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Original research article

Histomorphological analysis of endometrial biopsies in patients with abnormal uterine bleeding: An institutional experience

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Abstract

Background: Abnormal uterine bleeding (AUB) is the most common gynaecological complaint and can have varied presentation as well as different causes. Endometrial biopsy is a reliable and important tool to measure incidence of gynaecological conditions causing abnormal uterine bleeding.

Aims:

1. To assess endometrial morphology in endometrial biopsies of patients with the complaint of abnormal uterine bleeding.
2. To observe distribution of different endometrial pathology patterns in patients of various age groups presenting with abnormal uterine bleeding.

Materials and Methods: A retrospective descriptive study was conducted from January 2019 to December 2021. Patients with abnormal uterine bleeding who have taken consultation in OBG OPD, Subbaiah institute of Medical sciences, Shivamogga and in whom endometrial biopsies was collected were included in the study.

Results: A total of 365 cases were included in the study. The most common endometrial pathology pattern observed in abnormal uterine bleeding was endometrial hyperplasia without atypia seen in 39.45% of cases. Age group of patients ranged from 20yrs - 80yrs with the commonest clinical complaint being menorrhagia seen in 45.5% of cases.

Conclusion: Histopathological characterization of endometrial biopsies by light microscopy is considered as gold standard for diagnosis of the etiology of abnormal uterine bleeding, because of the relative ease and safety of obtaining the samples along with reasonable reporting time and diagnostic accuracy.

Keywords: Abnormal uterine bleeding, endometrial biopsy, endometrial hyperplasia

Introduction

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 [1]. Causes for abnormal uterine bleeding can be categorized into pregnancy related (intrauterine pregnancy, ectopic pregnancy, gestational trophoblastic diseases); systemic (coagulation disorder); organic (submucosal leiomyoma, adenomyosis, polyps); dysfunctional; neoplasia [2].

Between menarche and menopause, the reported prevalence of AUB in women in India is around 17.9% [3]. The spectrum of AUB affects up to one third of women of child bearing age and may reflect serious underlying pathology. Menorrhagia affects 10-30% of menstruating women at any one time, and may occur at some time during peri-menopausal age in up to 50% of women [4].

It is ideal to furnish clinical history with an endometrial sample and should include some description of the pattern and the amount of bleeding [5]. A history of anovulation, obesity, hypertension, diabetes and exogenous estrogen use should alert the pathologist that the patient is at an increased risk for hyperplasia and adenocarcinoma [6]. History of hormone use is an important information, as the endometrium is responsive to hormones. Clinical uses of steroid hormones (estrogen, progesterone or both) include oral contraceptive use, post-menopausal replacement therapy and therapy for endometriosis, hyperplasia, DUB, infertility and breast carcinoma [7].

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Aims

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Materials and Methods

This was an observational retrospective study conducted in the department of Pathology, Subbaiah institute of Medical Sciences, Shivamogga for 2 years from January 2019 to December 2021.

Inclusion criteria

Patients with abnormal uterine bleeding who have taken consultation in OBG OPD, SUIMS, Shivamogga and in whom endometrial biopsies were collected, during the period January 2019 to December 2021.

Exclusion criteria

1. Patients with pregnancy related causes and systemic diseases like coagulation disorders resulting in abnormal uterine bleeding.
2. Inadequate samples where no endometrial tissue was seen or when no conclusion was arrived at in spite of the presence of some endometrial tissue.
3. Hysterectomy specimens.

Endometrial tissue were fixed in 10% formalin and processed. Paraffin embedded blocks were sectioned at 3-4µm and stained with haematoxylin and eosin stain. Slides were collected from departmental archives and reviewed. Clinical data was analysed and descriptive statistics was used in the study.
Institutional ethical clearance has been obtained.

Results

A total of 365 endometrial biopsies of patients with abnormal uterine bleeding were included in the study. Age group of patients ranged from 20yrs - 80yrs. The most affected age group was 40-49 years (187 cases) and had menorrhagia as the commonest chief complaint (108 cases). (Table 1)

Table 1: Age wise distribution of AUB cases with associated chief complaints:

Age group (years)	Menometrorrhagia	Menorrhagia	Metrorrhagia	Polymenorrhagia	Polymenorrhoea	Postmenopausal bleeding	Total
20-29	1	9	3	5	2	0	20
30-39	2	49	8	19	22	0	100
40-49	10	108	14	18	15	22	187
50-59	0	0	0	0	0	50	50
>60	0	0	0	0	0	8	8
Total	13 (3.6%)	166 (45.5%)	25 (6.8%)	42 (11.5%)	39 (10.7%)	80 (21.9%)	

