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Histopathological Spectrum of Endometrial Lesions in Abnormal Uterine Bleeding: A Cross-Sectional Study in a Tertiary Care Hospital

Dr. Abhijit Kolhe

Assistant Professor, Dept of Pathology, Geetanjali medical College and Hospital, Udaipur (Raj.)

Corresponding author: Dr. Abhijit Kolhe
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Abstract:

Background: Abnormal uterine bleeding (AUB) is a frequent gynecological complaint with a wide spectrum of underlying causes. Histopathological examination of endometrial tissue plays a vital role in diagnosing these conditions, especially in peri- and postmenopausal women.

Objective: To evaluate the histopathological patterns of endometrial lesions in patients presenting with AUB and correlate them with age and clinical features.

Methods: This cross-sectional study included 162 cases of endometrial samples from women presenting with AUB. Samples were processed and examined histologically. Data were analyzed by age distribution, histological diagnosis, and menopausal status. Statistical significance was calculated using the chi-square test.

Results: The most common histopathological finding was proliferative endometrium (32.1%), followed by secretory endometrium (22.2%), endometrial hyperplasia (20.3%), and endometrial carcinoma (6.8%). Hyperplasia and malignancy were more common in women aged >45 years ($p < 0.01$). Postmenopausal bleeding was most frequently associated with atrophic endometrium and carcinoma.

Conclusion: Histopathological evaluation is essential for definitive diagnosis in AUB, particularly in peri- and postmenopausal women where the risk of malignancy is higher. Routine endometrial sampling is advocated in this population for early detection and management.

Keywords: Abnormal uterine bleeding, Endometrium, Histopathology, Endometrial carcinoma, Hyperplasia

Introduction

Abnormal uterine bleeding (AUB) is defined as bleeding from the uterus that deviates from normal menstrual pattern in terms of frequency, duration, or quantity. It is a major cause of morbidity in women of reproductive, perimenopausal, and postmenopausal age groups [1].

AUB has a broad range of underlying causes, classified by the FIGO PALM-COEIN system: structural causes (polyp, adenomyosis, leiomyoma, malignancy) and non-structural causes (coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, and not otherwise classified) [2].

Histopathological examination of endometrial tissue remains the gold standard for diagnosis in AUB, especially to rule out premalignant and malignant lesions in perimenopausal and postmenopausal women [3]. Lesions range from benign proliferative or secretory changes to hyperplasia and carcinoma. The distribution and frequency vary with age and hormonal status [4].

This study was conducted to analyze the histopathological spectrum of endometrial lesions in women with AUB and to correlate findings with age and menopausal status.

Materials and Methods

This cross-sectional study was conducted in the Department of Pathology over a period of 18 months. A total of 162 endometrial samples from women presenting with AUB were included. Ethical clearance was obtained, and informed consent was ensured.

Inclusion Criteria:

- All women presenting with abnormal uterine bleeding undergoing endometrial sampling (biopsy or curettage).

Exclusion Criteria:

- Inadequate biopsy samples
- Patients on hormonal therapy or anticoagulants

Endometrial samples were obtained by dilation and curettage or pipelle biopsy. Specimens were fixed in 10% formalin, processed by paraffin embedding, sectioned at 4 µm, and stained with hematoxylin and eosin.

Histopathological diagnosis was made and categorized as:

- Normal physiological (proliferative, secretory)
- Atrophic endometrium
- Disordered proliferative endometrium
- Endometrial hyperplasia (with/without atypia)
- Endometrial carcinoma
- Other (polyps, endometritis)

Statistical Analysis:

Data were compiled in MS Excel and analyzed using SPSS v22.0. Descriptive statistics were applied. Chi-square test was used to determine significance between histopathological patterns and age groups. $p < 0.05$ was considered significant.

Results

1. **Age Distribution**

Out of 162 cases:

- 42 (25.9%) were aged 21–30 years
- 48 (29.6%) were 31–40 years
- 38 (23.5%) were 41–50 years
- 34 (21.0%) were >50 years

Mean age: **39.2 ± 8.7 years**

2. **Histopathological Findings**

Histopathological Diagnosis	No. of Cases (%)
Proliferative endometrium	52 (32.1%)
Secretory endometrium	36 (22.2%)
Disordered proliferative pattern	16 (9.9%)
Endometrial hyperplasia (without atypia)	20 (12.3%)
Atypical hyperplasia	13 (8.0%)
Endometrial carcinoma	11 (6.8%)
Endometrial polyp	6 (3.7%)
Endometritis	4 (2.5%)

3. **Age-Wise Correlation with Lesions**

- Hyperplasia and carcinoma were significantly more common in women aged >45 years (**p = 0.004**, Chi-square = 9.27).
- Atrophic endometrium (noted in 6/162) was seen exclusively in postmenopausal women.

4. **Menopausal Status Correlation**

Diagnosis	Premenopausal (n = 122)	Postmenopausal (n = 40)
Hyperplasia + Carcinoma	14 (11.5%)	30 (75%)
Atrophic/Endometritis	6 (4.9%)	8 (20%)
Proliferative/Secretory	102 (83.6%)	2 (5%)

There was a statistically significant increase in endometrial neoplastic lesions in postmenopausal women (**$p < 0.001$**).

Discussion

This study highlights the histopathological spectrum of endometrial lesions in women presenting with AUB. Proliferative and secretory endometria comprised the most frequent findings in reproductive-age women, consistent with functional hormonal disturbances [5].

Endometrial hyperplasia, with or without atypia, was significantly more prevalent in women aged ≥45 years, supporting previous studies by Khare et al. and Muzaffar et al. [6,7]. Atypical hyperplasia is a known precursor of endometrial carcinoma, hence early diagnosis is vital [8].

In our study, **6.8% of cases were diagnosed with endometrial carcinoma**, which is comparable to previous Indian reports ranging from 5% to 10% in AUB cases [9]. Most of these cases occurred in the postmenopausal group, underlining the importance of endometrial sampling in this demographic.

The association of atrophic endometrium with postmenopausal bleeding was also well established, aligning with the literature [10]. Disordered proliferative endometrium likely reflects chronic anovulation in perimenopausal women.

Limitations of this study include its single-center nature and lack of follow-up data or radiological correlation. However, it underscores the diagnostic importance of histopathology in AUB evaluation.

Conclusion

Histopathological examination of endometrial tissue remains essential for diagnosing the underlying cause of AUB, especially in perimenopausal and postmenopausal women where the risk of hyperplasia and carcinoma is significantly higher. Routine sampling in AUB cases can facilitate early detection of premalignant and malignant conditions, leading to timely intervention.

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