

Abnormal uterine bleeding: A study of its clinical spectrum and incidence of histopathological patterns of endometrium as a function of age with parity

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Abstract

Introduction: Abnormal uterine bleeding (AUB) is a common complaint affecting majority of pre and postmenopausal women. Endometrium is a dynamic tissue and is affected by a wide range of histopathological lesions. The causes of AUB is a function of age.

Aim and Objective: to study the histopathological pattern in cases of AUB in reference age, parity and bleeding pattern. Patients were categorized into reproductive (<40 years), perimenopausal (40-50 years) and postmenopausal (>50 years).

Materials and Methods: A total of three hundred patients presenting with AUB are included in this study.

Observation and Results: In this study patient ranged from 20 to 70 years and the mean age of the cohort was 43.46±8.07. Major parity category noted in the cohort was para-2 in 89 patients (29.67%). Major bleeding pattern observed in the cohort was menorrhagia (32.33%); followed by metrorrhagia (19.67%), menometrorrhagia (16.33%), postmenopausal bleeding (12.67%), polymenorrhoea (9.67%), polymenorrhagia (5%) and continuous bleeding (1%). Histopathological pattern observed in AUB patients was proliferative phase endometrium (31.33%), secretory phase endometrium (21.67%), menstrual endometrium (1.33%), atrophic endometrium (6%), disordered proliferation (3.33%), mixed pattern (1%), polyp (10.67%), metaplasia (9.67%), hyperplasia (8.67%), endometritis (2.67%), adenocarcinoma (1.67%) and insufficient (2%).

Conclusion: The causes of AUB are function of age; perimenopausal age group is the most common affected. Dilatation & Curettage is cost effective, useful procedure but organic lesions such as leiomyoma and adenomyosis can be missed. AUB is a common disorder affecting females and is a challenge to the treating gynaecologist.

Keywords: Endometrium, Premenopausal, Postmenopausal, Hyperplasia, Polyp.

Introduction

Abnormal uterine bleeding (AUB) is considered one of the most common and challenging problems presenting to the gynecologist. Its prevalence is seen in majority of pre- and postmenopausal women visiting gynecologist.^{1,2} AUB is a deviation from normal menstruation or in other words unscheduled or unexpected uterine bleeding. It is categorized in different ways based on underlying cause and morphology. Endometrium is influenced by wide range of organic, abnormal histological alterations, inflammatory/infectious causes and functional disorders thereby posing a challenge to the physician. The underlying causes of AUB are a function of age group.

For adolescent women AUB is mostly transient due to disorders of the hypothalamic-pituitary axis; anovulatory bleeding is the common cause if severe bleeding is present. For women in the third and fourth decades, a range of organic lesions occur and other causes of bleeding which must be excluded are contraceptives, pregnancy, including ectopic gestations. The fifth decade witnesses the approach of menopause when AUB heralds the anovulatory cycle. In the six and seventh decades particularly the possibility of a neoplastic process is investigated where hormonal replacement therapy was excluded.

The pathophysiology of endometrial breakdown in AUB is mediated by inflammatory (endometritis) or vascular (fragility) phenomena in presence of organic lesions; and impaired vasoconstriction and fibrinolysis in the absence of a morphologic abnormality.³

Endometrial biopsy and curettage remain the primary diagnostic procedure to investigate potential endometrial pathology.⁴ Dilatation and curettage provides a safe, quick and cost-effective diagnostic tool that provides useful information regarding endometrial status, infections and/or organic lesions.^{5,6}

The objective of this study is to determine the types and frequencies of endometrial histopathological pattern in cases of AUB in reference age, parity and bleeding pattern. This may be of helpful to treating gynecologists in planning the diagnosing, therapeutic, or operative strategies.

Materials and Methods

This prospective study was done on three hundred patients, who presented with abnormal uterine bleeding. This study includes patients who have given consent.

Exclusion Criteria: Patients with IUCD in situ, Pregnancy; diagnosed with systemic diseases; liver or renal diseases; genital tuberculosis; known malignancy lesion other than endometrial origin; Endocrine disorders; Coagulation disorders; on medications like

steroids, anticoagulants and hormonal replacement therapy.

