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Histopathological study of endometrium in Abnormal Uterine Bleeding (AUB)

Sonal Nayak[1], Preeti Jain[2], Arsala Mulla[3], Pradeep R[4]*

ABSTRACT

Introduction

Abnormal uterine bleeding (AUB) is the most common health issue seen in women of all age groups. AUB significantly affects the quality of life of women and results in anemia. Endometrial sampling could be effectively used as the first diagnostic step in AUB

Objective: The present study was done to determine the histopathological spectrum of endometrium in women presenting with abnormal uterine bleeding.

Material and and methods

This was a hospital-based prospective observational study conducted in the Department of Pathology from June 2023 to October 2024 with approval from the Institute Ethics Committee.

Results

Most of the cases were in the age group of 41 to 50 years, comprising 58.13%. The mean age was 43.6 years. About 1.88% cases were malignant while 11.87% cases being precursor premalignant lesions which need to be followed up as they might progress to malignancy. Malignant lesions were seen in the 51-60 years and 41-50 years age group. Premalignant lesions were majorly seen in the perimenopausal (41-50years) age group. Most common histopathological diagnosis was proliferative endometrium 40.63% and which was most commonly seen in the age group of 41-50 years. **Conclusion:** From this study we conclude that, majority of the patients presenting with AUB were of the perimenopausal age group. Precursor lesion that is endometrial hyperplasia was also seen in a significant population which should be followed up regularly as these lesions may progress to malignancy. Endometrial carcinomas were found mostly affecting the women of perimenopausal and postmenopausal age group.

Keywords: Abnormal uterine bleeding (AUB), Endometrial carcinoma, Histopathology, Endometrial lesions

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2*Corresponding author: Preeti Jain (Head of the Pathology Department and Senior Consultant), [2]preetiright@gmail.com, Sonal Nayak[1] (DNB Pathology Resident), [1]sonal201325@gmail.com,Arsala Mulla[3] (Junior Consultant, Department of Pathology), [3]arsalamulla@gmail.com

and Pradeep R[4] (DNB Pathology Resident), [4]Pradeeprp97@gmail.com all affiliated with Bharatratna Dr Babasaheb Ambedkar Municipal General Hospital, Kandivali (W), Mumbai.

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INTRODUCTION

Abnormal uterine bleeding (AUB) is the most common health issue seen in women of all age groups. AUB is defined as any bleeding pattern that differs in frequency, duration and amount from a pattern observed during normal menstrual cycles or menopause[1]. AUB is the major gynecological problem responsible for as many as one-third of all outpatient gynecological visits with a prevalence reported to be 3-30%, with higher prevalence clustering at the extreme of reproductive life - the the perimenopause[2]. AUB is caused due to several factors deranging homeostasis like hormonal imbalances, infections, structural lesions, and malignancy. Based on these possible underlying etiologies, PALM COEIN classification was devised by the International Federation of Gynecology and Obstetrics (FIGO) for the etiology of AUB. Evaluation of endometrial histopathology has the dual advantage of finding an accurate reason causing the AUB and to rule out endometrial or other cancers or precursor lesion like endometrial hyperplasia with atypia[3]. When planning hormone therapy, it is mandatory to rule out a precancerous neoplasia like suspicious hyperplasia or sub-clinical endometrial cancer[4]. Endometrial hyperplasia is the precursor lesion for endometrioid adenocarcinoma of the endometrium. The most important risk factor for the development of Endometrial hyperplasia is chronic exposure to unopposed estrogen[5]. Clinical management ranges from surveillance or progestin therapy to hysterectomy, depending on the risk of progression to or concomitant endometrioid carcinoma and also the patient's desire to preserve fertility[5,6]. Endometrial sampling could be effectively used as the first diagnostic step in AUB. It is a simple, cost-effective, and appropriate method that provides accurate diagnostic yield[7]. The present study was done to determine the histopathological spectrum of endometrium in women presenting with abnormal uterine bleeding.

