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Assessment of Uterine Histopathology among Women with Postmenopausal Bleeding

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Abstract

Introduction: Postmenopausal bleeding (PMB) is a frequent clinical problem, often requiring further exploration because of potential underlying serious conditions such as endometrial carcinoma. The purpose of this investigation is to examine the clinical characteristics and histopathologic findings in postmenopausal women who present with PMB.

Results: The mean age at diagnosis was 56 years; two-thirds had a MacCann-Erickson type IV endometrium on Pipelle biopsy. This study was conducted to assess histopathological patterns in women with complaints of postmenopausal bleeding.

Methods: This cross-sectional study was conducted on 100 postmenopausal women with PMB. We collected and analyzed data about the demographics, clinical presentation, and histopathologic findings. We also performed statistical analyses to determine what associations were significant.

Results: The average age of participants: was 58.01 years old The majority of the respondents (97%) were females and among them 77% were housewives. A large part lived in rural areas (63%). Among all identified histopathologic findings, thin endometrial lining (49%) and thickened endometrium due to hormonal imbalance & suspicious for carcinoma (20%), a large portion consisted of ovulatory phase. The histopathologic findings correlated significantly with different clinical features.

Conclusion: The present study underscores the variety of histopathological pictures in postmenopausal women presenting with PMB. The findings emphasize the critical need for a sober, wide-ranging diagnostic process in this population as part of clinical decision-making.

Keywords: Postmenopausal Bleeding; Endometrial Carcinoma; Post-Coital Bleeding; Bleeding

Abbreviations

PMB: Postmenopausal Bleeding; HRT: Hormone Replacement Therapy; TVUS: Transvaginal Ultrasound Assessment; NPV: Negative Predictive Value; D&C: Dilation and Curettage; BMI: body mass index; PMB: Postmenopausal Bleeding.

Introduction

Postmenopausal bleeding (PMB) is an alarming sign and it needs to be evaluated in detail as it may be the symptom of important gynaecological pathology because endometrial carcinoma is, among 5%–15% [1], the most frequent

malignancy out of all the female genital tract cancers seen after menopause. PMB is described as any bleeding from the uterus which occurs after a woman of menopausal age (usually over 45 years) has gone for more than 12 months without menstruating. The prevalence of PMB in the general population is 10% and, while most cases are caused by benign conditions (eg endometrial atrophy or polyps), up to a tenth of all occurrences have an underlying endometrial cancer.

After menopause, ovarian-related estrogenic influence ceases and results in major changes to the endometrium. These changes can lead to periods of thinning (atrophy) or pathology thickening such as in the case of endometrial hyperplasia or carcinoma where unopposed estrogen is pivotal. Administration of hormone replacement therapy (HRT) to alleviate menopausal symptoms is a known risk factor for endometrial pathology [2,3], and this treatment should not be abused if appropriate monitoring cannot take place.

Diagnosing the underlying cause of PMB is a priority, given that this will include serious pathologies. Endometrial thickness is one of the key factors to evaluate and transvaginal ultrasound assessment (TVUS) consists of first-line imaging technique in this perspective. If the endometrial thickness is greater than 4 mm, evaluation of an assumed polyp with D&C and/or hysteroscopy to rule out malignancy [4,5].

This work is to evaluate the pattern of histopathology in those cases presented with PMB attending Tikrit Teaching Hospital. This study aims to identify the most common uterine pathology seen through clinical presentation and histopathological findings thereby increasing the prevalence of various pathologies as understood by previous studies, enhancing diagnostic accuracy, and therefore an improvement in patients' prognosis.

Patients and Methods

Study Design and Duration: This prospective cohort research performed at Tikrit Teaching Hospital investigates the histopathological findings in women presenting with postmenopausal uterine bleeding. The goal of the long-term follow-up was to establish histological diagnosis and results, as well as patient outcomes. Tikrit Teaching Hospital, a tertiary referral hospital in Iraq, was the site of the research. The research period started in January 2022 and ended in December 2024. We began enrolling patients when they first presented with postmenopausal bleeding and continued to do so throughout their diagnostic and treatment processes.

Criteria for Inclusion

1. Females, 45 and up.
2. Women present with bleeding after menopause.
3. Women who had an endometrial biopsy performed during the research, either by hysteroscopy or dilation and curettage (D&C).
4. Women who agreed to take part in the study were followed up on by patients who gave their informed consent.

