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Original Research Article

Clinicopathological and Histopathological Spectrum of Postmenopausal Bleeding: A Retrospective Analysis from a Tertiary Care Hospital

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Abstract:

Background: Postmenopausal Bleeding is an important gynecological symptom in the elderly and may be associated with either benign, premalignant or malignant disease process. Early evaluation is critical to the timely diagnosis and treatment, particularly in the tertiary care setting where there are many such cases.

Objective: To determine the clinicopathological profile and histopathological spectrum of women presenting with postmenopausal bleeding and common underlying aetiology of the women.

Method: Retrospective observational study in Department of obstetrics and Gynecology of Nalanda Medical College & Hospital for a period of 1 year. There were a total of 90 women with a history of postmenopausal bleeding. The clinical information, comorbidities, ultrasonographic data and histopathological reports were retrieved from hospital records and subsequently analyzed by descriptive and inferential statistical methods.

Result: Most of the patients were over 60 years and multiparous. Common comorbidities were hypertension and obesity as well as diabetes. Often, increased thickness of the endometrium was noted on ultrasonography. The most frequent histopathological finding was atrophic endometrium, followed by endometrial hyperplasia and polyps and then by malignant lesions in a few cases.

Conclusion: Although many pathologies are associated with postmenopausal bleeding, benign lesions are much more common, but the fact that there is a possibility of premalignant or malignant lesions means that thorough evaluation is warranted. Definitive diagnosis and guidance for management is best obtained from histopathological examination.

Keywords: Postmenopausal Bleeding, Histopathology, Endometrial Hyperplasia, Endometrial Carcinoma, Atrophic Endometrium, Transvaginal Ultrasonography.

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Introduction

Postmenopausal bleeding (PMB) is bleeding from the genital tract after 12 months of there being no more periods in a woman who has reached menopause. Menopause, according to the World Health Organization, is the permanent ending of menstruation and the loss of ovarian follicular activity and ovarian hormone production. PMB is regarded as one of the most significant gynecological symptoms in elderly women, as it could be associated with a benign or pre-cancerous or malignant condition that necessitates early evaluation and management [1].

The prevalence of postmenopausal bleeding is different in various parts of the world and has been reported as 4% to 11% among postmenopausal women [2]. While most women with PMB have a benign explanation (e.g., endometrial atrophy, polyps, hormone replacement therapy), in about 10% of women, PMB occurs in the context of a genital tract malignancy, making it a clinically important symptom [3]. Endometrial carcinoma is the most frequent malignancy associated with PMB, and almost 90% of women with endometrial cancer experience abnormal bleeding as their first sign of cancer [4]. Hence, PMB is considered to be a cardinal feature of uterine endometrium malignancy.

This spectrum of cause is very wide, and physiological, inflammatory, hyperplastic, and neoplastic lesions of the endometrium, cervix, vagina, and ovary are all involved in PMB. The most common cause, accounting for almost 60–80%, of endometrial atrophy in various studies [5]. Other non-cancerous factors are endometrial polyps, submucosal fibroids, endometrial hyperplasia, cervicitis and senile vaginitis. Unusual thickening and abnormal growth (hy-

perplasia) and cancer (malignancy) of the endometrium and cervix, however, are important pathological issues, particularly in women who have risk factors [6].

There are a number of risk factors that have been identified for the development of pathological causes of PMB. These include obesity, nulliparity, diabetes mellitus, hypertension, late menopause, unopposed estrogen therapy, tamoxifen usage and family history of gynecological malignancy [7]. With the growing incidence of lifestyle-related diseases like obesity and diabetes in Indian women, the incidence of endometrial diseases is further compounded. Moreover, the rise in life expectancy has resulted in a higher number of elderly women with the onset of menopause, thus aggravating the increasing prevalence of PMB in tertiary care centres [8].

The diagnostic workup for PMB has not changed for the last 45 years, and histopathological evaluation is still the gold standard in the diagnosis of the underlying cause. Clinical examination and imaging techniques like transvaginal ultrasonography (TVS) give valuable information in the initial assessment of the endometrial thickness and uterine pathology, but the final diagnosis is dependent on the tissue sampling and pathological examination [9]. Diagnostic methods for evaluation of endometrial abnormalities include endometrial biopsy, dilation and curettage, and hysteroscopy-guided biopsy. Histopathological assessment aids in the differentiation of benign atrophic changes, hyperplasia and invasive malignancy and helps to inform further management and prognosis.