Data was collected using semi structured Questionnaire. The diagnosis in 300 AUB patients was obtained post-curettage/ hysterectomy in 170 and 130 patients, respectively patients were categorized into reproductive (<40 years), perimenopausal (40-50 years) and postmenopausal (>50 years) age groups. Data was statistically analyzed wherever applicable.

Endometrial histopathological diagnosis was classified as follows:

1. Normal physiological changes: Proliferative phase endometrium (PP), Secretory phase endometrium (SP) and Menstrual phase endometrium.
2. Dysfunctional changes: Disordered proliferation, mixed pattern endometrium and Atrophic endometrium.

3. Organic lesions: Chronic endometritis, endometrial polyp, endometrial hyperplasia without atypia, atypical hyperplasia, metaplasia and malignancy e.g. adenocarcinoma.
4. Insufficient for evaluation.

Observations and Results

Among the three hundred AUB patients included in this study majority were in 4th and 3rd decade with 68.33% and 32% respectively. Distribution of patients in three age groups is shown in table 1. In this study patient ranged from 20 to 70 years and the mean age of the cohort was 43.46±8.07. Major parity category noted in the cohort was para-2 in 89 patients (29.67%).

Table 1: Demographics of AUB cases in three age groups

	Reproductive (<40 years)	Perimenopausal (40-50 years)	Postmenopausal (>50 years)
Number	65	205	30
%	21.67%	68.33%	10%
Mean age±SD	32.49±4.02	44.73±3.66	58.57±4.99
Parity			
Nullipara	6	3	0
Para 1	7	12	0
Para 2	25	59	5
Para 3	19	54	6
Para 4	5	46	8
Grand multipara	3	31	11
Total	65	205	30
Major bleeding pattern (n,%)	Menorrhagia (38, 58.46%)	Menorrhagia (58, 28.29%)	Postmenopausal bleeding (27, 90%)
Major normal histology diagnosis (n,%)	Proliferative phase (26, 40%)	Proliferative phase (66, 32.2%)	Secretory phase (4, 13.3%)
Major dysfunctional histopathological diagnosis (n,%)	Disordered proliferation (3, 4.62%)	Atrophic endometrium (10, 4.88%)	Atrophic endometrium (8, 26.67%)
Major organic histopathological diagnosis (n,%)	Metaplasia (7, 10.77%)	Polyp (24, 11.71%)	Adenocarcinoma/ Atypical hyperplasia (4, 13.33% each)

Major bleeding pattern observed in the cohort was menorrhagia in 97 (32.33%); followed by metrorrhagia in 59 (19.67%), menometrorrhagia in 49 (16.33%), postmenopausal bleeding in 38 (12.67%), polymenorrhoea in 29 (9.67%), polymenorrhagia in 15 (5%) and continuous bleeding in 3 patients (1%).

Table 2: Type of endometrial pattern seen in three age groups of AUB cases

S. No	Endometrial Histological status	Reproductive (<40 years)		Perimenopausal (40-50 years)		Postmenopausal (>50 years)		Total	
		n	%	n	%	n	%	n	%
1.	Adenocarcinoma	1	0.33	-	-	4	1.33	5	1.67
2.	Atrophic Endometrium	-	-	10	3.33	8	2.67	18	6
3.	Disordered Proliferation	3	1.00	7	2.33	-	-	10	3.33
4.	Endometritis	2	0.67	5	1.67	1	0.33	8	2.67
5.	Hyperplasia without Atypia	4	1.33	13	4.33	2	0.67	19	6.33
6.	Atypical Hyperplasia / EIN	-	-	3	1.00	4	1.33	7	2.33
7.	Insufficient	1	0.33	4	1.33	1	0.33	6	2
8.	Menstrual Endometrium	-	-	4	1.33	-	-	4	1.33
9.	Metaplasia	7	2.33	21	7.00	1	0.33	29	9.67

10.	Polyp	5	1.67	24	8.00	3	1.00	32	10.67
11.	Proliferative endometrium	26	8.67	66	22.00	2	0.67	94	31.33
12.	Secretory endometrium	14	4.67	47	15.67	4	1.33	65	21.67
13.	Mixed pattern	2	0.67	1	0.33	-	-	3	1
	Total	65	21.67	205	68.33	30	10.00	300	100

