International Journal of Research in Medical Sciences
Shinde PT et al. Int J Res Med Sci. 2023 Apr;11(4):1170-1174
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20230856

Original Research Article

Study of histopathological pattern of endometrium in abnormal uterine bleeding in a tertiary care center

Pratibha T. Shinde[1], Dilip S. Sarate[1], Suwarna B. Patil[1], Bhupendra V. Patil[2], Swarada V. Kangate[1]*

[1]Department of Pathology, [2]Department of Obstetrics and Gynaecology, Government Medical College, Akola, Maharashtra, India

Received: 13 March 2023
Revised: 27 March 2023
Accepted: 28 March 2023

***Correspondence:**
Dr. Swarada V. Kangate,
E-mail: dr.ptshinde91@gmail.com

ABSTRACT

Background: It is estimated that 9-30% of women of reproductive age suffer from abnormal uterine bleeding. As most cases are associated with anovulatory menstrual cycles, adolescent and perimenopausal women are particularly vulnerable to this particular condition. The aim of this study was to evaluate the histopathological pattern of endometrial biopsy from patients presenting with abnormal uterine bleeding.
Methods: The retrospective study was conducted in the Department of Pathology in tertiary care centre from 1st January 2021 to 31 December 2022. All the patients presenting with abnormal uterine bleeding and who underwent endometrial biopsy were included in this study. Distribution of various histopathological patterns was observed in the different age groups.
Results: A total of 260 cases were included in the study. The commonest pattern in these patients was proliferative endometrium (31 %) and products of conception (31%), hyperplasia without atypia (13.7%). Other patterns identified were secretory endometrium, chronic endometritis, endometrial polyp, complete mole, partial mole, and Ca endometrium.
Conclusions: As observed from the study, there is an age specific association of endometrial bleeding, with highest incidence in 21-30 years of age group. Hence, dilatation and curettage are helpful for diagnosis, to assess therapeutic response and to know the pathological incidence of organic lesions in cases of abnormal uterine bleeding.

Keywords: Abnormal uterine bledding, Proliferative endometrium, Product of conception, Hyperplasia without atypia

INTRODUCTION

Abnormal uterine bleeding (AUB) is bleeding from the uterus that is longer than usual or that occurs at an irregular time. Bleeding may be heavier or lighter than usual and occur often or randomly. AUB can occur as spotting or bleeding between periods. Abnormal uterine bleeding (AUB) is a broad term which is defined as any type of bleeding which does not fall under the normal range for amount, frequency, duration or cyclicity.[1] In the Indian scenario, a reported one third of patients coming for gynaecological consultations complain of AUB with or without other concomitant complaints.[2]

AUB is said to occur due to any deviation from the normal menstrual cycle and is characterised by one of the following abnormal volume, onset, duration and must have been present on multiple occasions over a period of 6 months or more. Many classifications were initially devised for AUB which involved factors such as volume

distribution of flow, regularity, frequency etc.[3] It was however in 2011 that a standardised and widely accepted system of classification was approved for AUB cases. This was named as the Palm-Coein in collaboration with FIGO.

The system was based on the principle that AUB is actually a symptom of a wider physiological derangement that is due a number of homeostasis destabilizing factors such as hormonal imbalances, infections, lesions and/or malignancies.[4] The Palm-Coein system is a acronym for the various conditions that can cause AUB, and the term Palm was developed after combining the anatomical etiology such as polyps, adenomyosis, leiomyoma, malignancy/hyperplasia. While the term Coein was based on the non-structural etiology causing AUB such as coagulation defects, ovulatory dysfunction, endometrial causes, iatrogenic causes and not classified ones.[4]

FIGO classification of uterine bleeding

The 2011 publication, as well as other publications authored or co-authored by the FIGO Menstrual Disorders Working Group, also included the process of investigation – that is, from the identification that a patient actually has one or more symptoms of AUB (FIGO System 1) to the classification of her condition as categorized by FIGO System 2, the PALM-COEIN System.[1]