A late presentation, lack of awareness and inadequate access to specialist services in developing countries such as India, can result in late diagnosis of disease. The socio-demographic and reproductive profile of the patients and their healthcare access could affect the clinicopathological profile of PMB in this region. In this context, institution-based retrospective studies are crucial in order to gain knowledge on the disease burden in the area and the histopathological trends. These studies are important for epidemiologic information and may be helpful for early diagnosis, risk stratification, and devising management protocols [10].

Women of urban and rural population present with postmenstrual complaints in tertiary care centers like tertiary care hospital, Nalanda Medical College & Hospital, Bihar. But there are few data available on the clinicopathological and histopathological spectrum of PMB in this area. An awareness of these patterns is essential to better plans of diagnostic work and to proper intervention.

Hence, the present retrospective study was conducted in the Department of Obstetrics and Gynecology, Nalanda Medical College & Hospital to analyze the clinical presentation and associate risk factors for postmenopausal bleeding along with the histopathological spectrum of the cases. The study aims to determine the incidence of benign, pre-cancerous and cancerous lesions in PMB cases and to relate the findings with clinic-pathological characteristics in order to improve clinical decision making and prognosis in PMB cases.

Methodology

Study Design: This study was a retrospective observational hospital-based study to assess the clinicopathological and histopathological spectrum of postmenopausal bleeding (PMB) seen in women at a tertiary care unit. The purpose of this study was to evaluate the etiological spectrum, clinical appearance and histopathology of PMB.

Study Area: The study was carried out in Department of Obstetrics and Gynaecology at Nalanda Medical College & Hospital, Patna, Bihar, India

Study Duration: The cases were studied for one year from January 2025 to December 2025.

Sample Size: Of the 90 post-menopausal women with menopausal complaints of post-menopausal bleeding, 90 women were included in the study who met the inclusion criteria.

Study Population: The subjects included women who had gone through natural menopause and had experienced abnormal uterine bleeding 12 months or more after the last period. Patients were identified based on their medical records from the hospital, operation theatre registers and histopathology records.

Data Collection: Retrospective collection of data was done from the Medical Records Department, operation theatre registers and Histopathology Department. A predesigned data collection form was used to extract relevant information from clinical records which included age, parity, duration since menopause, presenting complaint, associated comorbidities, previous medical and surgical history and clinical examination findings.

Inclusion Criteria

- All women with postmenopausal bleeding who visited the Department of Obstetrics and Gynecology in the study period.
- Menopausal women (women who have not had their period for at least 12 months).
- Patients with available histopathological report for review.

Exclusion Criteria

- Patients with known malignant vulval, vaginal or cervical lesions.
- Women known to have bleeding disorders.
- Those on hormone replacement therapy (HRT).

- Inadequate medical records or missing histopathology.

Procedure: Information on the selected patients' demographics and clinical data obtained. All patients were examined thoroughly including per speculum and per vaginal examination. Where available, findings of cervical cytology (Pap smear) were recorded. The thickness of the endometrium, uterine cavity abnormalities and adnexal pathology were evaluated by transvaginal ultrasonography (TVS). Diagnostic hysteroscopy, guided curettage or polypectomy was then performed on patients afterwards as indicated. The obtained tissue samples were sent for histopathological examination (HPE). The histopathological results were classified into benign, pre-cancerous and cancerous lesions, and correlated with clinical presentation.

Statistical Analysis: Collected data were analyzed by using Microsoft excel and Statistical Package for Social Sciences (SPSS) version 25.0. Demographic variables, clinical characteristics and histopathological findings were summarized by descriptive statistics. Data on the continuous variables were presented as means ± SD and the data on the categorical variables as frequencies and percentages. Associations were determined using appropriate statistical tests which included Chi-square test as indicated, with p value of <0.05 as statistically significant".

Result

Table 1 presents the age distribution of patients who presented with post-menopausal bleeding who were included in the study. Most of the patients were of the age more than 60 years (40 patients (44.44%) followed by 23 patients (25.56%) in the age group 56-60 years. The 52-56 age group had 14 patients (15.56%) and the smallest number of patients in the age group were 48-52 years with 13 patients (14.44%). This means that after the age of 60, having post-menopausal bleeding becomes more common.

