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Original Research Article

Histopathological Pattern of Endometrial Abnormalities in Postmenopausal Women With Abnormal Uterine Bleeding

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Abstract: *Abnormal uterine bleeding (AUB) in postmenopausal women often warrants prompt evaluation due to the risk of underlying malignancy or premalignant conditions. Histopathological examination of endometrial tissue remains a definitive diagnostic approach for identifying the etiology of AUB in this population.* ***Objective:*** *To assess the histopathological patterns of endometrial abnormalities in postmenopausal women presenting with abnormal uterine bleeding (AUB).* ***Methodology:*** *One hundred and forty five postmenopausal women aged ≥50 years with confirmed AUB were selected for this study. Non-endometrial causes of bleeding which were myometrial lesions, intrauterine devices, pregnancy-related complications, or hormone therapy were not included. Endometrial biopsies were obtained which were fixed in 10% formalin and processed for histopathological examination using hematoxylin-eosin staining. Histological findings were categorized as benign polyps, hyperplasia (with/without atypia), carcinoma, atrophic, proliferative, or secretory endometrium, and chronic endometritis.* ***Results:*** *Mean age was 55.19 ± 1.72 years. Atrophic endometrium was found in 32.4% patients, hyperplasia without atypia in 25.5%, secretory endometrium in 11.0%, and hyperplasia with atypia in 9.7% patients. Endometrial carcinoma was observed in 3.4% patients. Benign polyps and chronic endometritis were observed in 6.2% and 6.9% patients respectively.* ***Conclusion:*** *Atrophic endometrium was the leading pattern in postmenopausal women with abnormal uterine bleeding which was followed by hyperplasia without atypia and secretory endometrium.*

Keywords: Postmenopausal women, abnormal uterine bleeding, endometrial abnormalities, histopathological patterns, endometrial carcinoma

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Introduction

Abnormal uterine bleeding (AUB) describes a range of irregularities in the menstrual cycle. The previously used terms menorrhagia, as well as oligomenorrhea have been updated to more specific definitions. Heavy menstrual bleeding (HMB) is now defined as bleeding exceeding 80 mL or bleeding which significantly impacts a patient's quality of life. Intermenstrual bleeding refers to cyclical that occurs between menstrual periods, while breakthrough bleeding pertains to bleeding that occurs when taking hormone medication (1-3). The FIGO System 2 has introduced classification that separates AUB into structural as well as nonstructural causes (4, 5). The committee stated irregular bleeding as any bleeding that happens that occurs outside 5th to 95th percentiles regardless of the menstrual parameter (5). The prevalence of AUB among women of reproductive age globally is estimated to range 3%-30%, with a notable increase in impact observed during menarche as well as perimenopause. A number of studies focus especially on HMB; however, when taking into account irregular as well as intermenstrual bleeding, the prevalence boosts to 35% or more (5).

Dilation and curettage (D&C) is a procedure utilized to scrape the endometrial lining for therapeutic as well as diagnostic reasons. Following a diagnosis of miscarriage or postpartum complications, dilation and curettage (D&C) serves as a means of therapy to address bleeding symptoms by swiftly evacuating as well as cleansing the uterus of retained products of conception (6). D&C can also be used in the diagnosis of ectopic pregnancy, allowing for differentiation from an abortion, which can have serious consequences if not recognized promptly (7). In a non-gravid setting, D&C is performed to obtain specimens from patients going through AUB for the purpose of evaluating the endometrial lining. Individuals identified as being at risk for carcinoma undergo endometrial sampling to identify any histopathological atypia (8, 9). Unexplained or untreated persistent abnormal uterine bleeding requires a thorough uterine evaluation, which include endometrial sampling as well as an appropriate imaging modality of the uterus (9-12).

The common reported pathological patterns as follows i.e. endometritis in 7%, Polyps in 65.2%, Hyperplasia without and with atypia in 7.5%, and 4.8%, myoma in 4.8%, while Cancer in 7.5% of the cases (10).

