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Endometrial study by Ultrasonography and its correlation with Histopathology in Abnormal uterine bleeding

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ABSTRACT

Background: Abnormal Uterine Bleeding is defined as any deviation from a normal menstrual pattern. It is one of the common presentation in extremes of ages. However endometrial hyperplasia and carcinoma are commoner in perimenopausal and postmenopausal women warranting investigations like ultrasonography and endometrial biopsy. **Aims and Objective**: The aim of the study was to note the endometrial thickness by transabdominal ultrasonography and observe the histopathological pattern in women presenting with abnormal Uterine Bleeding. **Material and Methods**: Premenopausal women more than 45 years of age and the postmenopausal patients, without any pelvic pathology were included in the study. Endometrial thickness was measured by transabdominal sonography and endometrial biopsy was done. Tissue obtained was sent for histopathological examination. **Results**: A total of 105 patients were studied. Majority (92%) of patients were premenopausal. Proliferative Endometrium (32%) was the most common finding in premenopausal and atrophic endometrium (37.5%) in postmenopausal group. Malignancy was higher in a postmenopausal group (12.5%) as compared to the premenopausal group (2%). Malignancy was not seen when endometrial thickness was less than 11mm in the premenopausal age group. Endometrial hyperplasia was also more common when the thickness was more than 11mm.In postmenopausal group12.5% of patients, had complex hyperplasia.25% had simple hyperplasia and malignancy was seen in 12.5% of patients. When endometrial thickness was less than 5 mm, hyperplasia and malignancy was not seen. **Conclusion:** Measurement of Endometrial thickness and histopathological workup in patients above 45 years presenting with abnormal uterine bleeding will be helpful in detecting endometrial hyperplasia and carcinoma.

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INTRODUCTION

Abnormal uterine bleeding (AUB) is described as any deviation from a normal menstrual pattern. The key characteristics are regularity frequency, duration of flow, and heaviness of flow, however, each of these parameters may have considerable variability.[1] Bleeding is abnormal when the cycle is irregular, duration of flow is >7days or amount is more than 80 ml.[2] Abnormal uterine bleeding (AUB) is a common presentation responsible for more than 20% of all visits to outpatient department and for more than 25% of all hysterectomies.[3]

Evaluation of endometrium by sonography has become an integral component in the investigation of abnormal uterine bleeding since the introduction of ultrasound in gynecological practice by Donald et al in 1958.[4] Uterine bleeding after permanent cessation of menstruation resulting from loss of ovarian follicular activity is defined as postmenopausal bleeding. Around 3 % of menopausal women suffer from this condition which requires prompt and thorough evaluation.[5]

There is increased risk of endometrial hyperplasia and endometrial carcinoma in premenopausal and

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postmenopausal women with abnormal uterine bleeding. [6] Therefore, ultrasonography and endometrial biopsy, methods of detecting endometrial hyperplasia or carcinoma must be considered early in investigation.[7]

An endometrial biopsy is a safe and efficient office-based procedure for sampling the endometrium in a patient presenting with abnormal uterine bleeding. The endometrial tissue obtained provides a diagnosis for wide range of morphologic patterns, normal and abnormal changes like hyperplasia, exogenous hormonal effects, infections, carcinoma which helps in further management.[8,9]

This study was conducted in premenopausal and postmenopausal patients presenting with abnormal uterine bleeding who were subjected to transabdominal sonography. Endometrial biopsy was taken and correlated with the histopathological pattern.

MATERIAL AND METHODS

This was a prospective study conducted in the Department of Obstetrics and Gynaecology of Manipal Teaching Hospital after approval by the ethical and research committee.

The study population comprised of women aged 45 years and above who attended the gynecological department with complaints of abnormal uterine bleeding. Total of 105 patients was included in the study.

Inclusion criteria

1. Women aged 45 years and above with abnormal uterine bleeding
2. With no detectable pelvic pathology.

After a detailed history and appropriate clinical examination the patients were subjected to Ultrasonography. Transabdominal Ultrasonography was performed, independent of the phase of menstrual cycle.