Table 1: Age distribution of patients (Total Sample Size = 90)

Age (years)	Number of Patients (N)	Percentage (%)
48–52	13	14.44
52–56	14	15.56
56–60	23	25.56
>60	40	44.44
Total	**90**	**100**

The parity distribution of the subjects in the study is shown in Table 2. The majority of patients observed were multiparous with 51 patients (56.67%) having parity of 3 and above. This was followed by 27 patients (30.00%) with parity 2 and 9 patients (10.00%) with parity 1. The number of patients (3.33%) without childbirth was minimal. These results indicate that the majority of the study population had higher parity in association with postmenopausal bleeding.

Table 2: Parity index (Total Sample Size = 90)

Parity	Number of Patients (N)	Percentage (%)
Nullipara	3	3.33
Para 1	9	10
Para 2	27	30
Para 3 and above	51	56.67
Total	**90**	**100**

The comorbidities of the patients are shown in Table 3. The most common comorbidities were hypertension (40.00%) followed by obesity (23.33%) and diabetes mellitus (22.22%). Four patients (4.44%) had cardiac disease, and three patients (3.33%) had asthma. But there were 46 patients (51.11%) without any associated comorbidities. The prevalence of hypertension and metabolic disorders as risk factors among women attending with post-menstrual bleeding demonstrates that such risk factors were common.

Table 3: Associated comorbidities (Total Sample Size = 90)

Comorbidity	Number of Patients (N)	Percentage (%)
Hypertension	36	40
Diabetes mellitus	20	22.22
Obesity	21	23.33
Cardiac disease	4	4.44
Asthma	3	3.33
Nil	46	51.11

Table 4 shows the distribution of endometrial thickness (by transvaginal ultrasonography). The most common endometrial thickness was 8.1–12 mm (in 38 patients, 42.22%) followed by 21 patients (23.33%) with an endometrial thickness of 4–6 mm. The number of patients with endometrial thickness > 12.1 mm was highest in 19 patients (21.11%), and the lowest number of patients (12 patients, 13.33%) had endometrial thickness of 6.1-8 mm. These observations imply that patients with PMB had a thicker endometrium more often.

Table 4: Endometrial thickness in mm (Total Sample Size = 90)		
Endometrial Thickness (mm)	**Number of Patients (N)**	**Percentage (%)**
4–6	21	23.33
6.1–8	12	13.33
8.1–12	38	42.22
>12.1	19	21.11
Total	**90**	**100**

As shown in table 5, the following histopathological patterns were observed in the samples taken from the endometria. Atrophic endometrium was the most common condition; observed in 31 patients (34.44%) followed by hyperplasia without atypia (19 patients, 21.11%) and proliferative endometrium (13 patients, 14.44%). Eleven patients (12.22%) had endometrial polyps, and endometrial carcinoma was detected in 7 patients (7.78%). In 4 patients (4.44%) hyperplasia with atypia was noted; in 3 patients (3.33%) there was a note of disordered endometrium and in 2 patients (2.24%) there was an absence of opinion. These results show prevalence of benign lesions but also reveal a high number of cases with malignant pathology.

Table 5: Histopathological pattern (Total Sample Size = 90)		
Histopathological Pattern	**Number of Patients (N)**	**Percentage (%)**
Atrophic endometrium	31	34.44
Hyperplasia without atypia	19	21.11
Hyperplasia with atypia	4	4.44
Endometrial carcinoma	7	7.78
Polyp	11	12.22
Proliferative endometrium	13	14.44
Disordered endometrium	3	3.33
No opinion	2	2.24
Total	**90**	**100**

Discussion

In the present study, the age-wise distribution of the PMB cases revealed that the maximum number of cases in the age group >60 years (44.44%), followed by 56-60 years (25.56%), 52-56 years (15.56%) and 48-52 years (14.44%) (Table 1). This discovery suggests that PMB is a condition that tends to occur more frequently as one gets older and clinically relevant as the risk of developing endometrial malignancy goes up with age. Sreelatha S. et al. also reported similar findings that 28% of the women were in the age group of 54-60 indicating a similar trend of increasing age predominance [11]. Similarly, Singh P. *et al.* reported that PMB was more prevalent in women older than 55 years highlighting age as an important risk factor for pathological endometrial changes [10]. This helps to reinforce the concept of the need to promptly assess bleeding events when a woman ages beyond menopause".