Table 3: Shows relation between type of endometrial histopathology and the type of bleeding pattern

Histopathological Diagnosis	No. of cases	Continuous bleeding	Menometrorrhagia	Menorrhagia	Metrorrhagia	Oligomenorrhoea	Polymenorrhagia	Polymenorrhoea	Postmenopausal bleeding
Adenocarcinoma	5	-			2				3
Atrophic Endometrium	17			3	3	4	-	-	8
Disordered Proliferation	10	1		5	3	-	-	1	-
Endometritis	7	-	3	-	-	-	1	2	2
Hyperplasia without Atypia	18	-	4	7	3	-	1	2	2
Atypical Hyperplasia	7	-	1	-	2	-	-	1	3
Insufficient	6	-	-	2	2	-	1	-	1
Menstrual Endometrium	3	-	-	3	1	-	-	-	-
Metaplasia	29	1	3	8	9	4	-	3	1
Polyp	32	1	8	9	2	2	3	1	6
Proliferative Phase	93	-	15	35	23	-	6	10	5
Secretory Phase	65	-	14	24	8	-	3	9	7
Mixed endometrium	3	-	1	1	1	-	-	-	-
Total	300	3	49	97	59	10	15	29	38

Discussion

Endometrium is an evidently dynamic, hormonally sensitive and responsive tissue which constantly undergoes changes during the reproductive life.

Age Incidence: In this study we witnessed highest incidence of AUB cases in perimenopausal followed by reproductive and postmenopausal age group; 50.33%, 39.67% and 10% respectively. Similar results were reported by S. Vaidya et al.⁷, it was 46.15%, 37.97% and 15.88% respectively.

Table 4: Shows comparison of parity in AUB cases with other studies

Parity	Sadia Khan ⁸		Mahmoud & Aseel ⁹		Smita & Manik ¹⁰		Jagadale Kunda ¹¹		Present study		
	Total	%	Total	%	Total	%	Total	%	Total	%	%
Nullipara	27	5.4	38	7.3	18	8.57	8	8	9	3	3
Para 1	92	18.4	99	18.8	25	11.9	34	34	19	6.33	36
Para 2							-	58	89	29.67	
Para 3	178	35.6	186	35.4	128	60.95	-	58	79	26.33	46
Para 4							-		59	19.67	
Para ≥5	203	40.6	202	38.5	39	18.57	-	-	45	15	15
Total	500	100	525	100	210	100	100	100	300	100	100

Parity: In the present study, the highest incidence of AUB was seen in multiparous women this is in similarity with other authors as shown in table 4 as well as by most other investigators.^{10,12} The lowest incidence of AUB was seen in nulliparous women in the present study (3%) which is in close similarity with Radha N¹² (4%) and Sadia K⁸ (5.4%).

Bleeding Pattern: Menorrhagia was the most common type of bleeding noted in the present study and by other authors. Next common bleeding pattern observed was metrorrhagia, this is similar to Zeeba,¹³ Preeti.¹⁴ Therefore together menorrhagia and metrorrhagia constitutes the majority of bleeding pattern type and this is in concordance with most other studies (Table 5).

Table 5: Comparison of bleeding pattern with other studies (in%)

Authors	No. of cases	Continuous bleeding	Menometrorrhagia	Menorrhagia	Metrorrhagia	Oligomenorrhoea	Polymenorrhagia	Polymenorrhoea	Post menopausal bleeding
Moghal N ¹⁵	458	-	-	41	48	-	-	1.74	6.1
Zeeba S ¹³	462	14	5	41	18	9	4	6	3
Preeti et al ¹⁶	212	3.77	-	38.68	11.32	-	-	12.74	24.52
Mahmoud & Aseel ⁹	525	8.8	18.9	42.7	4.2	-	7.6	1.5	16.3
Jagadale K ¹¹	100	-	1	88	3	-	-	-	8
Sheetal et al ¹⁷	100	9	1	25	5	17	13	6	7
Present study	300	1	16.33	32.33	19.67	3.33	5	9.67	12.67

Histopathological Diagnosis: In the present study, the most common entity was normal cyclic endometrium: PP (31.33%), SP (21.67%) and menstrual (1.33%), total amounting to 54.33%. Where PP and SP together were most prevalent entity and this is in concordance with most authors.^{18,19,7,20,21,13,11} Menstrual endometrium (1.33%) is in similarity with 1.28%,²² 1.1%.⁴