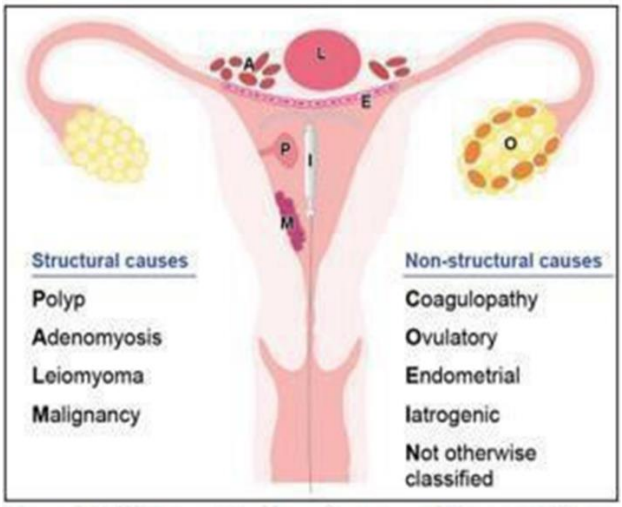

Figure 1: FIGO classification of causes of abnormal uterine bleeding palm-coein.
Source- Google image.

In the present scenario and the relatively higher load of patients with AUB, it becomes necessary to study Histopathological examination of endometrial biopsy as it is a major diagnostic tool in evaluation of abnormal uterine bleeding. The aim of the study was to analyze various histopathological conditions and histomorphological patterns of endometrium in various age group of patients presenting with AUB and their frequencies.

Category	Normal	Abnormal	☑
Frequency	Absent (no periods or bleeding) = amenorrhea		☐
	Frequent (<24 days)		☐
	Normal (24 to 38 days)		☐
	Infrequent (>38 days)		☐
Duration	Prolonged (>8 days)		☐
	Normal (up to 8 days)		☐
Regularity	Regular variation (shortest to longest ≤ 9 days)		☐
	Irregular (shortest to longest 10+ days)		☐
Flow volume	Heavy		☐
	Normal		☐
	Light		☐

Intermenstrual Bleeding (IMB) Bleeding between cyclically regular onset of menses	None		☐
	Random		☐
	Cyclic (Predictable)	Early Cycle	☐
		Mid Cycle	☐
		Late Cycle	☐

Unscheduled Bleeding on Hormone Medication (eg Birth Control Pills, Rings or Patches)	Not Applicable (not on hormone medication)	☐
	None (on hormone medication)	☐
	Present	☐

Figure 2: FIGO system 1; the system for definition and nomenclature of normal and AUB in the reproductive years.[4]

METHODS

This present prospective observational study including 260 cases was conducted in department of pathology and Gynaecology Government Medical College Akola, over the period of 2 years (January 2021 to December 2022). All the patients of all age groups coming to the Out patient Department (OPD) of Obstetrics and Gynaecology were included in the study, after taking informed consent. Patient not willing to give consent were excluded from study. Endometrial biopsy was taken sample received in histpathology section of department of pathology was processed. 3-5 microns thin sections were taken and H & E slides were studied to make diagnosis.

Sample size

For calculating sample size we consider most common histological finding in AUB patient is proliferative endometrium and found in 30% patients. (Dean AG, Sullivan KM, soe MM. Open Epi software) and also considering 95% confidence interval and 10% allowable error, sample size is calculated with Open Epi software. Minimum required sample size is 258

Source

Formalin fixed, paraffin-embedded tissue blocks, prepared from the endometrial curetting specimen received were retrieved. Routine H&E staining was done for every cases.

Sampling method

Purposeful or convenient sampling method used.

Materials required

Blocks which contain formalin fixed paraffin embedded endometrial curetting tissue obtainedfrom 260 cases, clinically diagnosed as AUB. Microtome and incubator for tissue sectioning and dewaxing. Hematoxylin and Eosin stain (H&E Stain)

Methodology

(Slide preparation) specimen of dilatation and curettage (D & C) and dilatation and evacuation (D & E) performed in Department of Obstetrics and Gynecology were received in Department of Pathology in 10 % formalin as a fixative. Tissue sections were prepared from paraffin block and stained with haematoxylin and eosin followed by microscopic examination. Special stains used wherever needed.

