A STUDY OF HISTOLOGICAL PATTERNS OF ENDOMETRIUM IN ABNORMAL UTERINE BLEEDING

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ABSTRACT

BACKGROUND

Abnormal uterine bleeding (AUB) is defined as a pattern of bleeding that does not correspond with the duration, amount and frequency of the flow of a normal menstrual cycle. It is one of the most common problems among patients presenting to Gynaecologists. There are a variety of causes leading to AUB, ranging from hormonal imbalance in young women in the reproductive age group to hyperplasia and malignancies in perimenopausal and postmenopausal patients. Analysis of endometrial biopsies by histopathology provides insight into cause of such bleeding and is important for diagnosis as a relatively less invasive procedure.

Aims and Objectives- This study aims at histopathological analysis and at studying various patterns encountered in endometrial biopsies done for abnormal uterine bleeding in patients.

MATERIALS AND METHODS

This study includes all patients who underwent endometrial biopsy for abnormal bleeding (other than for evaluation for infertility) from September 2016 to September 2017 after satisfying the specific inclusion and exclusion criteria. The biopsy specimens were obtained by Dilatation and Curettage or by biopsy and sent for histopathological examination.

RESULTS

A total of 71 biopsy specimens were selected of which 43 (60.5%) patients were premenopausal, 17 (23.9%) were perimenopausal and 11 (15.4%) were postmenopausal. Menorrhagia was the most common presenting complaint in 31 (43.6%) patients with AUB. Most common findings on histopathological examination were as follows: Secretory endometrium in 22 (30.9%), Proliferative endometrium in 14 (19.7%), Disordered Proliferative Endometrium in 11 (15.4%) patients followed by other patterns. Endometrial carcinoma was seen in 1 (1.2%) patient.

CONCLUSION

Study of endometrial histopathology in abnormal uterine bleeding is helpful and important to diagnose various disorders including hyperplasia and carcinoma of endometrium.

KEYWORDS

Abnormal Uterine Bleeding, Postmenopausal Bleeding, Endometrial Hyperplasia, Secretory Phase Endometrium, Proliferative Phase Endometrium, Endometrial Carcinoma.

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BACKGROUND

Abnormal Uterine Bleeding (AUB) is an important symptom of both benign and serious gynaecological disease.^[1] AUB in reproductive age women is defined as bleeding at abnormal or unexpected times or by excessive flow at the time of an expected menses. The aetiology of abnormal genital bleeding encompasses a wide range of disorders that can be secondary to anatomic changes of female genital tract, infection, endocrinologic disorders, malignancies, systemic illness.^[2]

The most probable aetiology of abnormal uterine bleeding is related to patient's reproductive age, whether the patient is premenopausal, perimenopausal or postmenopausal.^[3]

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Excessive menstrual blood loss affects 10–30% of menstruating women and in the order of 70% of all gynaecological consultations in the Perimenopause and Postmenopause. Perimenopause or menopausal transition is the phase, preceding the onset of menopause, at around 40 years of age, when the regular menstrual cycle of a woman changes from normal ovulatory cycles to a pattern of irregular cycles.^[4] It includes a period of about 4–5 years before menopause, sometimes even several months, characterised by varying degrees of somatic and psychological changes that reflect the change in the ovarian cycle.^[5] In premenopausal women, with normal findings on physical examination, the most likely diagnosis is DUB secondary to anovulation and in postmenopausal females, uterine pathology, especially endometrial carcinoma is a common cause of DUB.^[3] Abnormal perimenopausal or postmenopausal bleeding is associated with endometrial carcinoma in approximately 10% of cases.^[6,7] Endometrial biopsy by Dilatation and Curettage is considered the gold standard in AUB. The present study is designed to study the histopathological results of the endometrial biopsy in women with abnormal uterine bleeding.

Aims and Objectives

This study aims at histopathological analysis and studying various patterns encountered in endometrial biopsies done for patients presenting with abnormal uterine bleeding.

MATERIALS AND METHODS

This is a retrospective descriptive study, carried out in the Department of Pathology, Adesh Medical College & Hospital, Shahabad (M). The period of study was from September 2016 to September 2017 and the study included endometrial tissue obtained by Dilatation and curettage or biopsy done on patients with abnormal uterine bleeding.

