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Endometrial Profile in Abnormal Uterine Bleeding - A Retrospective Study at Tertiary care center

[1]Vidhi Singh, Post graduate 3rd year, Department of Obstetrics and Gynaecology at Teerthanker Mahaveer Medical College and Research Centre, Moradabad

[2]Kanchan Rani, Professor, Department of Obstetrics and Gynaecology at Teerthanker Mahaveer Medical College and Research Centre, Moradabad

Corresponding Author: Kanchan Rani, Professor, Department of Obstetrics and Gynaecology at Teerthanker Mahaveer Medical College and Research Centre, Moradabad.

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Abstract

Background: In gynecological OPD, Abnormal uterine bleeding is a common presenting symptom affecting the quality of life of females. For its diagnostic purpose, trans abdominal or transvaginal ultrasound is considered as 1st line investigation due to its non-invasive nature, and endometrial biopsy, its histopathological assessment is considered the gold standard for diagnosis.

Method: This study was conducted in Obstetrics and Gynecology department at TMMC and RC, Moradabad from March 2018 – March 2022. A total of 750 cases were selected and analyzed.

Result: The most common age group affected was (40-49) years, 59.06% and maximum patients had endometrial thickness in the range of (5-10) mm, 46.6 %. The most common histopathological pattern was proliferative phase endometrium, 37.2%, and disordered proliferative phase endometrium in the perimenopausal age group. Advancing age was associated with a higher incidence of malignant lesions.

Conclusion: As Abnormal uterine bleeding has a variable presentation in different age groups a thorough workup should be done including histopathological assessment, especially in the late reproductive age group and perimenopausal females to rule out pre-malignant and disordered proliferative pattern which has the potential to convert into malignant changes for deciding the best line of treatment and follow up.

Keywords: abnormal uterine bleeding, endometrial thickness, hysteroscopy, endometrial biopsy.

Introduction

Any abnormality in volume, duration, frequency, and regularity of menses is defined as Abnormal uterine bleeding. The normal menstrual cycle is defined under characteristics of frequency of cycle (frequent is <24 days, normal is 24-28 days and infrequent is >38 days),

regularity of cycle (absent, regular is of ±2-20 days and the irregular cycle is >20days), duration of flow (prolonged is >8days, normal is 4-8 days and shortened is <4days) and volume of blood loss (heavy is >80ml, normal is 5-80ml and light is <5ml).

It is among the most common gynecological problem among females presenting to OPD which also affects the physical, social, and emotional well-being of the female. It occurs in different age groups with different clinical presentations. Starting from menarche to menopause prevalence of AUB is around (9-14) %. In India, it is about 17.9%.[1] The underlying pathology can be physiological or pathological. It might be related to some structural cause, hormonal disturbances, any malignant cause, or any unknown factor. For the standardization of the terminology, investigations, and treatment of various causes in 2011 FIGO classification for AUB was given, which classified the underlying causes into structural causes which were Polyp (P), Adenomyosis (A),Leiomyoma (L), Malignancy (M)-(PALM) and nonstructural causes, Coagulopathy (C), Ovulatory dysfunction (O), Endometrial Causes (E), Iatrogenic(I), Not yet classified (N)- (COEIN).[2]

For proper treatment of AUB it is important to reach the correct cause and underlying pathology which ultimately leads to correct clinical diagnosis

Ultra-sonography being a non-invasive investigation is usually considered as a safe initial investigation and gives an idea about the structural causes of AUB.

During Hysteroscopy since the uterine cavity is directly visualized so it has higher sensitivity and specificity for diagnosing the cause of AUB.[3]After ruling out the structural and systemic causes Endometrial tissue sampling is best to determine the underlying cause.[4]

This study was done with an aim to study endometrial causes of abnormal uterine bleeding and its incidence and presentation in different age groups along with the association between histopathological and ultrasound results.