Hence, the current study is done to find the histopathological patterns of endometrial abnormalities in postmenopausal women with AUB in our local population. Though data is available on national (not specifically done on postmenopausal group) and global perspective but no consensus is made so far to on its pattern. By identifying the underlying etiology, early screening programs with concurrent earlier management of the cause maybe initiated. This will surely help to treat and reduce related complications and mortality.

Methodology

This cross-sectional study was carried out in the Department of Pathology at Services Hospital, Lahore, from 16-06-2024 to 16-12-2024. following ethical approval. One hundred and forty five postmenopausal women aged 50 years or older presenting with abnormal uterine bleeding (AUB) were enrolled by non-probability consecutive sampling. The sample size was determined based on a previously reported 4.8% prevalence of endometrial hyperplasia with atypia,[13] with a 3.5% margin of error and 95% confidence level. Participants were not enrolled if their bleeding was attributed to non-endometrial causes such as myometrial or adnexal lesions, intrauterine devices, pregnancy-related complications, or hormone replacement therapy.

After obtaining informed consent from all the patients, demographic and clinical data which included age, BMI, and duration of menopause were

recorded. Endometrial biopsy samples were collected and immediately fixed in 10% formalin for histopathological processing. Tissue sections were stained with hematoxylin and eosin (H&E) and examined under light microscopy to identify histological patterns. Additional staining such as Ziehl-Neelsen was performed when necessary. Histopathological findings were categorized according to predefined criteria including benign endometrial polyps, atrophic endometrium, proliferative or secretory patterns, chronic endometritis hyperplasia (with or without atypia) and endometrial carcinoma.

SPSS 26 was used for analyzing the study variables. Age, duration of menopause and BMI were assessed using means and standard deviations while histological pattern and marital status were calculated as frequencies and percentages. Stratification was performed using Chi Square test keeping the P value notable at ≤ 0.05.

Results

The mean age 55.19 ± 1.72 years. The patients had mean BMI 27.13 ± 4.02 kg/m² and a mean duration of menopause of 3.26 ± 0.97 years. Age distribution is shown in figure 1. Marital status can be seen at table no 1. Histopathological analysis of endometrial samples demonstrated a variety of patterns. The most common finding was atrophic endometrium observed in 47 (32.4%) cases which was followed by endometrial hyperplasia without atypia in 37 (25.5%) patients. Endometrial hyperplasia with atypia was present in 14 (9.7%) patients while chronic endometritis and benign endometrial polyps were identified in 10 (6.9%) and 9 (6.2%) cases respectively. Secretory endometrium was noted in 16 (11.0%) cases whereas proliferative endometrium was less frequent accounting for 7 (4.8%) of cases. Endometrial carcinoma the most severe finding was detected only in (3.4%) cases (Table 2). Histopathological pattern's stratification with age, duration of menopause, BMI and marital status can be seen from table no 3 to 6.

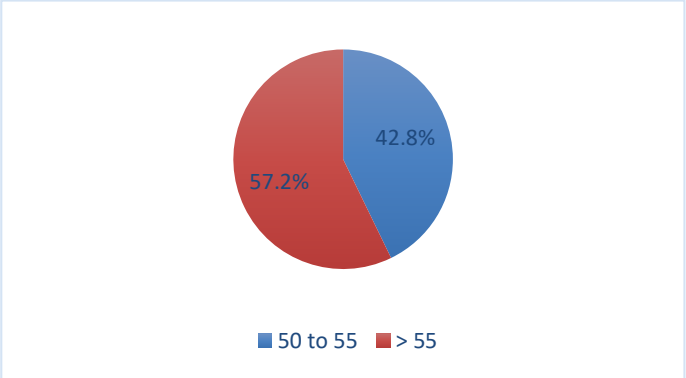

Figure 1 Age distribution (Years)

