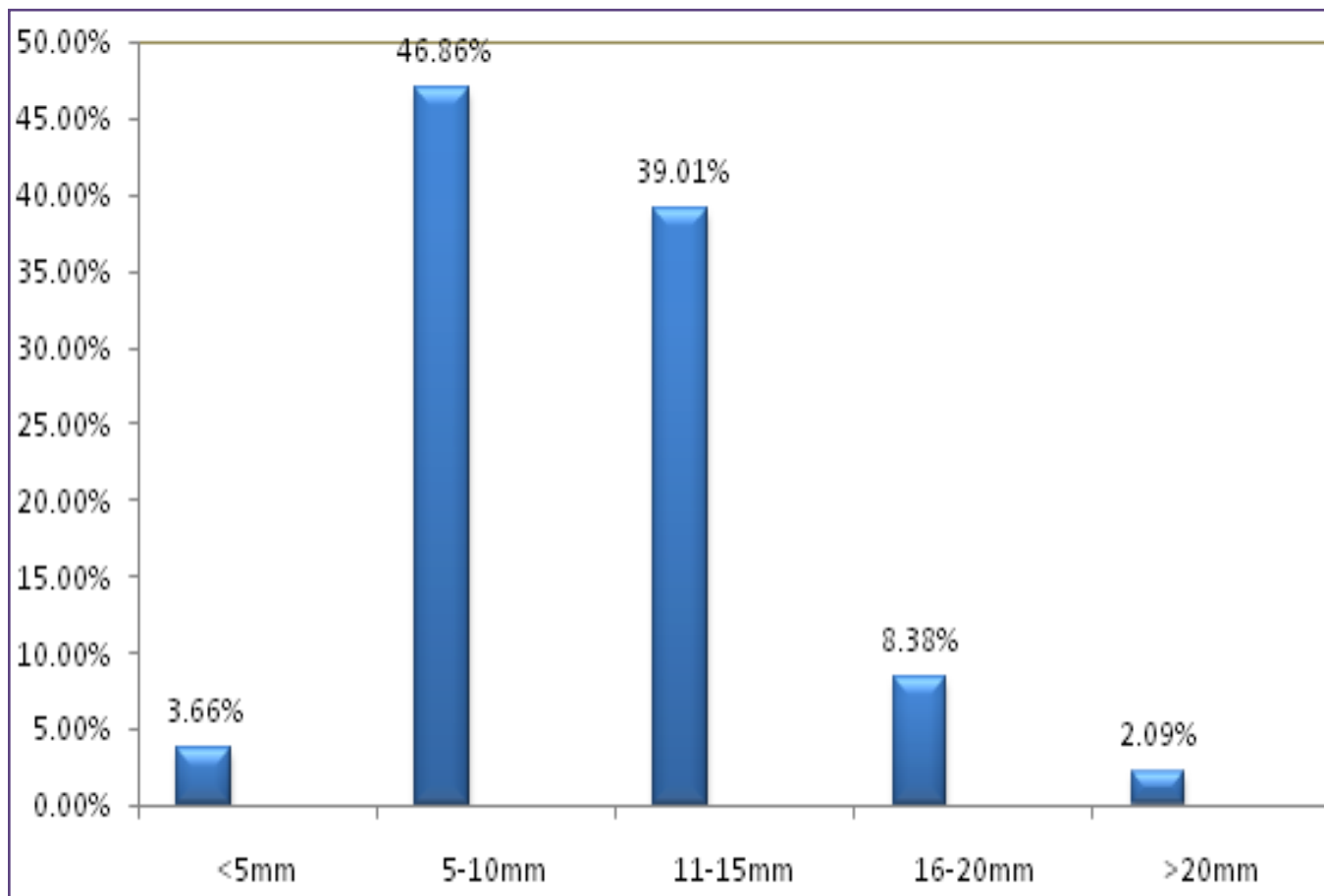


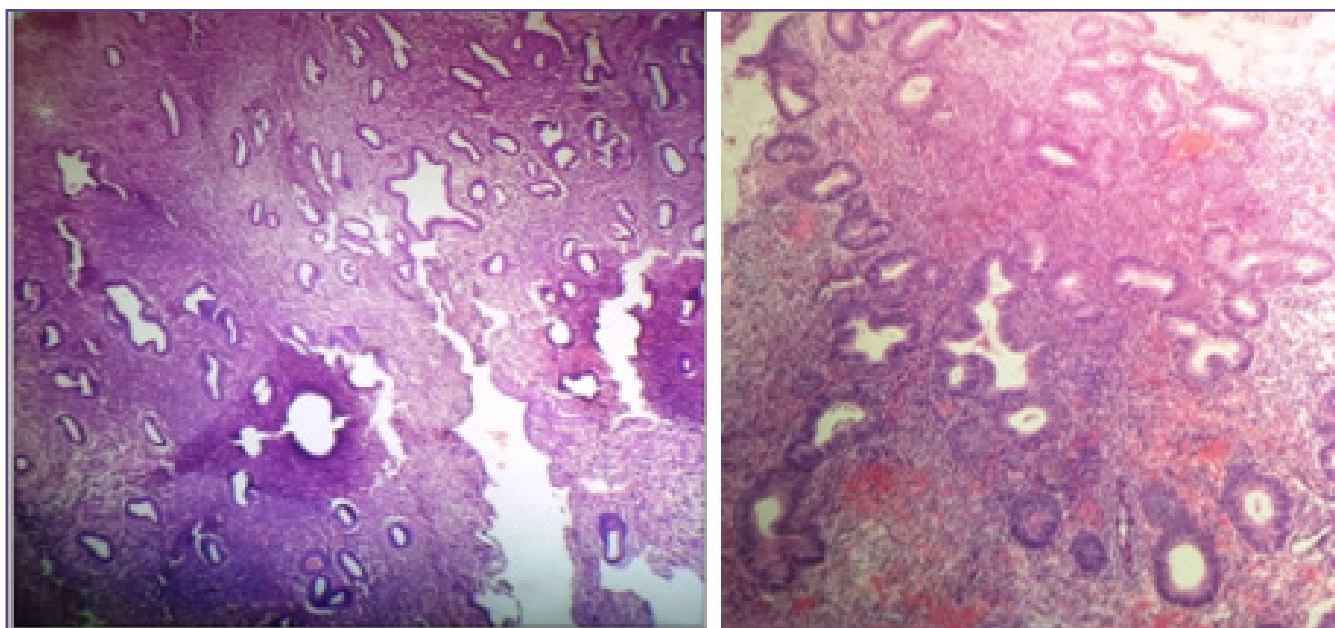
Table 1: Distribution of cases according to endometrial thickness.

Table 2: Comparison of endometrial thickness with histopathology finding.

HISTOPATHOLOGICAL FINDING	<5mm	5-10mm	11-15mm	16-20mm	>20mm	Total
Proliferative endometrium	4	12	-	-	-	16
Secretory endometrium	-	67	49	-	-	116
Menstrual endometrium	4	53	03	01	-	61
Atrophic endometrium	6	01	-	-	-	07
Disordered proliferative endometrium	-	44	75	06	-	125
Hyperplasia without atypia	-	-	11	11	01	23
Hyperplasia with atypia	-	-	-	02	-	02
Carcinoma	-	-	02	08	07	17
Irregular shedding	-	01	-	-	-	01
Endometrial polyp	-	01	09	04	-	14
TOTAL	14	179	149	32	8	382

Table 3: Comparison of endometrial thickness.

ENDOMETRIAL THICKNESS	Shrestha et al ^[11] (2018)	Sur D & Chakravorthy R ^[12] (2016)	Pillai SS ^[5] (2014)	Bishnu Prasad Das ^[13] (2017)	Our study
<5mm	1.90%	17.07%	3.41%	3%	3.66%
5-10mm	35.24%	32.32%	46.59%	34%	46.86%
11-15mm	48.57%	42.07%	22.73%	42%	39.01%
16-20mm	11.43%	6.71%	17.04%	15%	8.38%
>20mm	2.86%	1.83%	10.23%	6%	2.09%