Methodology

This retrospective study was conducted in Obstetrics and Gynecology department, TMMC & RC, Moradabad. Data of past 5 years (March 2018-March 2022) of patients who had undergone transvaginal ultrasound and later on endometrial biopsy for AUB was collected from medical record and results were entered into structured data for analysis of results.

Inclusion criteria:

-Reproductive age Female who presented with any form of AUB and underwent diagnostic endometrial biopsy.

Exclusion criteria:

-Pregnant females

-Patients who were unfitting for surgical

Procedure

Detailed history of patients regarding age, obstetric history, menstrual history, presenting complaints, physical and gynecological examination, laboratory investigations, transvaginal ultrasound, hysteroscopy findings and histopathological reports were collected and entered in structured proforma. A total of 750 patients were included for the study and data analysis.

Results

Data was analyzed using SPSS 24, through Chi square test at level of significance of $p<0.05$.750 patients were included in the study among which the maximum number of patients were in the age group of (40-49) years,59.06% followed by 31.2% in (30-39) years then 8.7% in >50 years and least in (20-29) years, 1.06%. On transvaginal ultrasound maximum, number of patients were having endometrial thickness between (5-10) mm,

46.6% followed by between (11-15) mm in 39.7% then between (16-20) mm in 8.2%, <5mm in 3.3% and least in >20mm in 2.13%.

Table 1: distribution of the patients according to age and endometrial thickness presenting with AUB

Age (in years)			Endometrial thickness		
Age	No. of patients	% (in total)	Endometrial thickness	No. of patients	% (in total)
20-29	08	1.06 %	<5mm	24	3.3 %
30-39	234	31.2 %	(5-10) mm	350	46.6 %
40-49	443	59.06 %	(11-15) mm	298	39.7 %
>50	65	8.7%	(16-20) mm	62	8.2 %
			>20mm	16	2.13 %

On histopathological reports most dominant pattern was proliferative phase (37.2%) followed by secretory phase (26.8%), disordered proliferative (9.86) %, hyperplasia without atypia (7.73%), atrophic endometrium (5.76%), hyperplasia with atypia (3.06%), adenocarcinoma (1.46%) while endometritis was in 6.53% and retained product of conceptus was found in 1.6% patients.

Table2: showing number of cases as per Histological subtypes (as per histopathology)

Histopathological Subtype	No. of Case	Percentage
Secretory phase	201	26.8%
Proliferative phase	279	37.2%
Disordered proliferative	74	9.86%
Endometritis	49	6.53%
Retained product of concepts	12	1.6%
Hyperplasia without atypia	58	7.73%
Hyperplasia with atypia	23	3.06%
Adenocarcinoma	11	1.46%
Atrophic endometrium	43	5.76%
Total	750	100%

On associating the findings of histopathology with the patients age, in the dominant age group of (40-49) years most dominant pattern was proliferative phase endometrium (39.95%) followed by secretory phase in 30.02%, disordered proliferative in 11.96%, hyperplasia without atypia in 7.9%, hyperplasia with atypia in 2.93% and least was adenocarcinoma in 1.8%.

In the females of (30-39) years similar results were there showing maximum patients had proliferative phase endometrium-41.88%, followed by secretory phase endometrium in 29.05%, then endometritis in 8.54% patients, disordered proliferative in 8.1%, few cases presented with hyperplasia without atypia (5.9%) and hyperplasia with atypia (2.13%).

In the extremes of age group, in (20-29) years most common was proliferative phase endometrium (37.5%) and endometritis (37.5%) while in ≥ 50 years patient most dominant pattern was atrophic endometrium in 66.15% patients, 12.3% patients presented with hyperplasia without atypia, 10.7% with endometritis, hyperplasia with atypia was present in 6.15%, Adenocarcinoma was there in 4.16% patients.