Chief complaint of menorrhagia affected maximum patients with 45.5% of cases, followed by post-menopausal bleeding seen in 21.9% of cases. (Table 1)

Table 2: Distribution of cases of AUB according to the endometrial pathology pattern:

Endometrial pathology pattern	Frequency	Percentage
Chronic endometritis	2	0.54
Atypical endometrial hyperplasia	33	9.04
Disordered proliferative endometrium	48	13.1
Endometrial adenocarcinoma	4	1.09
Endometrial hyperplasia without atypia	144	39.45
Endometrial polyp	4	1.09
Irregular shedding	41	11.23
Normal cyclical endometrium	70	19.17
Pill endometrium	19	5.2
Total	365	100

Histopathological evaluation of endometrial biopsies and curettage revealed various patterns ranging from physiological to pathological lesions of the endometrium. The most common pattern observed in the present study was endometrial hyperplasia without atypia (Fig. 3) affecting 39.45% of cases, followed by normal cyclical endometrium in 19.17%. Endometrial adenocarcinoma (Fig. 5) was seen in 1.09% of cases. Other conditions observed in the study were disordered proliferative endometrium (13.1%) (Fig. 2),iirregular shedding (11.2%) of cases, atypical endometrial hyperplasia (9.04%) (Fig. 4),

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pill endometrium (5.2%) (Fig. 1), endometrial polyp (1.1%) and chronic endometritis (0.5%). (Table 2)

Table 3: Distribution of AUB cases based on age and endometrial pathology patterns

Age group (years)	Chronic endometritis	Atypical endometrial hyperplasia	Disordered proliferative endometrium	Endometrial adenocarcinoma	Endometrial hyperplasia without atypia	Endometrial polyp	Irregular shedding	Normal cyclical endometrium	Pill endometrium	Total
20-29	0	1	04	0	2	0	1	11	1	20
30-39	1	11	18	0	27	2	10	24	7	100
40-49	1	12	22	0	91	0	26	26	9	187
50-59	0	7	4	1	24	0	3	9	2	50
>60	0	2	0	3	0	2	1	0	0	8

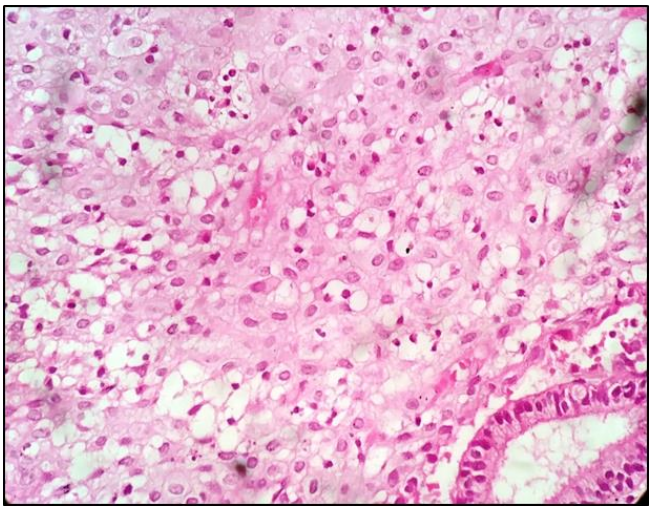

Fig. 1: PILL ENDOMETRIUM. H&E, 20x – Fragmented endometrial gland with decidualized stroma.

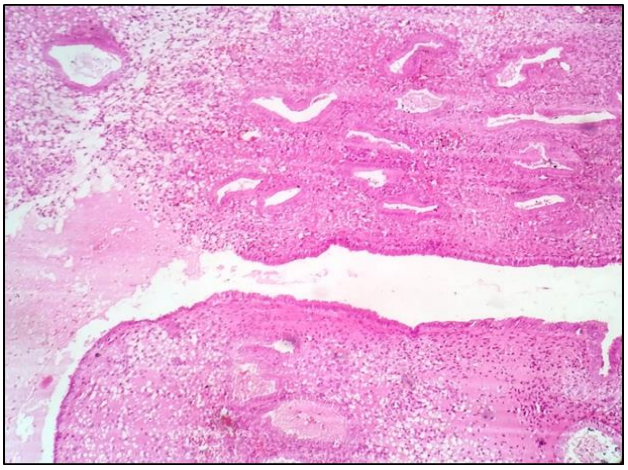

Fig. 2: DISORDERED PROLIFERATIVE ENDOMETRIUM. H&E, 4x – Proliferative glands and cystically dilated secretory glands.