**Fig. 1&2 : Disordered proliferative endometrium & Hyperplasia without atypia.**

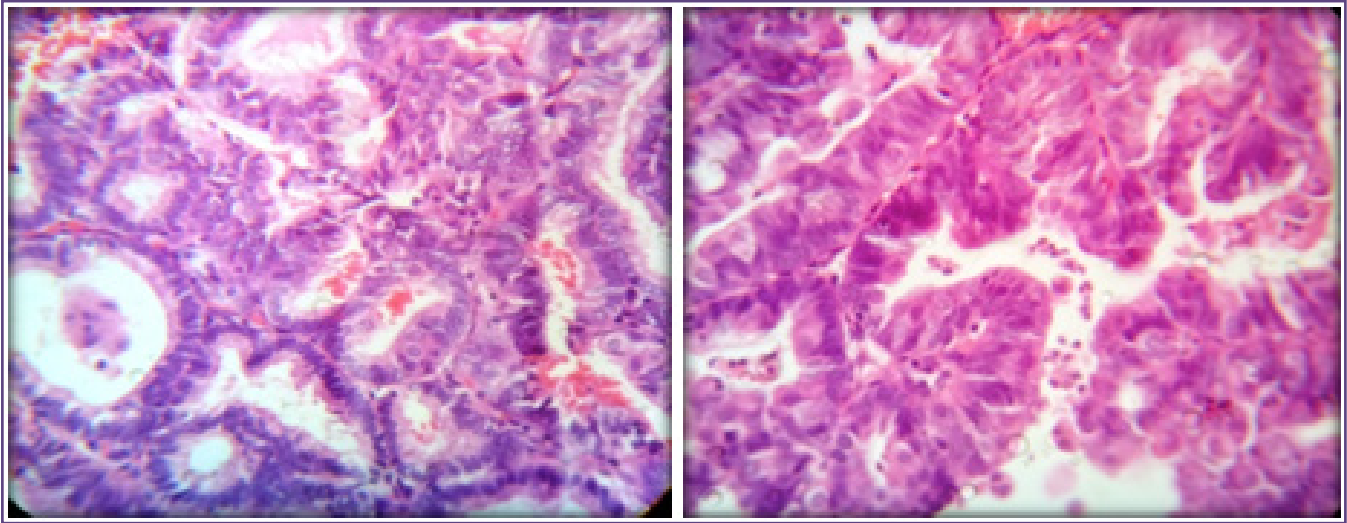


Fig. 3&4 : Hyperplasia with atypia & Endometrioid carcinoma – well differentiated.

Discussion

Abnormal uterine bleeding is the common presenting complaint in Gynaecology Outpatient Department in all age groups. It is due to the anovulatory cycles which are commonly seen in adolescent and peri menopausal women. Abnormal uterine bleeding is caused by a wide variety of organic and non organic causes. Endometrial carcinoma precedes through a spectrum of disordered proliferative pattern followed by hyperplasia without atypia and hyperplasia with atypia.^[9] Sonography followed by histologic assessment remains the corner stone for diagnosis.^[9,10]

Endometrial thickness was assessed using ultrasonography. In our study majority of the patients (46.86%) had endometrial thickness in the range of 5 -10mm followed by 11-15mm in 39.01 %. Studies by Shrestha et al^[11] and Sur D & Chakravorty R^[12] had majority of patients in the endometrial thickness range of 11-15mm(48.57% and 42.07%) followed by 5-10mm (35.24% and 32.32%). The extreme ranges of thicknesses ie <5mm and > 20mm were seen in 3.66% and 2.09% of cases which was similar to study by Shrestha et al (1.90% and 2.86%).

In our study for the ET of <5mm we had 1.04% cases of proliferative endometrium which is similar to the findings observed by Shrestha et al (1.9%), Sur D & Chakravorty R (1.82%) and Pillai SS (1.13%). Atrophic endometrium was reported in 1.57% cases with ET < 5mm which is similar to finding in Bishnu Prasad Das (1%).^[13] Rest of findings were in concordance with other studies. No cases of hyperplasia or carcinoma was reported in this thickness range.

We had 46.86% of cases with ET in range of 5-10mm. Out of this secretory endometrium was reported in 17.53% cases.

Studies by Shrestha et al, Sur D & Chakravorty R, Pillai SS also reported similar findings in this thickness range. Second common histopathologic pattern was disordered proliferative endometrium which correlated with the study by Pillai SS (11.51%). Proliferative endometrium was seen in 3.14% cases which is similar to the findings observed by Shrestha et al (6.66%) Other studies by Sur D & Chakravorty R, Pillai SS and Bishnu Prasad Das reported much higher incidence of proliferative endometrium. Atrophic endometrium and endometrial polyp was reported in 0.26% cases each which is concordance with other studies. No cases of hyperplasia or carcinoma was reported in this thickness range.

With the thickness range of 11-15mm, we observed hyperplasia of 2.87% and carcinoma of 0.52%. Hyperplasia was reported by Pillai SS (3.4%) and Sur D & Chakravorty R (4.26%) which is in correlation with our study. Carcinoma was seen in 0.95% cases of the study done by Shrestha et al which again conforms with our study. With the increase in the endometrial thickness from < 5mm to >20 mm we observed that there is an increase in the cases of hyperplasia and endometrial carcinoma. These findings were similar to other studies. The study by Getpook C et al^[14] concluded that endometrial thickness of 8 mm or less is less likely to be associated with malignant pathology in perimenopausal women with abnormal uterine bleeding. In post-menopausal women the ET of 4 mm or less considered normal, if more than 4 mm the chances of abnormalities like hyperplasia and carcinoma are more. There is no clear definition of what constitutes an abnormal endometrial thickness in perimenopausal woman. The upper limit for normal endometrial thickness remains controversial, but most studies have reported transvaginal sonographic

endometrial thickness 8 mm as the abnormal cut off value, necessitating further investigations.^[15]

Conclusion

Transvaginal ultrasonography (TVUS) is recommended as a first line diagnostic tool as it is relatively inexpensive, safe and non-invasive. It will not only reveal endometrial thickness but also other pelvic pathology. The primary indication for invasive methods like D&C should be in cases with abnormal thickness of endometrium >8mm or inconclusive TVUS in order to obtain endometrial tissue to exclude precancerous lesion or endometrial cancer.

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