These results were statistically significant with p value <0.05except for findings of endometritis and retained product of concept us for which p value was >0.05

Table 3: Association between histopathology and age wise distribution

Histopathological subtype	Age (20-29) years	(30-39) years	(40-49) years	≥ 50 years	P value
Secretory phase	------	67	134	----	<0.05
Proliferative phase	3	98	178	-----	<0.05
Disordered proliferative	1	19	54	-----	<0.05

endometritis	3	20	19	07	>0.05
Retained product of conceptus	1	11	-----	------	>0.05
Hyperplasia without atypia	------	14	36	08	<0.05
Hyperplasia with atypia	------	5(2.13%)	14(2.93%)	04(6.15%)	<0.05
Adenocarcinoma	-------	-----	8(1.8%)	03(4.61%)	<0.05
Atrophic endometrium	-----	-------	-----	43(66.15%)	<0.05
Total	8	234	443	65	

In our study 24 patients with endometrial thickness <5mm, maximum had proliferative phase endometrium (10 cases) and atrophic endometrium (10 cases) and4cases had secretory phase endometrium. Among 350 patients with endometrial thickness of (5-10) mm predominant histopathology was secretory phase endometrium in 143 patients, 121 patients in proliferative phase endometrium, 37 patients in disordered proliferative phase, 33 showed atrophic endometrium, 10 had retained product of conception and 06 had endometritis. In 298 patients of (11-15) mm endometrial thickness maximum was proliferative phase endometrium in 148 patients, secretory phase in 54 patients, endometritis in 32 patients and 31 in disordered proliferative, 21 patients had hyperplasia without atypia in 08 patients had hyperplasia with atypia and 02 patients had adenocarcinoma. 8.2% patients (62) had endometrial thickness between (16-20) mm from which 33 had hyperplasia without atypia, 11 had endometritis, 09 had hyperplasia with atypia and 03 had adenocarcinoma. In 16 patients with extreme of endometrial thickness >20mm, 06 had hyperplasia with atypia and 06 had adenocarcinoma, 04 had hyperplasia without atypia.

Secretory phase endometrium was predominant finding in the (5-10)mm endometrial thickness group while proliferative phase endometrium was dominant in (11-15)mm endometrial thickness group , Disordered proliferative endometrium was maximum in (5-10)mm group , endometritis was maximum in (16-20)mm group while retained product of conceptus in the (5-10)mm group, hyperplasia without atypia was dominant in (16-20)mm group while hyperplasia with atypia and adenocarcinoma was dominant in >20mm group. Atrophic endometrium was most dominant in <5mm group.

Table 4: Comparison of USG TVS finding (endometrial thickness) with Histopathological findings (HPE)

ET (in mm) / HPE	<5 mm	(5-10)	11-15	16-20	>20	Total	P value
Secretory	04	143	54	-	-	201	<0.05
Proliferative	10	121	148	-	-	279	<0.05
Disordered proliferative	-	37	31	06	-	74	<0.05
Endometritis	-	06	32	11	-	49	>0.05
RPOC	-	10	2	-	-	12	>0.05
Hyperplasia without atypia	-	-	21	33	04	58	<0.05

Hyperplasia with atypia	-	-	08	09	06	23	<0.05
Adenocarcinoma	-	-	02	03	06	11	<0.05
Atrophic endometrium	10	33	-	-	-	43	<0.05
Total	24	350	298	62	16	750	
Percentage	3.3%	46.6%	39.77%	8.2%	2.13%	100%	

Discussion

Any deviation from the normal characteristics of the menstrual cycle is described as abnormal uterine bleeding. It can be due to organic and non-organic causes. In adolescent and perimenopausal females, reason can be anovulation. After investigating the patient to rule out endocrinal causes Coagulation disordersnext is the Tran's abdominal pelvic ultrasound or transvaginal ultrasound. Histopathological examination remains the last line of investigation [5,6]

In this study maximum patients with abnormal uterine bleeding were of (40-49) years,59.06% similar to Raj Gopal I et al, Parmar J et al, Yusuf et al and Muzaffar et al [7,8]while in study of Sharma K et al [9], Singh s et al [10] peak incidence was among the age group of (31-40) years.