Procedure of H &E stain

Procedure of H &E stain were deparaffinize section through xylene changes (I, II & III); dehydrate through graded alcohols to water; stain with Harris hematoxylin solution for 4-5 minutes; dip in running tap water- 2-3 times; differentiate in 1% acid alcohol – 5-10 seconds; wash in running tap water; counter stain using eosin solution for 1 minute; dehydrate quickly through alcohols; blot to remove excessive stain; clear in xylene; mount the tissue section using coverslip and DPX.

RESULTS

In this study 260 patients with a clinical diagnosis of AUB were enrolled. The general profile of the patients is depicted in the Table 1.

Table 1: Distribution of AUB according to age (n=260).

Age of participants (in years)	AUB	Percentage
11 to 20	14	5.4
21 to 30	84	32.3
31 to 40	78	30.0
41 to 50	70	26.9
51 to 60	9	3.5
61 to 80	5	1. 9
Total	260	100.0

The most common age group is between 21-30 years of age. The mean age is 36.05 years±10.9(SD).

In the present study of total 260 patients were included, out of which the maximum number of patients 163 (62.7%) were having clinical features of heavy menstrual bleeding (HMB), followed by 50 (19.2%) cases of irregular menstruation (IM) and 47(18.1%) patients were having postmenopausal bleeding (PMB).

Table 2: Distribution of AUB cases according to clinical features.

Clinical features	Frequency	Percentage
HMB	163	62.7
IM	50	19.2
PMB	47	18.1
Total	260	100.0

Table 3: Endometrial pattern in patients presenting with AUB.

Diagnosis	Frequency	Percentage
Atypical hyperplasia	5	1.9
Ca endometrium	2	0.8
Chronic endometritis	1	0.4
Complete mole	2	0.8
Endometrial polyp	8	3.1
Hormonal imbalance	1	0.4
Hyperplasia without atypia	46	17.7
Partial mole	3	1.2
POC	83	31.9
Proliferative endometrium	83	31.9
Secretary endometrium	26	10.0
Total	260	100.0

Total 260 patients with AUB were included in this study. Proliferative pattern and products of conception (POC) was the most common endometrial pattern observed accounting for 83(31.9%) each followed by 46 (17.7%) patients of hyperplasia without atypia, 26(10%) patients of secretary endometrium, 8 (3.1%) patients of endometrial polyp, 5 (1.9%) patients with atypical hyperplasia. 3 patients (0.12%) of partial mole, 2 patients (0.8%) complete mole. 2 cases of (0.8%) Ca endometrium, 1(0.4%) case of chronic endometritis.

DISCUSSION

AUB is a gynecological disorder which demands exclusive diagnosis and intervention. The organic and functional causes has been derived and classified for AUB. The functional causes of AUB which got dysmorphed from DUB had been extensively researched and is still under research. The endometrial cause (AUB-E) is one prime factor among the 5 functional causes (COEIN) of AUB, which has been a diagnosis of exclusion.

In this discussion we compare the histopathological features of AUB. In the present study with the histopathological features suggesting the functional

causes of AUB in the reference studies. The histopathological parameters which we had undertaken to assess exclusively the HPE findings of AUB will also be discussed.

Products of conception (POC) microscopically shows chorionic villi lined by syncytiotrophoblasts and cytotrophoblasts, decidual sheets.

Proliferative endometrium microscopically shows endometrial glands in proliferative phase.

Hyperplasia without atypia microscopically shows gland to stroma ratio is increased, glands are arranged in back to back fashion.

Secretery endometrium microscopically shows glands showing supranuclear vacuolation, glandular lumen filled with secretion, loose stroma.

Endometrial polyp microscopically shows epithelial lining, subepithelium shows endometrial glands with stroma with congested blood vessels.

Atypical hyperplasia microscopically shows increase in gland to stroma ratio, endometrial glands arranged in back to back manner. Individual gland shows loss of nuclear polarity, hyperchromatic nuclei.

Partial mole microscopically shows avascular chorionic villi with scalloped borders along with normal chorionic villi.

Complete mole microscopically shows avascular chorionic villi showing hydropic degeneration cistern formation.