Material and and methodology

This was a hospital-based prospective observational study conducted in the Department of Pathology, Bharatratna Dr Babasaheb Ambedkar Municipal General Hospital, Kandivali (West), Mumbai over a period of 17 months from June 2023 to October 2024 with approval from the Institute Ethics Committee. The study included 320 women of all age groups with a history of Abnormal uterine bleeding (AUB) evaluated in histopathology department. It included histopathology samples from patients with isolated endometrial cause of AUB in the form of endometrial biopsies, curettage and hysterectomy specimens. Women with AUB due to pregnancy complications, leiomyoma, hemostatic disorders, products of conception and autolyzed specimen or inadequate biopsies were excluded from the study. Endometrial tissue and hysterectomy specimens were received in 10% buffered formalin solution in containers appropriately labelled for name, age and type of specimen. Specimens were kept for overnight fixation and then processed. After paraffin embedding of the tissue, 3-4 µ thick sections were made and stained with Hematoxylin and Eosin stain. Microscopic evaluation was done. Detailed clinical history and relevant investigations as per the proforma were documented. The data was collected from women women who fulfilled the inclusion criteria. Women with AUB Women with AUB were included from June 2023 to October 2024 (17 months) in the study. Data was collected after taking the informed consent from the patient and recorded on the case record form designed for this study. The data was entered in Microsoft Excel 2016 version and presented in tabular and pie chart form. Data analysis was done with the help of SPSS version 26.0. Quantitative data like age presented with the help of Mean, Standard Deviation and Median. Categorical Categorical data like histopathological diagnosis etc. were presented with the help of percentage percentage tables and frequency frequency.

Results

In our 17 months study period (June 2023 to October 2024); 803 patient's

patients'histopathology samples were received from the department of obstetrics and gynecology for examination. 320 cases of AUB which fulfilled the inclusion criteria for this study were evaluated and rest other cases were excluded. Out of 320 specimens specimens, 234 hysterectomies, 29 dilatation and curettage specimens and 57 biopsies were received. Most of the cases were in the age group of 41 to 50 years, comprising 58.13%. The mean age was 43.6 years (Range 27-68 years). Majority of the patients (85.31%) presented within a year of the onset of the symptoms. About 91.56% were multiparous. Out of 320 specimens specimens, 1.88% specimens specimens were malignant while 11.87% specimens specimens being precursor premalignant lesion which need to be followed up as they might progress towards malignancy (Table 1).

Table 1: Distribution according to clinical parameter

Clinical parameter		Frequency	Percentage
Age group	21-30	3	0.94%
	31-40	102	31.88%
	41-50	186	58.13%
	51-60	25	7.81%
	>60 Years	4	1.25%
Duration of complaint	6 months-1 year	273	85.31%
	1-2 years	26	8.12%
	>2 years	21	6.56%
Parity	Nulliparous	2	0.62%
	Primiparous	25	7.81%
	Multiparous	293	91.56%
Histological subtype	Benign	276	86.25%
	Precursor lesions	38	11.87%
	Malignant	6	1.88%

Malignant lesions were seen in the 51-60 years and 41-50 years age group. Premalignant lesions were majorly seen in the perimenopausal age group (Table 2).

Table 2: Distribution of cases according to age and histopathological subtype

Age in years	Histopathological Histopathological Diagnosis		
	Benign	Pre-malignant Lesion	Malignant
21-30	1(0.31%)	_-_	_-_
31-40	92(28.75%)	10(3.12%)	_-_
41-50	1(50%)	24(7.5%)	2(0.62%)
51-60	19(5.93%)	2(0.62%)	4(1.25%)
61-70	2(0.62%)	2(0.62%)	_-_

Most common histopathological diagnosis was proliferative endometrium 40.63% (Fig 1) and which was most commonly seen in the age group 41-50 years (Fig 2).