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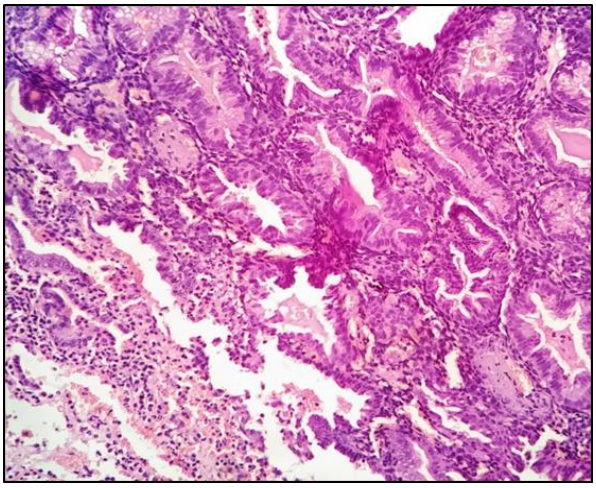

Fig. 3: ENDOMETRIAL HYPERPLASIA WITHOUT ATYPIA. H&E, 10x – Closely packed endometrial glands lined by columnar epithelium with no nuclear atypia.

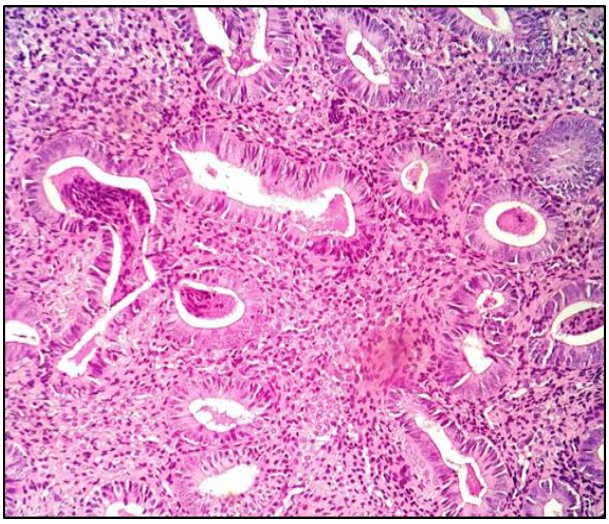

Fig. 4: ATYPICAL ENDOMETRIAL HYPERPLASIA. H&E, 10x – Compact arrangement of irregular endometrial glands lined by pseudostratified columnar epithelium showing nuclear atypia.

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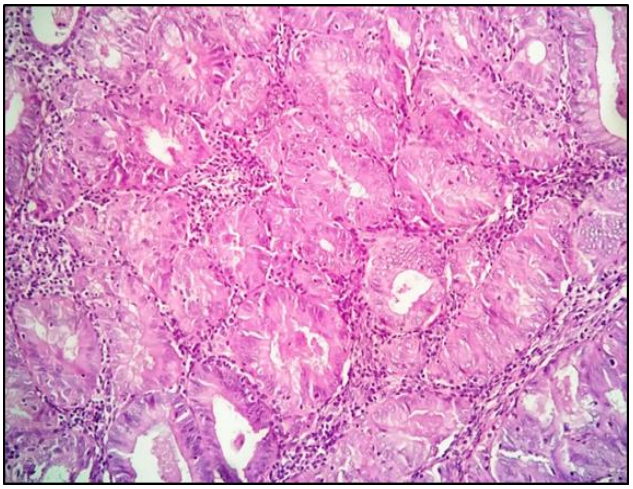

Fig. 5: ENDOMETRIAL ADENOCARCINOMA. H&E, 10x – Back to back arrangement of irregular glands with intervening scant stroma. Lining epithelium shows moderate degree of nuclear pleomorphism, eosinophilic moderate amount of cytoplasm and few atypical mitoses.

Discussion

AUB is the most common and perplexing problem in women of all age groups. The commonest age group presenting with excessive bleeding in our study was 40-49 years (51.6%). Similar results were obtained in a study by Nivedita singh *et al*. [8] with 49.2% of women between 40-49 years of age and Saraswati D *et al*. with 33.5% [9]. An increased number of cases in this age group could be due as menopause approaches, decreased number of ovarian follicles and their increased resistance to gonadotrophic stimulation, results in low level of oestrogen which cannot keep the normal endometrium growing [10].

Commonest bleeding pattern in our study was menorrhagia in 45.5%, followed by post-menopausal bleeding in 21.9%. In a study by puneet kaur *et al*. [11] observed results comprising metromenorrhgia 26%, menorrhagia 21%, post-menopausal bleeding 12%.