Endometrial thickness which was measured on ultrasound, in this article most common endo metrical thickness was of (5-10) mm, 46.6% followed by in (11-15) mm range in39.7% patients in resemblance to Wankhede A et al [11] while Shrestha et al [12] and Sur D and Chakravorty R et al [13] had maximum cases in (11-15) mm range followed by (5-10) mm range.

In our study maximum incidence was of proliferative pattern (37.2%) which is similar to the study by Singh s et al[10]and next was the secretory pattern (26.8%) comparable to Rajagopal et al [14] research work.

Endometrial hyperplasia being the precursor of carcinoma is of utmost importance to diagnose by pathologist. In our study incidence of endometrial hyperplasia without atypia was 7.73% and that of endometrial hyperplasia with atypia was 3.06% and maximum pattern of endometrial hyperplasia was seen in >50 years in accordance to Sharma K et al [9]. Deprivation of Estrogen in post-menopausal females leads to atrophy of endometrium atrophic endometrium is associated with rupture of dilated blood vessels beneath the overlying thinned out endometrium causing abnormal uterine bleeding. In this study atrophic endometrium was in 66.6% females of >50 years resembling to Prabha G et al [15] research.

In this research incidence of endometrial carcinoma was 1.46% which was maximum in patients of >50 years, 4.61% similar to research of VI Jayshree M et al and by Sajeetha et al[17].

Disorders of endometrial proliferation has disordered phase proliferative endometrium on one corner and carcinomatous endometrium on other corner with hyperplastic state lying at middle of spectrum[18]i.e. disordered proliferative endometrium presents as endometrium which is hyperplastic but without increase in the volume of endometrium.

In our study significant number of cases of disordered proliferative was present in perimenopausal age similar to study of Bashir H et al. [19] and Vaidya et al. [20] while higher incidence was found in study by Saraswathi D et al. [21].

In our study incidence of endometritis was low and maximum cases belonged to reproductive age and

presented with amenorrhea which is similar to the study by S. Gupta et al [22] and Eleva Asan RPT et al [23].

The incidence of endometritis was low, 6.5% because it was diagnosed by H & E staining which has low sensitivity and specificity not by immunohistochemistry which is gold standard for diagnosis of chronic endometritis

In our study in the range of <5 mm thickness most of the patients had proliferative phase pattern resembling research of Shrestha et al [12] and Sur D and Chakravorty R [13] and atrophic endometrium which is similar to study by Sujana G. et al [11] and Bishnu Prasad Das et al. None of the patients had hyperplasia or carcinoma in this range.

About 46.6% of the patients were in the range of (5-10)mm endometrial thickness in which maximum incidence was of secretory pattern alike study of Shrestha et al [12] and Sur D and Chakravorty R [13] and Pillai SS et al [24] followed by proliferative pattern which is similar to study by Sur D and Chakravorty R [13], Pillai SS et al [24] and Bishnu Prasad Das et al [25] whereas lower incidence was found in study by Shrestha et al [12] followed by disordered proliferative pattern resembling to Pillai SS et al [24]. No cases of hyperplasia and adenocarcinoma in this thickness range of endometrium were seen.

As the thickness of endometrium increases incidence of hyperplasia increases, in the (11-15) mm thickness group hyperplasia was reported in around 7.04% (without atypia) and 2.68% (with atypia) while in study by Sur D and Chakravorty R [13] it was 4.26% and in study by Pillai SS et al [24] it was 3.4%, incidence of carcinoma was <1% in our study resembling results of Shrestha et al [12].

Endometrial thickness range (16-20) mm and >20 mm, higher incidence was of hyperplasia and adenocarcinoma which is in accordance with the fact that increasing endometrium thickness is associated with increased hyperplasia and carcinoma risk.