A structured proforma was used to collect the medical history, examination findings of the patients, results of routine laboratory investigations and ultrasonography findings wherever available. Endometrial biopsy was done irrespective of endometrial thickness. Patients were categorised into reproductive (<40 yrs.) age groups, perimenopausal group (41-50 yrs.) and postmenopausal (>50 yrs.). The endometrial tissue obtained was collected in 10% formal saline and sent for histopathological examination. Routine histopathological processing was done followed by embedding tissue in paraffin and 3-4 μ thick sections were prepared. Sections were stained with Haematoxylin and Eosin (H&E) stain.

RESULTS

There were total of 71 biopsies from patients with abnormal uterine bleeding. Out of these, 43 (60.5%) were premenopausal patients (<40 yrs.), 17 (23.9%) were perimenopausal and 11 (15.4%) were postmenopausal patients. The age of patients ranged from 21 to 70 years, and majority (27, 38%) of them were in 31-40 years age group (mean age of 39.6 yrs.).

Age Group (years)	Number of Patients	Percentage (%)
21-30	16	22.5
31-40	27	38.0
41-50	17	23.9
51-60	08	11.2
61-70	03	4.2
Total	71	100

Table 1. Age Distribution of all Patients with Abnormal Uterine Bleeding

Pattern of Bleeding	No. of Patients	(%)
Menometrorrhagia	17	23.9
Menorrhagia	31	43.6
Bleeding per vaginum	07	9.8
Postmenopausal bleeding	10	14
Metrorrhagia	00	00
Discharge and Bleeding per vaginum	02	2.8
Polymenorrhoea	04	5.6
Total	71	100%

Table 2. Distribution of Patients According to Bleeding Pattern

Table 2 shows distribution of patients according to the type of complaints at time of presentation to the Gynaecology

OPD. Among all patients, menorrhagia was the most common bleeding pattern in our study. It was seen in 31 (43.6%) patients followed by menometrorrhagia in 17 (23.9%) patients. Other complaints recorded were bleeding per vaginum, polymenorrhoea, discharge with bleeding per vaginum. Among premenopausal patients, the commonest complaint was of menorrhagia reported in 28 out of 43 (65.1%), while menometrorrhagia was the most common bleeding pattern noted in perimenopausal age group, in 8 out of 17 (47%) patients. Postmenopausal bleeding was the next common pattern seen in 10 (14%) patients.

Histopathological Diagnosis	No. of Patients	(%)
Proliferative phase	14	19.7
Secretory phase	22	30.9
Simple hyperplasia with atypia	01	1.4
Complex hyperplasia with atypia	02	2.8
Atrophic endometrium	01	1.4
Disordered proliferative endometrium	11	15.4
Benign endometrial polyp	01	1.4
Extensive breakdown, dating not possible	03	4.2
Chronic Endometritis	01	1.4
Endometrial carcinoma	01	1.4
Progesterone effect endometrium	04	5.6
Decidua only, no chorionic villi	02	2.8
Products of Conception	03	4.2
Inadequate	05	07
Total	71	100

Table 3. Distribution of Various Histopathological Diagnosis of Endometrium.

Of all the 71 patients who underwent histopathological examination of endometrial tissue, the most common finding was secretory phase, seen in 22 (30.9%) patients, followed by proliferative phase in 14 (19.7%) patients. Five (7%) patients' biopsies were designated as inadequate for opinion. Disordered proliferative endometrium was seen in 11 (15.4%) patients, 01 (1.4%) showed simple hyperplasia with atypia, 02 (2.8%) were complex hyperplasia with atypia, Hormone effect endometrium was seen in 04 (5.6%) and Products of conception were present in 03 (4.2%). However, only decidua was present in 02 (2.8%), but no chorionic villi were present. Endometrial tissue undergoing extensive breakdown was seen in 03 (4.2%) therefore, no opinion was possible in these cases. Benign endometrial polyp, Atrophic endometrium and chronic endometritis were seen in 01 (1.4%) each.