Endometrial biopsy was done using Karmann's cannula after signed informed consent and tissue obtained was sent for Histopathological examination. Histopathology reports were divided into seven groups i.e. Proliferative Endometrium, Secretory Endometrium, Simple Hyperplasia, Complex Hyperplasia, Atrophic Endometrium, Endometritis, Malignancy.

Results were compiled. Statistical analysis was done using SPSS 16.

RESULTS

A total of 105 patients were included in the study. Patients age ranged from 45 to 78 years.

Majority of the patients belonged to the Premenopausal group (92%) and the rest 8% were Post-Menopausal.

As shown in Table 1, Proliferative endometrium was the most common finding in Pre-menopausal group (32%) whereas Atrophic endometrium (37.5%) in Post-Menopausal.

19.5% of Premenopausal patients had Endometritis.

Malignancy was higher in Post-Menopausal (12.5%) with respect to Pre-Menopausal (2%).

According to Table 2, 22% of patients had endometrial hyperplasia. Simple hyperplasia was

more common (61%).39% of patients had Complex hyperplasia. Atypical hyperplasia wasnot noted in our study.

Table 3, shows endometrial thickness in both age groups. 50.5% of Pre-menopausal patients had endometrial thickness of 11-15mm.50% postmenopausal had endometrial thickness of 5-10mm by ultrasonography.

Table 4, shows a different histopathological pattern with parity. Majority of women were multiparous (87.6%). Endometrial Hyperplasia was more common in Primipara (25%) as compared to multipara (21. 7%).Endometrial carcinoma was again more in Primipara (8.3%) as compared to 2.1% in Multipara

The above Table 5, shows an association of different histopathological pattern with the endometrial thickness

Table 1: Histopathological pattern in pre and post-menopausal age group

Findings	Premenopausal (n=97)	Postmenopausal (n=8)	Total(n=105)
Proliferative Endometrium	31 (32%)	1 (12.5%)	32 (30.4%)
Secretory Endometrium	24 (25%)	0 (0%)	24 (22.8%)
Simple Hyperplasia	12 (12.3%)	2 (25%)	14 (13.3%)
Complex Hyperplasia	8 (8.2%)	1 (12.5%)	9 (8.5%)
Atrophic Endometrium	1 (1%)	3 (37.5%)	4 (3.8%)
Endometritis	19 (19.5%)	0 (0%)	19 (18%)
Malignancy	2 (2%)	1 (12.5%)	3 (2.8%)

in Premenopausal Group. Malignancy was not seen when endometrial thickness was less than 11mm.Endometrial Hyperplasia was also more common when the thickness was more than 11mm.

As shown in Table 6, 12.5% of patients, had complex hyperplasia.25% had simple hyperplasia and malignancy was seen in 12.5% of patients. When endometrial thickness was less than 5 mm, hyperplasia and malignancy was not seen.

DISCUSSION

Variation in menstrual flow and cycle length are common at extremes of reproductive ages. Endometrial hyperplasia and cancer are more commonly detected in older than in younger age. In Premenopausal women, the likelihood of abnormal endometrial histology is relatively high (14%) when menses are irregular but very low (less than 1%) when cycles are regular.[10] Approximately 10% (range 1–25%) of postmenopausal bleeding patients will be diagnosed with endometrial carcinoma.[11]

In the Present study group, the age of the patients ranged from 45 to 78years. A cut off value of 45 years was taken for evaluation of abnormal uterine bleeding and endometrial biopsy.[12] 48.5% of patients had an endometrial thickness between 11-15mm on Ultrasonography similar to the study conducted by Dipanshu Sur (42.3%).[13]

Proliferative endometrium was the most common finding (30.4%) which indicates anovulatory AUB which occurs in perimenopausal women who is in the follicular phase of an ovarian cycle and proliferative phase of an endometrial cycle. Proliferative endometrium was the predominant finding in 32% of the premenopausal group and Atrophic endometrium in 37.5% of the postmenopausal women.