Table 1 Marital status of the patients

Marital status	Frequency	Percent
Married	141	97.2
Unmarried	4	2.8
Total	145	100.0

Table 2 Histopathological patterns

Histopathological patterns	Frequency	Percent
Atrophic endometrium	47	32.4
Benign endometrial polyp	9	6.2
Chronic endometritis	10	6.9
Endometrial hyperplasia with atypia	14	9.7
Endometrial hyperplasia without atypia	37	25.5
Endometrial carcinoma	5	3.4
Proliferative endometrium	7	4.8
Secretory endometrium	16	11.0
Total	145	100.0

Table 3 Stratification of histological pattern with ag

		Age groups (years)		Total	P value
		50 to 55	> 55		
Histopathological patterns	Atrophic endometrium	21	26	47	0.74
		44.7%	55.3%	100.0%	
	Benign endometrial polyp	5	4	9	
		55.6%	44.4%	100.0%	
	Chronic endometritis	4	6	10	
		40.0%	60.0%	100.0%	
	Endometrial hyperplasia with atypia	8	6	14	
		57.1%	42.9%	100.0%	
	Endometrial hyperplasia without atypia	12	25	37	
		32.4%	67.6%	100.0%	
	Endometrial carcinoma	3	2	5	
		60.0%	40.0%	100.0%	
	Proliferative endometrium	3	4	7	
		42.9%	57.1%	100.0%	
	Secretory endometrium	6	10	16	
		37.5%	62.5%	100.0%	
Total		62	83	145	
		42.8%	57.2%	100.0%	

Table 4 Stratification of histological pattern with duration of menopause

		Duration of menopause (years)		Total	P value
		1 to 3	> 3		
Histopathological patterns	Atrophic endometrium	29	18	47	0.28
		61.7%	38.3%	100.0%	
	Benign endometrial polyp	6	3	9	
		66.7%	33.3%	100.0%	
	Chronic endometritis	9	1	10	
		90.0%	10.0%	100.0%	
	Endometrial hyperplasia with atypia	5	9	14	
		35.7%	64.3%	100.0%	
	Endometrial hyperplasia without atypia	19	18	37	
		51.4%	48.6%	100.0%	
	Endometrial carcinoma	4	1	5	
		80.0%	20.0%	100.0%	
	Proliferative endometrium	4	3	7	
		57.1%	42.9%	100.0%	
	Secretory endometrium	8	8	16	
		50.0%	50.0%	100.0%	
Total		84	61	145	
		57.9%	42.1%	100.0%	

Table 5 Stratification of histological pattern with BMI

		BMI (Kg/m2)		Total	P value
		18 to 25	> 25		
Histopathological patterns	Atrophic endometrium	11	36	47	0.69
		23.4%	76.6%	100.0%	
	Benign endometrial polyp	4	5	9	
		44.4%	55.6%	100.0%	
	Chronic endometritis	5	5	10	
		50.0%	50.0%	100.0%	
	Endometrial hyperplasia with atypia	5	9	14	
		35.7%	64.3%	100.0%	
	Endometrial hyperplasia without atypia	12	25	37	
		32.4%	67.6%	100.0%	
	Endometrial carcinoma	1	4	5	
		20.0%	80.0%	100.0%	
	Proliferative endometrium	3	4	7	
		42.9%	57.1%	100.0%	
	Secretory endometrium	6	10	16	
		37.5%	62.5%	100.0%	
Total		47	98	145	
		32.4%	67.6%	100.0%	

Table 6 Stratification of histological pattern with marital status

		Marital status		Total	P value
		married	Unmarried		
Histopathological patterns	Atrophic endometrium	43	4	47	0.28
		91.5%	8.5%	100.0%	
	Benign endometrial polyp	9	0	9	
		100.0%	0.0%	100.0%	
	Chronic endometritis	10	0	10	
		100.0%	0.0%	100.0%	
	Endometrial hyperplasia with atypia	14	0	14	
		100.0%	0.0%	100.0%	
	Endometrial hyperplasia without atypia	37	0	37	
		100.0%	0.0%	100.0%	
	Endometrial carcinoma	5	0	5	
		100.0%	0.0%	100.0%	
	Proliferative endometrium	7	0	7	