Histo-pathological Diagnosis	Age Group (Years)					Total
	21-30 (%)	31-40 (%)	41-50 (%)	51-60 (%)	61-70 (%)	
Proliferative phase	-	5(7.0)	7(41.1)	2(25)	-	14
Secretory phase	10 (66.6)	10 (35.7)	2 (11.7)	-	-	22
Simple hyperplasia with atypia	-	1(3.5)	-	-	-	01
Complex hyperplasia	-	1 (3.5)	-	1 (12.5)	-	02

with atypia						
Atrophic endometrium	-	1(3.5)	-	-	-	01
Disordered proliferative endometrium	1 (1.4)	5 (7.0)	4 (23.5)	1 (12.5)	-	11
Benign endometrial polyp	-	-	-	1 (12.5)	-	01
Extensive breakdown, dating not possible	-	2 (7.1)	1 (5.2)	-	-	03
Chronic Endometritis	-	-	-	-	1 (33.3)	01
Endometrial carcinoma	-	-	-	-	1 (33.3)	01
Progesterone effect endometrium	1 (1.4)	1 (3.5)	2 (10.5)	-	-	04
Decidua only, no chorionic villi	-	1 (3.5)	1 (5.2)	-	-	02
Products of Conception	3 (18.5)	-	-	-	-	03
Inadequate	1 (1.4)	-	-	3 (37.5)	1 (33.3)	05
Total	16	27	17	8	3	71
Table 4. Age wise Distribution of Histological Pattern seen in Endometrium						

In different histological patterns witnessed when considering age wise distribution, as shown in Table 4, maximum number of patients (7, 50%) with proliferative endometrium were in 41-50 years, whereas secretory endometrium was present in 10 (45.4%) patients each in 21-30 years and 31-40 years. Disordered proliferation was seen in equal distribution in 31-40 years and 41-50 years with 5 (45.4%) each. Chronic endometritis and endometrial carcinoma were seen in 61-70 years. Similarly, maximum number of inadequate biopsies were reported in same group in patients where scanty endometrial tissue was obtained and curettings mostly contained haemorrhage, fibrinous exudates and inflammatory cells as in pyometra.

DISCUSSION

Abnormal uterine bleeding can be caused by a wide variety of disorders. The bleeding could be a sign of an underlying localised condition including benign tumours, malignancy and infection. Endometrial cancer and hyperplasia are likely causes of abnormal bleeding in perimenopausal and postmenopausal bleeding.^[8]

With regards to age of the study population, patients' age ranged from 21 to 70 years (mean age 39.6%). Maximum number of patients were seen in 31-40 years age group (27, 38%). Hoxhaj et al also reported maximum number of patients in same age group followed by 41-50 years age group.^[8] In perimenopausal age group, there were 17 (23.9%) patients. Whereas varying number of patients (33.5%, 36%, 38%, 37.9%) have been reported to present in perimenopausal age with abnormal uterine bleeding.^[9,10,11,12]

Pattern of Bleeding

With regards to the pattern of bleeding, the commonest complaint was menorrhagia, reported in 31 (43.6%) patients,

followed by menometrorrhagia in 17 (23.9%) of all patients. Hoxhaj et al, Kaur et al also reported menorrhagia as the commonest complaint among all patients (44%).^[8,10] Jetley et al also found menorrhagia as a leading complaint in 46.45%, followed by metrorrhagia in 20% of their study group patients.^[13] However, Moghal et al found metrorrhagia in majority of their patients (48%), followed by menorrhagia in 41% of all patients.^[14]

Among premenopausal patients, the commonest complaint was of menorrhagia reported in 28 out of 43 (65.1%). Menometrorrhagia was the most common bleeding pattern noted in perimenopausal age group, in 8 out of 17 (47%) patients. Among perimenopausal patients, main complaint was menorrhagia. In a study by Bhosle et al (2010), menorrhagia was seen in 53.3% patients, followed by 28.2%, 12.2% and 6.5% with polymenorrhagia, intermenstrual bleeding and metrorrhagia respectively.^[4] In another study by Cornitescu, maximum number of patients had menometrorrhagia (34%).^[5]

In our study, Postmenopausal bleeding was the cause of evaluation in 10 (14%) patients. Moghal et al reported 6.5% patients with postmenopausal bleeding.^[14] Kaur et al reported the same in 12% patients.^[10]

Histopathological Diagnosis

In our study, the most common finding was secretory phase, seen in 22 (30.9%) patients, as also seen by Hoxhaj et al, Jetley et al, Moghal et al and Vaidya et al in 29%, 32.4% and 25.3% and 29.6% patients respectively.^[8,13,14,15]

Proliferative phase in 14 (19.7%) patients was the second commonest histological pattern observed in this study. Jetley et al, Hoxhaj et al, Vaidya et al reported similar findings in 30.5%, 55%, 24% patients.^[13,8,15]

