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Original Research Article

Endometrial Biopsy Patterns in Abnormal Uterine Bleeding: Urban vs Rural India

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Abstract:

Introduction: Abnormal uterine bleeding is a prevalent gynecological issue and one of the most frequent severe menstruation disorders affecting women of all ages. AUB adversely impacts patient quality of life and is linked to financial detriment, diminished productivity, and compromised health. Abnormal uterine bleeding (AUB) is a prevalent issue impacting women at various life stages.

Aim: This study aimed to ascertain the spectrum of abnormal uterine bleeding (AUB) among community.

Methods: This is retrospective research conducted at a hospital with women with abnormal uterine bleeding (AUB). Baseline demographic data and clinical details regarding menstruation problems were gathered using a pre-validated, semi-structured proforma following the acquisition of informed consent.

Results: Proliferative and secretory endometrium were more abundant in the rural cohort, but hyperplasia and cancer were comparatively more frequent in the urban cohort. Endometrial cancer was predominantly identified in women aged over 50. The results indicated proliferative endometrium in 35% of cases, secretory endometrium in 18%, hyperplasia in 19%, and cancer in 9%.

Conclusion: AUB affects women across all age groups, significantly affecting their quality of life. AUB-N, AUB-O and AUB-L contribute to a major proportion of AUB.

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Introduction

Abnormal uterine bleeding (AUB) is a common gynecological condition among individuals of reproductive, perimenopausal, and postmenopausal ages [1]. It significantly impacts quality of life and is a prevalent justification for endometrial biopsy to exclude premalignant and malignant neoplasms [2]. The endometrial biopsy is a crucial diagnostic tool, particularly in low- and middle-income countries like India, due to its cost-effectiveness and accessibility [3].

India exhibits considerable disparities in healthcare accessibility, health-seeking behaviours, nutritional status, and the incidence of risk factors such as obesity, polycystic ovarian syndrome, and metabolic disorders between urban and rural areas [4]. These changes may influence the spectrum of endometrial diseases identified in women with abnormal uterine bleeding (AUB). Nonetheless, data comparing endometrial biopsy changes between urban and Rural populations are limited [5].

This study aims to assess the histological features of endometrial biopsies in women experiencing abnormal uterine bleeding from both urban and rural regions in India, highlighting possible epidemiological differences and implications for clinical management.

Methods

Study Design and Setting: This retrospective, comparative investigation was performed at Patna Medical College and Hospital, India. Medical records spanning from January 2025 to January 2026 were examined.

Study Population: 100 women exhibiting abnormal uterine bleeding who had endometrial biopsy during the study period were included. Participants were categorized into two groups according to their place of residence:

- Urban group: 50 patients
- Rural group: 50 patients

Inclusion Criteria

- Women aged ≥18 years

- Presenting with abnormal uterine bleeding
- Underwent endometrial biopsy with adequate tissue for histopathological evaluation

Exclusion Criteria

- Pregnancy-related bleeding
- Known bleeding disorders
- Inadequate or inconclusive biopsy samples

Data Collection: Data were obtained from hospital records, encompassing age, parity, menopausal status, domicile (urban/rural), biopsy indication, and histological diagnosis. Endometrial biopsy tissues were evaluated by seasoned pathologists and classified into conventional histological patterns.

Statistical Analysis: Data were inputted into a spreadsheet and subjected to descriptive analysis. Categorical variables were represented as frequencies and percentages. A comparative comparison of urban and rural groups was conducted utilizing the chi-square test, with $p < 0.05$ being statistically significant.

Results

Demographic Characteristics: The participants' ages ranged from 22 to 68 years, with a mean age of 42.6 ± 9.8 years. The primary demography of women was within the perimenopausal age range of 40 to 50 years. Postmenopausal bleeding was more common in the urban cohort.

Histopathological Patterns

Table 1: The distribution of endometrial biopsy findings is shown below

Histopathological Pattern	Urban (n=50)	Rural (n=50)	Total (n=100)
Proliferative endometrium	12 (24%)	22 (44%)	35 (35%)
Secretory endometrium	10 (20%)	14 (28%)	18 (18%)
Disordered proliferative endometrium	9 (18%)	6 (12%)	15 (15%)
Endometrial hyperplasia without atypia	11 (22%)	9 (18%)	19 (18%)
Endometrial hyperplasia with atypia	4 (8%)	3 (6%)	8 (8%)
Endometrial carcinoma	6 (12%)	4 (8%)	9 (9%)

Proliferative and secretory endometrium were more prevalent in the rural cohort, while hyperplasia and cancer were comparatively more common in the urban cohort. Endometrial cancer was primarily detected in women over the age of 50.

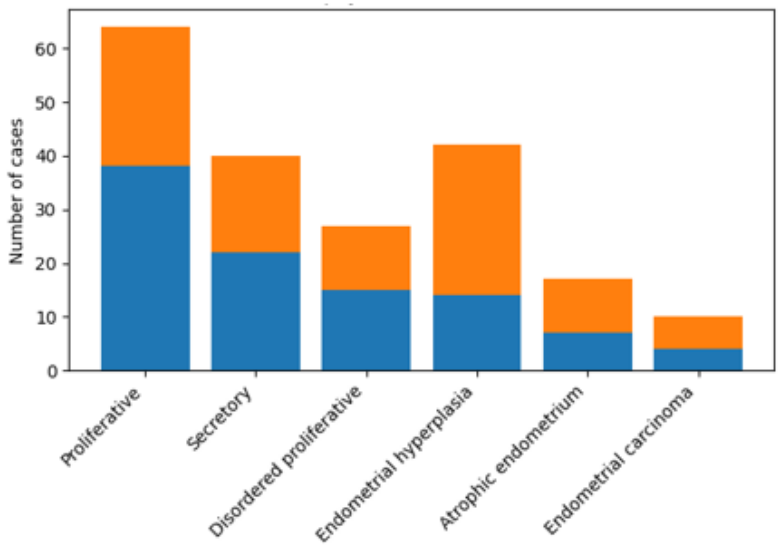

Figure 1: distribution of endometrial biopsy patterns in urban and rural women with AUB

Discussion

This study highlights significant differences in endometrial biopsy patterns among women experiencing abnormal uterine bleeding in urban versus rural areas of India. Functional endometrial patterns (proliferative and secretory) were more prevalent among rural women, suggesting a higher occurrence of ovulatory or hormonally caused bleeding in the absence of significant organic disease [6].

In contrast, urban women demonstrated a higher incidence of endometrial hyperplasia and cancer [7].

This can be attributed to urban lifestyle factors such as sedentary behaviour, obesity, delayed childbearing, and an increased incidence of metabolic syndrome, all acknowledged risk factors for unopposed estrogen exposure [8].

The overall prevalence of endometrial cancer (8%) aligns with previous hospital-based studies conducted in India. Although there is no statistical significance between urban and rural groups, the trend underscores the importance of careful monitoring, particularly in urban postmenopausal women experiencing abnormal uterine bleeding (AUB) [9].

The study's weaknesses include its retrospective design, limited sample size, and single-center setting, which may restrict generalizability. Furthermore, detailed data concerning body mass index, hormonal therapy, and comorbidities were not regularly available.

Conclusion

Patterns of endometrial biopsy in cases of abnormal uterine bleeding exhibit significant differences between urban and rural populations in India. Functional endometrial alterations are prevalent in rural women, whereas premalignant and malignant lesions are comparatively more frequent in urban women. These findings underscore the necessity for context-specific clinical vigilance and customized screening procedures, especially for high-risk urban populations. It is advisable to conduct larger multicentric prospective studies to clarify these discrepancies and influence national guidelines.

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