As seen in the parity distribution (Table 2), the majority of the cases were multiparous women. 56.67% of the women had parity 3 and above, 30% had parity 2 and 10% had parity 1 whereas 3.33% of women were nulliparous. This indicates that multiparity is associated with increased PMB, likely due to higher multiparity rate in the general population of tertiary care centres. A similar trend has been observed in Kothapally K. *et al.* where the nullipara group was predominant with 6.7% of the cases [12]. On the other hand, Bhosle A. *et al.* found a comparatively higher percentage of nulliparous women, which they explained by higher levels of estrogen and hence the endometrial pathology [13]. In our study, the proportion of women with nulliparity is less than that reported in other studies, which might be due to demographic differences.

Table 3 shows the comorbidities associated with the patients. Comorbidity was most commonly hypertension (40%), followed by obesity (23.33%), diabetes mellitus (22.22%), cardiac disease (4.44%) and asthma (3.33%) with 51.11% having none. The results are important as metabolic disorders have been identified as risk factors for endometrial hyperplasia

and cancer. A similar finding was reported by Tandulwadkar S. et al who reported 20% cases of diabetes mellitus and 36% cases of hypertension [14]. However, Astrup K. *et al.* also noted that there was a strong relationship between obesity and hypertension and abnormal endometrial pathology [2]. The presence of these comorbidities in our study further emphasizes the significance of these comorbidities as risk modifiers in PMB.

Evaluation of endometrial thickness by ultrasonography (Table 4) showed that the majority of women had thickness between 8.1–12 mm (42.22%), followed by 4–6 mm (23.33%), >12.1 mm (21.11%), and 6.1–8 mm (13.33%). Postmenopausal women with increased endometrium thickness are an important marker of hyperplasia and carcinoma. The thickness > 12 mm was found in 21.11% of women which is higher than the findings of Tandulwadkar S. *et al* who reported 11.6% women with thickness > 12 mm. Likewise, Karlsson B. *et al.* have reported that endometrial thickness > 5 mm is an indicator of pathological findings. This highlights the role of transvaginal sonography as an initial investigation in PMB.

At the end of the study, on histopathological examination (Table 5), atrophic endometrium was found most frequently (34.44%) followed by proliferative endometrium (14.44%), endometrial polyp (12.22%), hyperplasia without atypia (21.11%), endometrial carcinoma (7.78%), hyperplasia with atypia (4.44%) and disordered endometrium (3.33%). Thinning and fragility of the endometrium after menopause is the most common cause of a benign PMB known as atrophic endometrium. Similarly, Singh P. *et al,* reported atrophic endometrium in 38.33, simple hyperplasia in 18.33 and carcinoma in 13.33. Similarly, in almost 40% of PMB cases, atrophy was observed by Gredmark T. *et al.* [15]. Our reported carcinoma rate (7.78%) was, however, low in comparison to Singh et al. which may be attributed to early presentation and better screening for diagnosis in the tertiary care setting.

The presence of endometrial hyperplasia with and without atypia together accounted for 25.55% of cases, which is clinically relevant as these lesions are considered precancerous. Kurman R.J. *et al*. highlighted the much-increased risk of atypical hyperplasia to carcinoma [16]. The finding of polyps in 12.22% of our patients also demonstrates the fact that blind curettage is not sufficient to detect all the polyps as there are focal lesions which may be missed if no hysteroscopic guidance is used. Hysteroscopy has been demonstrated to be more effective than other methods in identifying focal lesions of the uterine cavity, such as uterine polyps and localized carcinoma by studies by Clark T.J. and others [17].

Overall, the results of the present study agree with the literature and indicate that atrophic endometrium is indeed the most common etiology of PMB; however, a significant number of women do have premalignant or malignant lesions. In this regard, all cases of PMB should be carefully clinically, radiologically and histopathologically appraised to exclude malignancy and allow early management.

Conclusion

This study therefore indicates that postmenopausal bleeding is a significant clinical symptom and that it should be investigated carefully as it can have a broad range of causes from benign to premalignant and malignant. The results indicated that both age and multiparity as well as related metabolic comorbidities, like hypertension, obesity, and diabetes, could play a major role in the onset of postmenopausal bleeding. Atrophic endometrium was the most common histopathological lesion, which reflects its high prevalence as a benign etiology, but endometrial hyperplasia and carcinoma were seen, reflecting the risk of serious pathology. Transvaginal ultrasonography was helpful in early diagnosis of the endometrial thickness and histopathological examination was considered the gold standard for confirming the diagnosis. Thus, early detection and prompt evaluation of post-menopausal bleeding is important to rule out cancer, start treatment early and achieve better patient outcomes.

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