Ca endometrium microscopically shows neoplastic endometrial glands invading through stroma, individual gland showing nuclear pleomorphism, increased nuclear to cytoplasmic ratio.

Among 260 patients with the clinical diagnosis of AUB, the incidence of AUB was maximum in the age group of 21-30 years (84 i.e., 32.3%) and minimum incidence was seen in the age group of 61-80 years (i.e.,1.9%).

In our study, the most common presenting symptoms was Heavy menstrual bleeding (62.7%) which was affirmative with the studies conducted by Shukla et al, Baral et al, Singh et al (42%), Bolde et al (47%) and Chhatrasal et al.[5-9] The least common symptoms are PMB. Our study differed with Bhatta et al which inferred inter menstrual bleeding as the most common presenting symptoms.[10]

Baral et al studied 300 specimens in Nepal population presented with AUB.[6] They inferred that the group of patients less than 40 years of age had 50% of normal physiological changes, 23 % had abnormal physiological changes and 9% had pregnancy related complications as well as benign changes. The age group comprising 40 to 55 years presented with 32% of abnormal physiological changes, 29% of benign conditions and 26% of normal physiological changes. In the age group, which included more than 55 years had shown 21% of malignancy, 21% of benign nature and 36% of unsatisfactory samples. In our study, which comprised 260 AUB samples, the HPE results showed 41.92% (109) had normal physiological changes, 25% (65) had benign conditions and 33% (88) had pregnancy related complications as in less than 40 years of age group. In the age group 41-50 years, HPE showed 52% of normal physiological changes, 7% of benign conditions and 35% of abnormal physiological changes. 2.8% showed malignant changes and 1.4% showed pregnancy related complications. The present study is affirmative with the above reference study when analyzing the age group of below 40 years in relation to normal physiological changes and pregnancy related complications, whereas the scenario is reversed on analyzing more than 40 years of age group infer that the normal physiological changes is predominant than the abnormal physiological changes in the HPE report. The difference in the values may be due to ethnic, geographical variations and also may be due to sample taken and sample size derivations.

Deka et al conducted a study on 150 samples in Assam population presented with AUB.[11] They observed that normal proliferative endometrium was seen in 37.2%, pregnancy related complications on histological sections shows retained products of conception (54.3%) and hydatiform mole (8.7%) the normal secretory endometrium in 18.6% of samples studied, endometrial hyperplasia in 32.6%, atropic endometrium in 26.7%, chronic endometritis 2.2%, endometrial carcinoma in 2.2%. In our study normal proliferative endometrium was seen in 31.9%, pregnancy related complications on histological sections shows retained products of conception (31.9%) and hydatiform mole (2%) and normal secretory endometrium was observed in 10% of the patients endometrial hyperplasia (with and without atypia) was seen in 19.6%, endometrial carcinoma was observed in 0.8%. In the reference study, functional cause for AUB was predominant and findings in our study was found to be affirmative with the reference study while observing the distribution of proliferative, secretory phases, malignant and hyperplastic changes.

Complications of pregnancy are observed as a common cause of abnormal uterine bleeding in some studies like Supriya et al, Ghani et al, Forae et al, Jairajpuri et al, Ara et al.[12-16] In fact, pregnancy complication was the commonest cause of AUB in Forae et al like our study.[14] Hence, this cause should be kept in mind when evaluating AUB in women of the reproductive age group. These patients should be investigated with urine pregnency test for pregnancy.[17]

CONCLUSION

Thus, in this study, for the women of reproductive, peri-menopausal and postmenopausal age group, we analysed

histopathologically, the type of endometrium, the groups with hyperplasia, chronic endometritis, products of conception, endometrial polyp, partial and complete mole, and carcinoma endometrium, which were all initially diagnosed clinically as AUB. We studied endometrial biopsies by using H&E stain to substantiate AUB exclusively by histopathology. In the near future, as an extension of this study, we are anticipating to increase the sample size, to involve radiological parameters and correlate clinico-radiology-histopathological parameters and also to involve the third eye as an adjunct to reduce intra-observer variation. By doing so, the credibility will be increased further which will set up a specific criteria in classifying AUB.