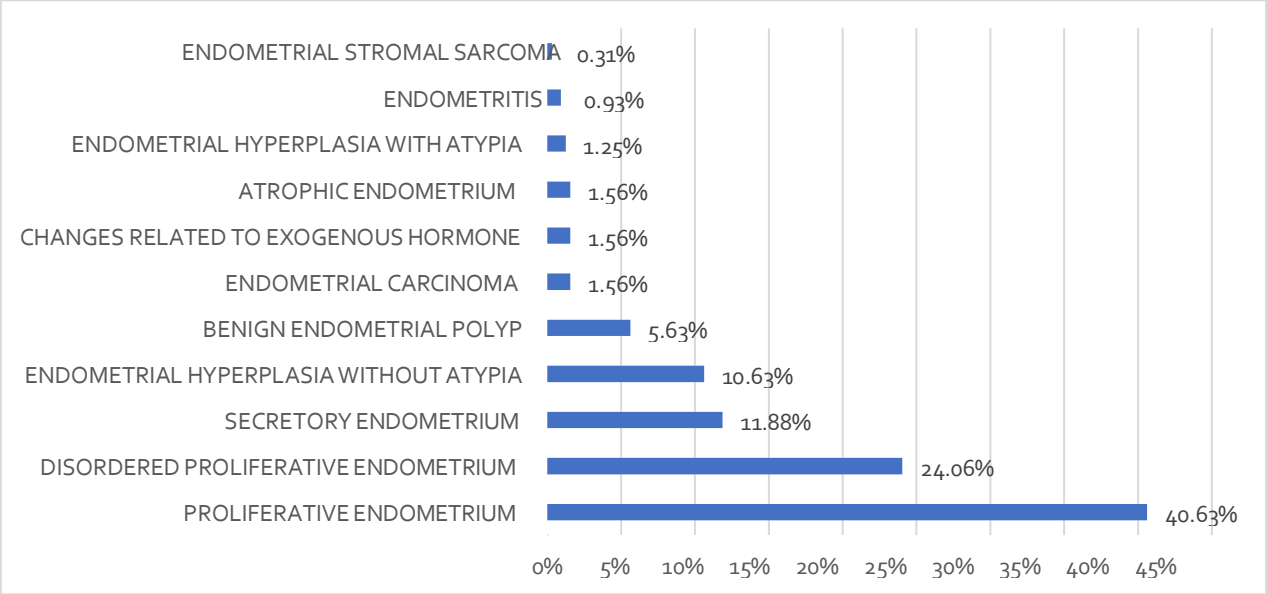
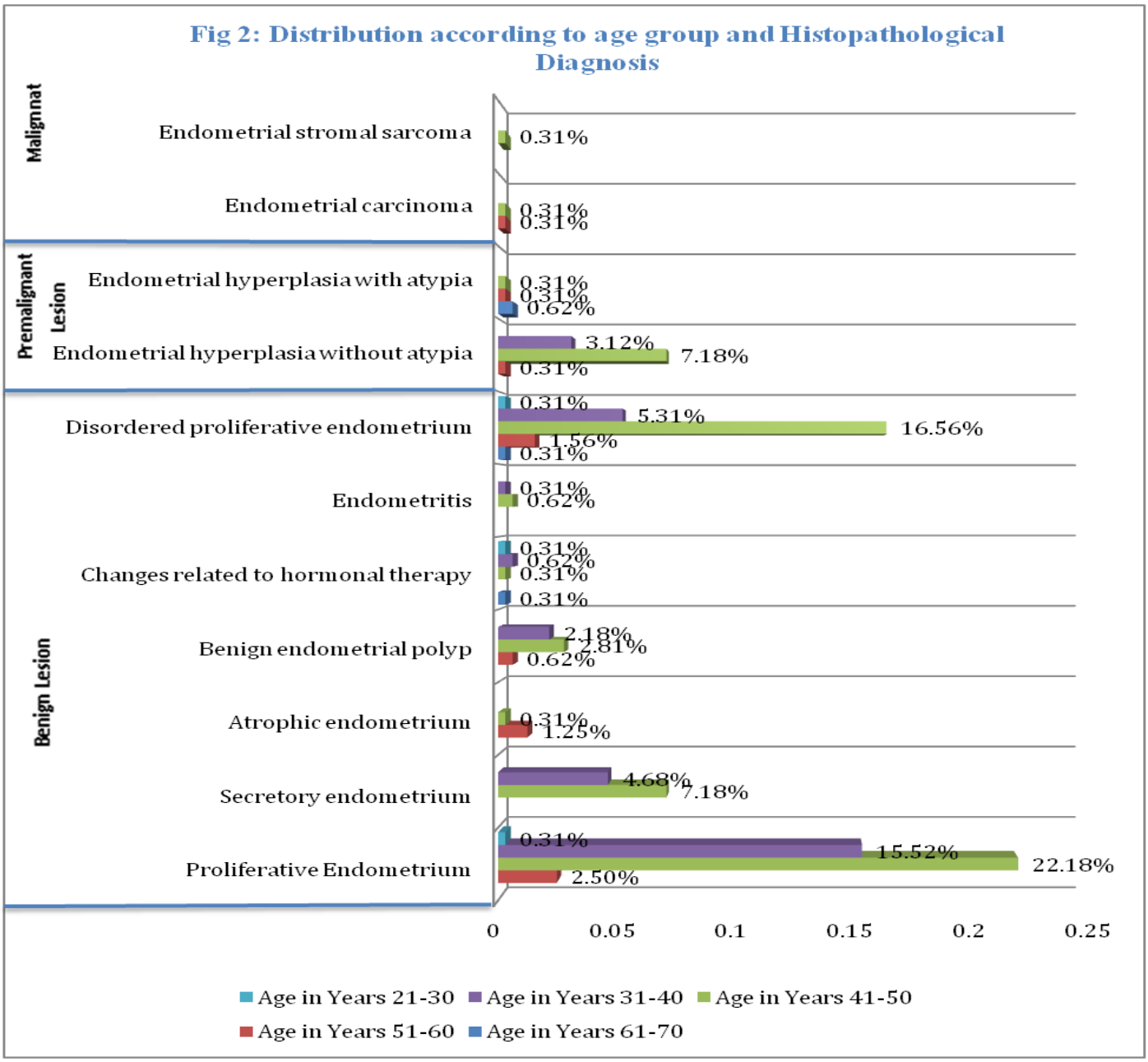