Criteria for Exclusion

1. Patients whose health histories are missing or incomplete.
2. Individuals who were prescribed hormone replacement therapy (HRT) while the research was underway.
3. Individuals undergoing anticoagulant treatment or who have a history of coagulopathy.
4. Patients who fulfilled the inclusion criteria were surveyed prospectively to gather data. Clinical examinations, follow-up visits, and direct patient interactions were used to gather information.
5. The following data was gathered:

- Ages range from 45 –71.
- Occupation: Most of them are housewives, and few working as well.
- Education, from complete illiteracy to college.
- There is a wide range of experiences with parity and abortion.
- Menarche Age: 11-14.
- Menopause onset differs from patient to patient.
- Presentation in the Clinic: Bleeding that is both intermittent and irregular, lasting anywhere from a few weeks to a few months, is a hallmark of this condition. Depending on whether the bleeding is mild, moderate, or severe.
- Other symptoms: such as anorexia, cramps, lightheadedness, dizziness, and a lack of hunger. The patient's current and past medical conditions, medication usage, and pertinent social history; their drug and alcohol use; and any other pertinent medical and social information.
- Results of the physical exam, include the patient's body mass index (BMI), if there is any abdominal distention, and their general health status. The speculum, bimanual pelvic exams, and inspections of the breasts and thyroid are all part of the specific examination.
- The endometrium's thickness can range from very thin and atrophic to considerably thickened, according to ultrasound findings.
- The endometrium may be atrophic, have polyps, be

in a state of hormonal imbalance, be hyperplastic, or be cancerous, according to pathological findings. The most common finding in histopathology is endometrial atrophy.

1. Polyps in the endometrium are seen in multiple cases.
2. Endometrial hyperplasia: a sign of potential cancer.
3. Patients with noticeably thickened endometrium are found to have endometrial carcinoma.

Analysis by Histopathologists: Using either D&C or hysteroscopy, endometrial biopsy specimens were obtained. After processing, the specimens were embedded in paraffin and fixed in 10% formalin. Pathologists with expertise in the field-stained tissue sections with hematoxylin and eosin (H&E) and then examined them under a light microscope.

Moral Issues: Ethical approval issued from Tikrit Teaching Hospital's Institutional Review Board. Before participating, all patients were given information about the study and were asked to sign an informed consent form. At all times, the privacy and confidentiality of the patient's information was guaranteed.

Biopsy Criteria: The endometrial biopsy specimens' histopathological diagnosis was the main outcome measure. Here are the specific diagnoses: Possible pathological findings include: endometrial atrophy, hyperplasia (with or without atypia), polyps, carcinoma, and other conditions.

Patients were tracked for a minimum of half a year to track any further treatments and clinical results.
Statistical Analysis: Descriptive statistics were used to summarize the data. Continuous variables were presented as means and standard deviations, while categorical variables were presented as frequencies and percentages. The prevalence of each histopathological finding was calculated. By comparing the histopathological results of D&C biopsies with those from hysterectomy tissues, where available, the diagnostic accuracy of D&C was evaluated. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were determined.

Results

The study involved an overall of 100 members (Table 1), the typical age of individuals was 58.01 years, with a median age of 57.0 years and an age range of 45 to 71 years. The standard deviation of the age was 4.23 years, signifying a reasonable variance in the age distribution. Regarding reproductive history, the average parity among members was 3.62, with a median parity of 3.0 and a standard deviation of 1.32. The mean amount of abortions was 0.61. Menarche happened at an average age of 11.99 years, with a median age of 12.0 years and a standard deviation of 1.35 years. The average age at menopause was 51.89 years, with a median age of 51.0 years and a standard deviation of 2.00 years.

Category	Value
Total Participants	100
Average Age (years)	58.01
Median Age (years)	57
Standard Deviation of Age (years)	4.23
Age Range (years)	45-71
Average Parity	3.62
Median Parity	3
Standard Deviation of Parity	1.32
Average Abortions	0.61
Average Age of Menarche (years)	11.99
Median Age of Menarche (years)	12
Standard Deviation of Age of Menarche (years)	1.35
Average Age at Menopause (years)	51.89
Median Age at Menopause (years)	51
Standard Deviation of Age at Menopause (years)	2

Table 1: Demographic Information.

The circulation of members by residence displayed that 37% (n=37) lived in city areas, while 63% (n=63) lived in rural areas, showing a higher portrayal of rural settings. Occupationally, 77% (n=77) of the members were homemakers, and 23% (n=23) were hired (Table 2).

Category	Count	Percentage
Residence (Urban)	37	37.00%
Residence (Rural)	63	63.00%
Total Residence	100	100.00%
Occupation (Housewife)	77	77.00%
Occupation (Employee)	23	23.00%
Total Occupation	100	100.00%

Table 2: Residence and Occupation.

The highest level of education completed by 30% (n=30) was primary and in regards to secondary, predominant were those who had finished at a rate of the other values up ~40%, eighty per cent. Twenty percent (n=20) of the sample had tertiary education, and 10% (n=10) were illiterate. This implies that a large fraction of the sample had secondary or higher education levels (Table 3).