In a study done by Getpook C etal. [26] said that thickness of endometrium of about 8mm or thinner, usually have low probability of malignant cause in females of perimenopausal age presenting with abnormal form of uterine bleeding while in postmenopausal female endometrial thickness of ≤ 4mm is usually considered to be normal but if the endometrial thickness is >4mm, there are increased chances of having hyperplasia and carcinoma.

Till now the topic of upper limit of normal endometrial thickness is controversial but most of the studies have said that endometrial thickness of 8mm is the considered as abnormal cut off value which needs further investigations. [27]

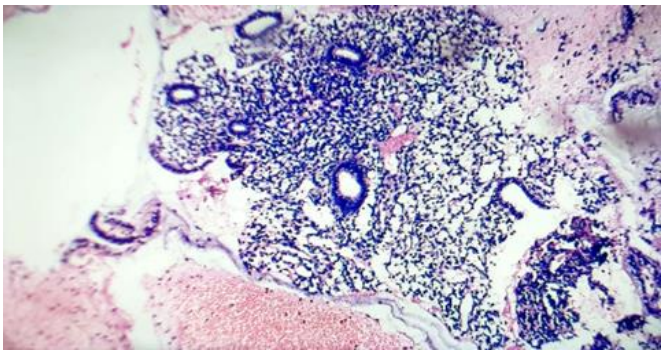

Figure 1: Disordered proliferative phase endometrium

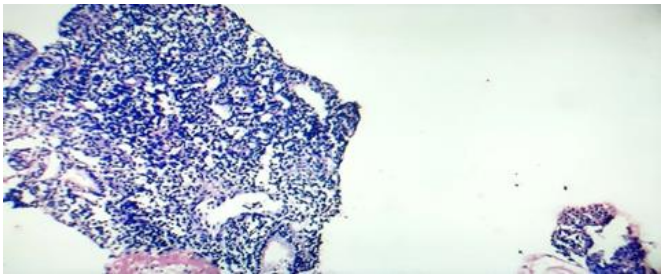

Figure 2: Endometrium showing Hyperplasia with atypia

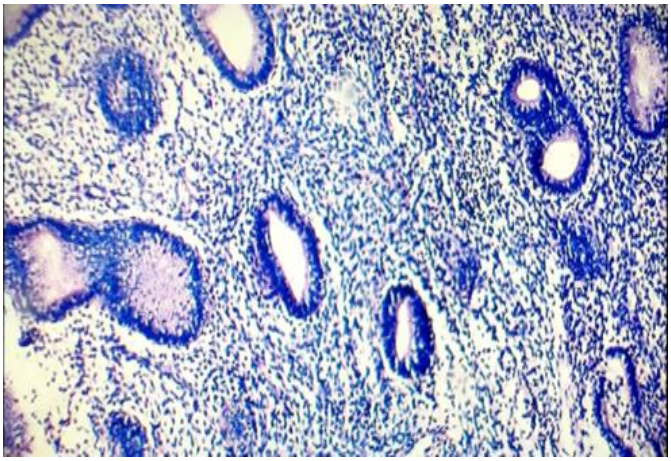

Figure 3: Endometrium showing hyperplasia without atypia

Conclusion

Abnormal uterine bleeding has variable incidence and pattern which varies with the age of female and affects the quality of life. Trans abdominal or transvaginal ultrasound is considered as the first line investigation for AUB due to its non-invasive nature and easy availability, it not only detects the endometrial thickness but rules out other pelvic pathologies also.

Histopathological assessment is considered as gold standard as it helps to rule out pre malignant lesions and for planning the line of treatment for individual. There should be low threshold for the indication for endometrial biopsy in late reproductive and perimenopausal age as incidence of premalignant lesion is more in this age group. Larger study is needed for optimum cut off value of endometrial thickness for endometrial biopsy.

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