Fig 1: Distribution of cases according to histopathological diagnosis

DISCUSSION

Abnormal uterine bleeding (AUB) is the main reason women are referred to gynecologists and accounts for two third of all hysterectomies. AUB significantly affects the quality of life of women and results in anemia. It is due to various physiological, pathological or pharmacological causes and its evaluation requires adequate history, physical examination and laboratory investigations including imaging and endometrial sampling[2]. A plethora of causes and conditions lead to AUB in different age groups most of which can be diagnosed by studying the endometrium. In our study, the histopathological pattern of endometrium was determined by considering by considering the age of the patient, the date of onset of the last menstrual period, the length of menstrual cycle and iatrogenic use of hormones. The most common histopathological pattern of endometrium observed was normal cyclical endometrium. Normal cyclical endometrium including proliferative phase (40.63%) and secretory phase (11.88%) was seen in almost half of the (52.5%) total cases. Similar findings were reported by Prathipaa R et al[8], Anitha S et al[9] and and Behera B et al[10]. Majority of the lesions were seen in the perimenopausal age group (41-50 years) wherein benign lesions were observed in 50% cases, premalignant lesions in 7.5% cases and malignant lesions in 0.62% cases. The same age group was found to be affected the most in the study by Bhat R et al[11]. The reason for increased occurrence of AUB in this age group (41–50 years) may be due to the fact that these patients were in their perimenopausal period. The women in this age group have a decline in estradiol levels and number of ovarian follicles resulting in anovulatory cycles. A significant number of cases in this study showed normal physiological physiological phases such as proliferative and secretory pattern. This finding was in concordance with the findings of Damle RP et al [12]. The bleeding in the proliferative phase (40.63%) may be due to anovulatory cycles and in the secretory phase due to ovulatory dysfunctional uterine bleeding. Endometrial study thus helps to differentiate ovulatory from