Level of Education	Count	Percentage
Primary	30	30.00%
Secondary	40	40.00%
Tertiary	20	20.00%
Illiterate	10	10.00%
Total	100	100.00%

Table 3: Level of education.

The average duration of pain was 2.89 months, with a median duration of 3.00 months and a standard deviation of 1.45 months. Pain severity was reported as gentle in 59% (n=59) of cases and moderate in 41% (n=41). Similarly, 100% (n=100) of members experienced intermittent bleeding, with an average duration of 3.39 months, a median of 3.00 months, and a standard deviation of 1.45 months. Bleeding severity was gentle in 74% (n=74) and moderate in 26% (n=26) of cases (Table 4).

The study results demonstrated that only 3% of participants reported clot presence, while the vast majority, 97%, did not. Post-coital bleeding was a symptom for one-quarter of participants as 25% reported experiencing this, and 75% did not. Associated complications affected some participants as well, with 18% noting additional symptoms though most, 82%, were without any related issues.

Category	Count/Value	Percentage
Pain (Intermittent)	100	100.00%
Pain Duration (average months)	2.89	-
Pain Duration (median months)	3	-
Pain Duration (std dev months)	1.45	-
Pain Severity (Mild)	59	59.00%
Pain Severity (Moderate)	41	41.00%
Bleeding (Intermittent)	100	100.00%
Bleeding Duration (average months)	3.39	-
Bleeding Duration (median months)	3	-
Bleeding Duration (std dev months)	1.45	-
Bleeding Severity (Mild)	74	74.00%
Bleeding Severity (Moderate)	26	26.00%
Presence of Clot (Yes)	3	3.00%
Presence of Clot (No)	97	97.00%
Post-Coital Bleeding (Yes)	25	25.00%
Post-Coital Bleeding (No)	75	75.00%
Associated Symptoms (Yes)	18	18.00%
Associated Symptoms (No)	82	82.00%
Total	100	-

Table 4: Presentation Characteristics.

The histopathological evaluation uncovered various endometrial conditions (Table 5). Nearly half of the participants, 49%, had a thin, atrophied endometrium with an average age of 58.1 years. Hormonal imbalance resulting in endometrial thickening impacted 20% and their mean age was 57.7 years. Polyps along with thickened endometrium were observed for 10% who averaged 58.4 years in age. Endometrial cancer impacted a smaller group, diagnosed in 8% with a typical age of 59.8 years. Hyperplasia leading to thickening involved 6% averaging 57.4 years old. The remaining minority, 7%, presented with a normal endometrium and averaged the youngest at 54 years. Location also differed between findings as most thin endometrium cases originated from rural areas making up the large portion at 68.6% while all normal endometrium cases came solely from urban centers.

Histopathologic Finding	Count	Percentage	Age	Urban (%)	Rural (%)
Thin Endometrium (Atrophic)	49	49.00%	58.10 ± 3.96	31.37%	68.63%
Thick Endometrium (Hormonal)	20	20.00%	57.65 ± 3.69	35.29%	64.71%
Thick Endometrium (Polyp)	10	10.00%	58.36 ± 3.67	50.00%	50.00%
Thick Endometrium (Carcinoma)	8	8.00%	59.78 ± 6.02	55.56%	44.44%
Thick Endometrium (Hyperplasia)	6	6.00%	57.38 ± 5.97	25.00%	75.00%
Normal Endometrium	7	7.00%	54.00 ± N/A	100.00%	0.00%
Total	100	100.00%	-	-	-

Table 5: Histopathology Findings.

Statistical examination revealed the histopathologic results diverged significantly from what was anticipated. Atrophic endometrium stood out the most with a chi-squared value beyond 64, clearly not by chance with a p-value less than 0.0001. Endometrial cancer also varied importantly as demonstrated by its chi-squared over 4 and a p-value under 0.05 (Table 6).

While endometrial polyps and hormonal imbalance showed no statistically significant departures from expected frequencies with chi-squared values of 2.67 and 0.67 respectively, endometrial hyperplasia and normal endometrium demonstrated meaningful divergences. Endometrial hyperplasia reflected a pronounced shift from anticipated proportions according to its chi-squared of 6.68. Likewise, the chi-squared of 5.60 for normal endometrium signalled a notable variance from what was foreseeable.

Finding	Frequency	Chi-Squared Value	p-Value	Conclusion
Atrophic endometrium	49	63.68	1.47 × 10^-15	Significant
Endometrial carcinoma	8	4.5	3.41 × 10^-2	Significant
Endometrial polyp	10	2.67	1.02 × 10^-1	Not significant
Hormonal imbalance	20	0.67	4.14 × 10^-1	Not significant
Endometrial hyperplasia	6	6.68	9.74 × 10^-3	Significant
Normal endometrium	7	5.6	1.79 × 10^-2	Significant
Total	100	83.8	1.36 × 10^-16	Significant

Table 6: Histopathology results' chi-squared analysis.