Normal cyclical endometrium which included proliferative and secretory phase was found in 70 cases (19.17%) and this was the most common histopathological finding in 20-29 yrs. In most other studies normal cyclical endometrium was the commonest histopathological finding in cases with abnormal uterine bleeding [8, 3, 12, 13, 14].

The most common histopathological diagnosis of abnormal uterine bleeding was found to be endometrial hyperplasia without atypia- 144 cases (39.45%). This was compared favourably with other studies like Nivedita singh *et al*. [8], Bhatta S *et al*. [3], Vijayashree *et al*. [12] as mentioned in Table 4.

Endometrial Hyperplasia is classified according to 2014 World Health Organization (WHO) into endometrial hyperplasia without atypia and atypical endometrial hyperplasia/EIN. Atypical endometrial hyperplasia/EIN is seen in 33 cases (9.04%). In a study by Vijayashree *et al*. [12] and Vani S *et al*. [15] slightly lower incidence was noted 0.38% and 1.29% respectively.

Disordered proliferative endometrium was noted in 48 cases (13.1%) and this was common in 40-49 years of age group patients. (11) Similar results were noted in a study by Nivedita *et al*. [8] and Vaidya *et al*. [14]. Disordered proliferative endometrium is common in the perimenopausal years because of anovulatory cycles.

Endometrial polyps have been reported in 2-23% patients presenting with abnormal uterine bleeding in both premenopausal and post-menopausal women [16]. We observed 4 cases (1.09%) of endometrial polyp similar results were noted in Vijayashree *et al*. [12], Vaidya *et al*. [14] and Baral R *et al*. [17].

In our study 41 cases of irregular shedding of endometrium was seen and majority are from 40-49yrs. In a study by Baral R *et al*. [17] irregular shedding was seen in 6% of cases with equal distribution of cases seen below and above 40 yrs of age. Irregular shedding has been attributed to the persistence of corpus luteum, leading to prolonged secretion of progesterone. A mixed pattern of proliferative and secretory phase is seen at least 5 days after the onset of bleeding [10].

Postmenopausal women with high concentrations of estrogen are at a higher risk for developing endometrioid carcinoma. Endometrial adenocarcinoma was seen in 4 cases (1.09%) and all 4 were endometroid subtype. Varied incidence of endometrial adenocarcinoma was seen in various other studies. [3, 12, 17, 10, 8]

The incidence of chronic endometritis (0.53%) was similar to 0.5% of Sharmila *et al*. study [13]. Chronic endometritis characterized by an infiltrate of lymphocytes and plasma cells usually follows pregnancy or abortion and use of intracontraceptive device (IUCD).

Use of hormonal pills also predispose to a condition known as pill endometrium, especially use of progestational agents. Pill pattern endometrium was seen in 5.2% of our cases which was similar to

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Vijayashree *et al.* [12] that had 4.35%. The details of any hormonal therapy should be provided by the clinician to the pathologist since hormones have varying effects on the endometrium and cause abnormal uterine bleeding.

Table 4: Endometrial patterns in various other studies

	Our study	**Nivedita singh *et al.* (8)**	**Bhatta S *et al.* (3)**	**Vijayashree *et al.* (12)**	**Sharmila parajuli *et al.* (13)**	**Vaidya S *et al.* (14)**
Normal cyclical pattern	70 (19.17%)	36.7%	42.6%	78.17%	69.63%	50.6%
Disordered proliferative endometrium	48 (13.1%)	16.1S	6.6%	-	2.95%	13.4%
Endometrial hyperplasia without atypia	144 (39.45%)	21.0%	18.0%	6.28%	3.82%	10.9%
Atypical endometrial hyperplasia	33 (9.04%)	-	-	0.38%	-	-
Pill endometrium	19 (5.2%)	-	-	4.35%	3.04%	-
Endometrial polyp	4 (1.09%)	8.1%	2.5%	1.66%	0.6%	1.2%
Inflammatory lesions	2 (0.54%)	2.4%	6.6%	0.24%	0.5%	3.9%
Endometrial adenocarcinoma	4 (1.09%)	2.4%	5.7%	3.5%	0.5%	2.5%

Conclusion

In the present study, commonly affected age group was 40-49yrs. Most of the females with AUB presented with the clinical complaint of menorrhagia. Different endometrial pathology patterns in AUB were observed in the present study with endometrial hyperplasia without atypia being the commonest finding. The incidence of endometrial carcinoma was high after 50years of age. This study provides valuable information regarding the endometrial morphology in abnormal uterine bleeding. When provided with adequate clinical information appropriate diagnosis can be put forth. Thus, a pathologist can give an interpretable and clinically useful report to the gynaecologist.

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