Endometrial Polyp (n=32, 10.67%) was the commonest organic histopathological lesion observed. Its occurrence was similar to menorrhagia² but higher than other studies by 5%,¹⁷ 2.46%,²³ 2.63%.¹⁹ Though in this study majority (62.5%) of polyp cases were seen in 4th decade and this is in concordance with 54.5%,¹³ 40%¹⁹ and 39.1%.²⁴ Polyps increase in frequency with age; late menopause, hypertension and obesity are associated with polyps.

Metaplasia was seen in (n=29, 67%) cases; similar to reported by Talat Mirza²⁵ (n=25, 6%). Among the 29 cases of metaplasia, squamous metaplasia was seen in 26 cases and tubal metaplasia was seen 3 cases respectively.

Atrophic Endometrium (n=18, 6%) was similar to 7%,²⁵ 6.72%,²⁶ 7.38%²³ and 5.12%;²² near comparable results are 4.71%,⁷ 3.5%²¹ & 2.44%.²⁴ The difference is due to different composition of cohort. Atrophic endometrium was seen predominantly in post-menopausal age group, the reason is that decreased estrogenic stimulation leads to thin atrophic endometrium making it susceptible to minor injury and may cause bleeding even in absence of any identifiable lesion.²³

Hyperplasia was (n=26, 8.67%) and comparable to other authors 9.1%,¹⁸ 10.92%⁷; 6.11%²⁴ and 12.6%⁸ but it is much lower than 41.9%,¹⁰ 30.3%,⁴ 25%²² and 25.5%.²¹ In this study 61.5% of hyperplasia was noted in perimenopausal age group. Similar results were 57.1%,¹⁹ 64.8%¹³ and 68%,²⁴ Wahda Moohamed⁴ found statistical significant correlation between hyperplasia

and perimenopausal age group (p<0.05). Unopposed estrogen level, genetic factor, obesity and medication like tamoxifen act as risk factors in females to develop endometrial hyperplasias.²⁷ Therefore endometrial histopathological evaluation cannot be underestimated in perimenopausal women.

Disordered Proliferation was (n=10, 3.33%) similar to 3%,²¹ 4.8%¹³ where other reported 6.56%,²³ 15.9%,²⁶ 13%²⁵; 13.4%⁷; and 20.54%.²⁴ Anovulatory cycles play role in development of disordered proliferation, and although risk of malignancy is less than 2% but it should be thoroughly evaluated.²⁸ Chronic endometritis can be caused by IUCD, PID, abortion or mucopurulent cervicitis. It was noted in (n=8, 2.67%), similar data is 2.6%,¹⁹ 2.74%,²⁴ 3.23%.⁷

Endometrial Carcinoma was (n=5, 1.67%) and it is comparable with most authors 1.49%,²⁹ 1.06%,³⁰ 1%²¹; 2%,²⁵ 2.38%¹⁰ and 2.48%.⁷ Among these 5 patients only one was 40 years and rest four patients were above 55 years. Other authors also reported higher incidence of carcinoma above 50 years of age.

Mixed Pattern was (n= 3, 1%) where other reported 1.89%,¹⁶ 3%,²¹ 3.85%²² and 8.3%.⁴ Mixed endometrium includes pill endometrium therefore its incidence will depend on the type of patients included in the study. Among the 130 hysterectomy specimen included, 26 specimens revealed other pathologies affecting the uterine wall in addition to endometrial lesions detected in these cases. These include adenomyosis in 10 cases (7.81%), leiomyoma in 16 cases (12.5%).

Conclusion

The causes of AUB are function of age; perimenopausal age group is the most common affected; and there is wide range of histopathological and functional reasons. Most common entities are in clinical pattern (Menorrhagia); normal histological finding (Proliferative phase); dysfunctional change

(Atrophic endometrium) and organic Endometrial lesion (polyp). Dilatation & curettage is cost effective, useful procedure but organic lesions such as leiomyoma and adenomyosis can be missed. AUB is a common disorder affecting females and is a challenge to the treating gynaecologist.

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