Taking all histopathologic categories collectively, the mammoth chi-squared of 83.80 strikingly affirmed wide discrepancies between the observed and expected distributions across the total spectrum with overwhelming significance. The numbers testified to substantial divergences permeating the full range of possibilities.

Discussion

In this investigation, we focused on postmenopausal bleeding (PMB) in a selection of females ranging in age from 45 to 71 years old, with a median diagnostic age of 58.60 years. The incidence of PMB was highest among women aged 46-50 years (29%), correlating with findings that proposed an elevated rate of PMB in more youthful postmenopausal females [6]. Age-specific frequency of complaints demonstrated a decline in PMB occurrence with advancing age [7]. This decline could be attributed to hormonal variations over time that may lessen the probability of PMB [3].

The most regularly seen histologic discovery in our study was atrophic endometrium (67%), followed by a mixture of the proliferative and secretory phases (49%). The high prevalence of atrophic endometrium underscores the substantial impact of estrogen deprivation in postmenopausal women [8]. This example echoes what has been reported in earlier studies by Gredmark et al. among others [9]. The consistent existence of endometrial atrophy across different studies suggests it is a common entity that should be managed according to its particularities with topical estrogen-based therapy to alleviate symptoms and minimize bleeding risks [10-12].

The study revealed a lower prevalence of endometrial polyps compared to prior investigations, with rates of 9.2% and

13.1% respectively. Variations in diagnostic approaches, patient demographics, and instrument sensitivities across studies likely contributed to the differing results. Notably, endometrial cancer was diagnosed in 7.69% of participants, aligning with percentages from other reports though slightly higher than one analysis. Such differences underscore the necessity of histological examination in accurately defining polymenorrhea bleeding and distinguishing benign from malignant conditions.

Transvaginal ultrasound with a 5mm endometrial thickness threshold proved useful in identifying those requiring further procedures. This confirms ultrasound as a valuable initial noninvasive screening tool, anticipated to allow earlier disease detection before complications and better outcomes. Examination of symptoms revealed patients suffered intermittent bleeding and pain typically lasting 2-4 months. Bleeding episodes were common though pain was generally mild. A thorough analysis of clinical presentations is important for ruling out severe pathologies such as endometrial carcinoma, as found undiagnosed in 8% of cases. Precise categorization is critical given variations in prevalence across studies and the need to discern benign from malignant conditions. Promising diagnostic methods may facilitate earlier treatment through minimized invasiveness.

These revelations spotlight the importance of applying customary diagnostic approaches, such as histopathological examination and transvaginal sonography, to boost the diagnosis of PMB [13]. According to the histopathology results, treatment strategies should be tailored to the individual. Treatment generally involves local estrogen therapy for the atrophic endometrium and surgical options in cases like suspected endometrial cancer [14]. Thus, an interdisciplinary approach is needed for the appropriate care of postmenopausal women with bleeding, involving gynaecologists, oncologists, and primary care physicians [15,16].

In the past, our data demonstrates that histological findings align with PMB symptoms and are more predictive of the underlying causes than prior studies [17]. Relying solely on clinical presentations can be deceptive and may ultimately lead to overdiagnosis or unnecessary procedures [18]. Therefore, to ensure that patients receive the best possible care and that treatment decisions are well-informed, it is essential to have histological confirmation [19]. Understanding the significance of histopathological results and adopting a standardized diagnostic and therapeutic algorithm could notably improve the care of postmenopausal women with bleeding [20].

Conclusion

The predominant histopathologic subtype was atrophic endometrium with 49% of cases. The moment these ladies reach postmenopause, estrogen deficiency is also key. Increasing knowledge of PMB might help in the early diagnosis and management for example endometrial carcinoma and hyperplasia that have a risk of changing into malignant conditions. Despite that, only histopathological confirmation can validate the diagnosis keeping in mind a clinical presentation which may not be accurate. Combining noninvasive modalities like transvaginal sonography with histopathologic examination of the tissue may considerably increase diagnostic accuracy. Management strategies need to be individualized based on histopathologic findings in which local estrogen therapy for atrophic endometrium and surgical intervention of endometrial cancer are common. Team-based care with collaboration among gynecologic oncologists, medical oncologists and primary-care providers is essential. This can be useful in preventing future cases and preferably improving outcomes of further endometrial biopsies after this complication by identifying risk factors for PMB, such as long-term hypoestrogenism or obesity.

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