In the study done by Rajshri P,[14] the predominant histopathological findings were proliferative endometrium (34.09%) in perimenopausal women and Atrophic endometrium in the postmenopausal (25.8%). Similar findings were also noted by Dangal G[15]where 22% of patients had endometrial hyperplasia. Simple hyperplasia was more common (61%).Similar to the study done by Talat Mirza[16] where 30% cases were of endometrial hyperplasia. Similar finding was noted by Rajshri P (23.86%)[14] Dangal (23%).[15]

Malignancy was higher in the postmenopausal (12.5%) as compared to the premenopausal (2%).A higher incidence of malignancy was seen in a postmenopausal group in the study done by Dangal G (24.3% vs 7.7%).[15] Endometrial hyperplasia was more common inprimipara (25%). Endometrial carcinoma was again more in primipara (8.3%) as compared to 2.1% in multipara. As the endometrium is in an inactive state during pregnancy, multipara patients have a lower incidence of endometrial hyperplasia and carcinoma.

In patients, presenting with abnormal uterine bleeding when the endometrial thickness was less than 11mm endometrial carcinoma was not observed in Premenopausal

Table 2: Distribution of cases according to type of endometrial hyperplasia

Type of hyperplasia	Number of patients	Number. of patients (%)
Simple Hyperplasia	14	61
Complex Hyperplasia	9	39
Atypical Hyperplasia	0	0
Total	23	100

Table 3: Endometrial thickness in different age groups

Age group	Endometrial thickness					
	<5mm	5-10mm	11-15mm	16-20mm	>20mm	Total No.
Pre-menopausal	1 (1.03%)	33 (34.02%)	49 (50.5%)	11 (11.3%)	3 (3.09%)	97
Post-menopausal	1 (12.5%)	4 (50%)	2 (25%)	1 (12.5%)	0 (0%)	8

Table 4: Correlation of parity with histopathology

Findings	Nullipara	Primipara	Multipara
Proliferative	1	3	28
Secretory	0	2	22
Simple Hyperplasia	0	0	14
Complex Hyperplasia	0	3	6
Atrophic	0	1	3
Endometritis	0	2	17
Malignancy	0	1	2
Total	1	12	92

Table 5: Comparing endometrial thickness (mm) with endometrial histopathology in Pre-Menopausal group

HPE	ET (mm)	<5	5-10	11-15	16-20	>20	Total
	No. of pts						
Proliferative Endometrium		1	7	22	1	0	31
Secretory Endometrium		0	13	9	1	1	24
Simple hyperplasia		0	1	8	2	1	12
Complex Hyperplasia		0	0	1	6	1	8
Atrophic endometrium		0	1	0	0	0	1
Endometritis		0	11	8	0	0	19
Malignancy		0	0	1	1	0	2
Total		1	33	49	11	3	97

Table 6: Endometrial thickness with histopathology in post-menopausal group

Findings	Endometrial thickness (mm)					
	<5	5-10	11-15	16-20	>20	Total
Proliferative	1	0	0	0	0	1
Secretory	0	0	0	0	0	0
Simple hyperplasia	0	0	2	0	0	2
Complex hyperplasia	0	1	0	0	0	1
Atrophic	0	3	0	0	0	3
Endometritis	0	0	0	0	0	0
Malignancy	0	0	0	1	0	1

patients. Morepatients had endometrial hyperplasia when the endometrial thickness was more than 11mm.Similarly, in the study done by Pilai, complex hyperplasia and malignancy were not noted when the endometrial thickness was less than 14.9mm.[17]

In Post-Menopausal patients 37.5% of patients, had endometrial hyperplasia when the endometrial thickness was more than 5mm. Endometrial carcinoma was not observed when the endometrial thickness was less than 15mm.In the study done by Chaudhary L[18] mean endometrial thickness in endometrial carcinoma was 11.95mm.

A cut off point of endometrial thickness for predicting endometrial carcinoma could not be made in our study because of inclusion of both premenopausal and postmenopausal group.

CONCLUSION

Measurement of endometrial thickness by Ultrasonography and endometrial biopsy in Perimenopausal and postmenopausal women with abnormal bleeding can be a useful tool to identify endometrial hyperplasia and endometrial carcinoma.

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Authors Contribution:
PS- Concept and design of the study, reviewed the literature, statistically analysed and interpreted, manuscript preparation, critical revision of the manuscript; **SS -** Collected data and helped in preparing first draft of manuscript; **VM-** Literature search and helped in critical revision of manuscript.

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