According to the study we carried out in our institute we could focus on possible causes of AUB and we could find commonest cause and pattern of various histological lesions in various age groups. This will help in taking possible steps to treat the cause and minimize the cases.

Owing to the limitation of sample size due to time and resource constraint (260), there was statistical mismatch with frequency distribution which will be sorted by increase of sample size in the near future, in addition the study will be supported by radiological parameters.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to All Associate and Assistant professors of my department, who helped me to take each step in the conduct of the study with their extensive knowledge.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Munro MG, Critchley HO, Broder MS, Fraser IS. FIGO Working Group on Menstrual Disorders. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. Int J Gynecol Obste. 2011;113(1):3-13.
2. Betha K, Malavatu L, Talasani S. Distribution of causes of abnormal uterine bleeding using new FIGO classification system-PALM COEIN: a rural tertiary hospital-based study. Int J Reprod Contracept Obste Gynecol. 2017;6(8):3523-7.
3. Fraser IS, Critchley HO, Broder M, Munro MG. The FIGO recommendations on terminologies and definitions for normal and abnormal uterine bleeding. Semin Reprod Med. 2011;29(5):383-90.
4. Munro MG, Critchley HO, Broder MS, Fraser IS. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. Int J Gynaecol Obstet. 2011;113(1):3-13.
5. Shukla M, Fonseca MN, Kharat D, Tekale P. A study to correlate histopathological findings in patients with abnormal uterine bleeding. Int J Reprod Contracep Obstet Gynecol. 2017;6(2):654-7.
6. Baral R, Pudasaini S. Histopathological pattern of endometrial samples in abnormaluterine bleeding. J Pathol Nepal. 2011;1(13):13-6.
7. Alpana Singh*, P.V. Ramana Bai. Study of histopathological pattern of endometrium in abnormal uterine bleeding and its management. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2016 Feb;5(2):432-436
8. Bolde, Pudale SS, Pandit GA, Matkari PP. Histopathological study of endometrium in cases of abnormal uterine bleeding. Int J Res Med Sci. 2014;2(4):1378-81.
9. Chhatrasal C, Shelgaonkar G, Kulkarni CV, Ghanghoria S, Yadav A, Aggarwal P. Evaluation of endometrial histopathological patterns in abnormal uterine bleeding: A study of 1545 cases. Int J Med Sci Public Health. 2017;6(8):1240-3.
10. Bhatta S, Sinha AK. Histopathological study of endometrium in abnormal uterinebleeding. J Pathol Nepal. 2012;(2):297-300.
11. Deka RR, Saikia T, Handique A, Sonowal B. Histopathological spectrum of endometrial changes in women presenting with abnormal uterine bleeding with special reference to endometrial malignancies: A two years hospital based study. Ann Appl Bio Sci. 2016;3:152-7.
12. Sandeepa S, Jayaprakash HT, Ashwini MC. Histopathological Study of Endometrium in Abnormal Uterine Bleeding in Different Age Groups. Int J Sci Res. 2014;3(11).
13. Ghani NA, Abdulrazak AA, Abdullah EM. Abnormal Uterine Bleeding: a Histopathological Study. Diyala J Med. 2013;4(1).
14. Forae GD, Aligbe JU. Histopathological Patterns of Endometrial Lesions in Patients with Abnormal Uterine Bleeding in a Cosmopolitan Population. J Basic Clin Reprod Sci. 2013;2(2).
15. Jairajpuri ZS, Rana S, Jetley S. Atypical uterine bleeding-Histopathological audit of endometrium A study of 638 cases. Al Ameen J Med Sci. 2013;6(1):21-8.
16. Ara S, Roohi M. Abnormal Uterine Bleeding; Histopathological Diagnosis by Conventional Dilatation and Curettage. Professional Med J. 2011;18(4):587-91.
17. Kilbourn CL, Richards CS. Abnormal uterine bleeding, diagnostic considerations, management options. Postgrad Med. 2001;109(1): 137-50.

Cite this article as: Shinde PT, Sarate DS, Patil SB, Patil BV, Kangate SV. Study of histopathological pattern of endometrium in abnormal uterine bleeding in a tertiary care center. Int J Res Med Sci 2023;11:1170-5.