		100.0%	0.0%	100.0%	
	Secretory endometrium	16	0	16	
		100.0%	0.0%	100.0%	
Total		141	4	145	
		97.2%	2.8%	100.0%	

Discussion

In our study the histopathological analysis identified atrophic endometrium as the most common finding (32.4%) followed by endometrial hyperplasia without atypia (25.5%), secretory endometrium (11.0%) and endometrial hyperplasia with atypia (9.7%). Chronic endometritis and benign endometrial polyps were observed in 6.9% and 6.2% of cases respectively while endometrial carcinoma was detected in 3.4% of the women.

When comparing our results with similar studies we found that the prevalence of atrophic endometrium in our study was 32.4% which aligns with findings from Husain et al who reported atrophic endometrium as the most common histopathological finding in postmenopausal women 29.7% who had age above 55 years. Their study also noted a higher prevalence of endometrial polyps 21.9% in this age group which aligns with our higher incidence in this age group (> 55 years) (14).

The prevalence of endometrial hyperplasia without atypia in our study (25.5%) was notably higher than the 3.9% reported by Husain et al. (2021). This difference may be due to variations in the definition of hyperplasia or the inclusion criteria for AUB. Notably our study focused specifically on postmenopausal women with AUB which may have enriched the sample for endometrial abnormalities. In contrast Husain et al included a broader age range and a mix of symptomatic and asymptomatic women in their study which could explain the lower prevalence of hyperplasia.[14] The higher prevalence of hyperplasia in our study underscores the need for vigilant monitoring and intervention in postmenopausal women with AUB as hyperplasia particularly with atypia is a known precursor to endometrial carcinoma.

Endometrial carcinoma was identified in 3.4% of our participants which is consistent with the findings of Aston et al who reported a malignancy rate of 3% in asymptomatic postmenopausal women with endometrial thickening (15). The role of hysteroscopy in diagnosing endometrial pathologies was assessed by Elfayomy et al who reported a sensitivity of 50% and specificity of 94.2% for detecting endometrial carcinoma (16). Their findings suggest that while hysteroscopy is useful for identifying benign lesions such as polyps its accuracy for detecting malignancy is limited. Elfayomy et al also noted that 20% of resected polyps harbored hidden malignancies reinforcing the need for histological examination even in seemingly benign cases (16). Lee et al conducted a meta-analysis on the oncogenic potential of endometrial polyps and found that postmenopausal status and symptomatic bleeding were notable risk factors for malignancy (17).

Kaleem et al examined the histopathological pattern of endometrium in perimenopausal and postmenopausal women reporting proliferative endometrium as the most common finding in both groups which were perimenopausal and postmenopausal (18). However their study included a younger cohort (40–50 years for perimenopausal women) which may explain the higher prevalence of proliferative patterns compared to our postmenopausal cohort.

In light of these comparisons our findings suggest that postmenopausal women with AUB should undergo comprehensive evaluation including imaging and histopathological assessment to rule out malignancy or premalignant conditions.

Conclusion

The histopathological assessment revealed that atrophic endometrium was the leading pattern in postmenopausal women with abnormal uterine bleeding which was followed by hyperplasia without atypia and secretory endometrium.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-SIMS-24)

Consent for publication

Approved

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Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

SN (Postgraduate Resident)
Manuscript drafting, Study Design, Conception of study, Data Collection, Data analysis, and Manuscript Writing
AJ (Associate Professor)
Review of Literature, Conception of study, Critical Input, and final approval of draft.
MNR (Postgraduate Resident)
Manuscript review, and Literature Search

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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