anovulatory AUB. Anovulatory AUB is is caused by a disturbed function of the hypothalamic-pituitary-ovarian axis most commonly seen as seen as polycystic ovary syndrome and in in perimenopausal years. During these stages of life, the cycles may be intermittently ovulatory and and anovulatory, leading to great irregularity of menstruation and variability in blood loss[13,14]. Although most causes of ovulatory dysfunction can be traced to endocrinopathies, the disorder may be iatrogenic caused by gonadal steroids or drugs that impact dopamine metabolism[15]. Disordered proliferative endometrium accounted for 24.06% of our patients patients with the highest incidence in 41-50 years age group. Disordered proliferative endometrium was seen commonly in the perimenopausal years because of anovulatory cycles[16].



Histopathologically as per the WHO 2014 classification of endometrial hyperplasia, is is classified into endometrial hyperplasia without atypia (benign EH) and atypical endometrial hyperplasia/endometrial intraepithelial neoplasia (EIN)[6]. Endometrial hyperplasia accounted to 11.87 % of all the cases which were most commonly seen in 41-50 years of age. In the study conducted by Albers JR et al[17] it is it is seen that endometrial endometrial hyperplasia was most commonly found in the perimenopausal age group. Unopposed estrogen stimulation in the perimenopausal age causes endometrial proliferation and hyperplasia. There is a risk of endometrial hyperplasia progressing to carcinoma, especially in obese women who have who have increased availability of peripheral estrogens which which aromatize aromatize androgens to estrogens in adipose tissue. Therein lies the importance of endometrial study in identifying endometrial hyperplasia with atypia, considered as as the precancerous condition for endometrial carcinoma[17]. Atrophic endometrial pattern was seen in 1.56% specimens specimens with more than half of them (80%) occurring after 51-60 years of age. Various studies on women of all age groups have shown an incidence of atrophic endometrium ranging from 2.2%-11.5% [13]. Although the exact cause of bleeding in atrophic endometrium was unknown, it was postulated to be due to anatomic vascular variations or local abnormal hemostatic mechanisms making the vessels vulnerable to injury[13]. Malignancy accounted for 6 out of 320 specimensspecimens (1.88%), which were seen in the age group of 41- 50 years and 51-60 years. Five specimens specimens were of endometrial carcinoma and one specimen specimen was of endometrial stromal sarcoma. Endometrial carcinoma is is commonly seen in the perimenopausal and post-menopausal age group[18,19]. Postmenopausal bleeding in women receiving hormone therapy for more than 12 months definitely needs endometrial study to rule out carcinoma. In our study endometrial changes related to exogenous/ endogenous hormone were seen in 1.56% of the total specimens specimens.

As hormones have varying effects on the endometrium,causing abnormal uterine bleeding, the details of any hormonal therapy should be provided by the clinician to the pathologist. The unpredictable blood blood spotting and bleeding is caused by continuous exposure of endometrium to relatively constant doses of progestogen with simultaneous low levels of estrogen. This results in a variety of endometrial histological picture showing a weak secretory to complete atrophic pattern[20] with varying degrees of pseudo-decidualization of stroma [12].

Conclusion

AUB was the most common complaint found among the women presenting to the Gynecology outpatient department. From this study, we conclude that AUB requires thorough and prompt histopathological evaluation as it can be a clinical manifestation of underlying fatal disease like endometrial carcinoma. From the present study, we found that AUB was most commonly prevalent in perimenopausal age group. The most common histopathological feature was the normal cyclical endometrium including proliferative and secretory phase endometrium. The most common histopathological feature was proliferative and secretory phase endometrium. Disordered proliferative endometrium was the other common finding. Precursor lesion such as endometrial hyperplasia was also seen in a significant population which should be followed up regularly as these lesions may progress to malignancy. Endometrial carcinomas mostly affected women of perimenopausal and postmenopausal age group. A histological assessment therefore remains the cornerstone in the current practice as it supportssupports the clinical diagnosis and align it to the accurate perspective, also also allowing standardization of treatment. Along with histopathological work up; relevant clinical history is also mandatory. Hence histopathological examination plays a critical role in early diagnosis of endometrial pathology and to provide appropriate gynecological management.

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