We found disordered proliferative endometrium in 11 (15.4%) patients. However, a varying range from 6.8% to 17% has been reported in different studies. (Jetley et al, Hoxhaj et al, Vaidya et al).^[13,8,15]

Hyperplasia of the endometrium was seen in 4.2% of all patients with AUB in our study. Of these, 1 (1.4%) patient each of simple and complex hyperplasia with atypia was seen in 31-40 years age group while another one patient (1.4%) with complex hyperplasia with atypia was in 6th decade of life. Cornitescu et al reported 1.6% patients with complex hyperplasia with atypia,^[5] incidence of hyperplasia was 10.92%. In a study by Vaidya et al, simple hyperplasia without atypia was in 1.2% and complex hyperplasia with atypia was in 0.5% of all patients with abnormal uterine bleeding.^[15] In perimenopausal age group, varying incidence of hyperplasia has been reported in 1.2% to 17.8% to 78.26% in different studies by Cornitescu, Bhosle, Bharti et al.^[5,4,16] However, in our study, none of these patients diagnosed with hyperplasia were in perimenopausal age group.

Benign endometrial polyp, Atrophic endometrium and chronic endometritis were seen in 01 (1.4%) each in 6th, 4th and 7th decade.

Among patients in 31-40 years age group, the most frequent finding was secretory endometrium in 35.7% patients, followed by disordered proliferative and proliferative phase endometrium in 7% patients each.

In perimenopausal age group (41-50 years), regarding histopathology of endometrium, in our study, proliferative endometrium (41.1) and disordered proliferative

endometrium (23.5%) along with secretory endometrium (11.7%) were main findings. In comparison, Bharti et al reported 4.3% patients with proliferative endometrium while Bhosle et al found 66.1% proliferative endometrium in perimenopausal patients.^[16, 4] Vaidya et al reported secretory endometrium, proliferative endometrium and disordered proliferative endometrium in 19.8%, 18.8% and 15% patients.^[15] We did not find any case of hyperplastic endometrium or endometrial carcinoma in perimenopausal patients.

In perimenopausal age, in the absence of any organic lesion, abnormal uterine bleeding occurs due to hormonal imbalance resulting from abnormalities of hypothalamus-pituitary-ovarian axis, leading to derangement of follicular maturation, ovulation, corpus luteum formation. Endometrial proliferation occurs in response to unopposed oestrogen, resulting in hyperplasia, polyp formation and is characterised by irregular painless excessive bleeding.^[13]

Among patients > 50 years of age, and in those with postmenopausal bleeding, proliferative endometrium was noted in 2 (25%), chronic endometritis in 1 (33.3%), Benign endometrial polyp in 1 (12.5%), endometrial adenocarcinoma in 1 (33.3%) patient. None of the patients were reported to have hyperplasia, atrophy, or hormone effect endometrium in this age group in our study. Bharti et al noted that 56% had simple hyperplasia without atypia, 8% had complex hyperplasia without atypia, 8% had complex hyperplasia with atypia, 16% had atrophic endometrium and 12% had carcinoma in postmenopausal patients.^[16] Identification of hyperplasia is important as it is considered to be a precursor of endometrial carcinoma. In simple hyperplasia, normal gland to stroma ratio is maintained whereas in complex hyperplasia, there is an increased ratio of the same. Simple and complex hyperplasia are further subdivided into typical and atypical types depending on presence or absence of cytological atypia.^[10]

In our study, endometrial carcinoma was found in a 63-year-old lady who presented with postmenopausal bleeding. It has been reported in 2.48% of all patients with AUB by Vaidya et al and 2.0% by Desai et al.^[15, 1] Endometrial carcinoma mostly occurs in elderly women (Sixth and seventh decade) with 90% of patients presenting with vaginal bleeding or discharge as a presenting complaint.^[1]

CONCLUSION

Endometrial histopathology in abnormal uterine bleeding is an important tool to diagnose various endometrial patterns ranging from proliferative, secretory, simple and complex hyperplasia with/without atypia, disordered proliferation and atrophic endometrium, including pathologic conditions of uterus including hyperplasia and carcinoma of endometrium, especially in perimenopausal and postmenopausal bleeding. It offers benefits like ease and safety of obtaining samples, along with reasonable reporting time and diagnostic accuracy.^[17]

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