

**MORPHOLOGICAL AND CLINICAL FEATURES OF ENDOMETRIAL
CHANGES IN WOMEN WITH ABNORMAL UTERINE BLEEDING**

Axmedjanova Xurshidaxon Zokirjon qizi

Madolimova Namunaxon Xasanboy qizi

Tashkent state medical university, Tashkent Uzbekistan.

Abstract. *Abnormal uterine bleeding (AUB) is one of the most common gynecological disorders affecting women of reproductive age and is frequently associated with structural and functional alterations of the endometrium. Accurate evaluation of these changes is essential for proper diagnosis and effective clinical management.*

This study aims to investigate the morphological and clinical characteristics of endometrial changes in women presenting with abnormal uterine bleeding. A descriptive observational study was conducted, including patients diagnosed with AUB based on clinical examination and diagnostic procedures. Endometrial samples were obtained using standard gynecological techniques and analyzed through histopathological methods.

The results demonstrated a wide spectrum of morphological alterations, including endometrial hyperplasia, irregular glandular architecture, stromal edema, and inflammatory changes. Clinical findings revealed that these alterations were strongly associated with hormonal imbalance, particularly in women with prolonged or irregular menstrual cycles. Endometrial hyperplasia was identified as the most frequent pathological condition among the studied population.

In conclusion, abnormal uterine bleeding is closely linked to significant morphological changes in the endometrium. Histopathological evaluation remains a key diagnostic tool for identifying underlying pathology and guiding treatment strategies. Early detection of abnormal endometrial patterns is crucial for preventing disease progression and improving patient outcomes.

Keywords. *Abnormal uterine bleeding, endometrium, morphology, endometrial hyperplasia, histopathology, reproductive age, gynecology.*

Introduction

Abnormal uterine bleeding (AUB) is a common gynecological condition that significantly affects the quality of life of women of reproductive age. It is characterized by irregularities in menstrual volume, duration, or frequency and represents one of the leading causes of gynecological consultations worldwide [1]. The etiology of AUB is multifactorial and includes hormonal imbalance, structural abnormalities, and functional disorders of the endometrium.

The endometrium is a dynamic tissue that undergoes cyclic morphological and functional changes under the influence of ovarian hormones. Disruption of hormonal regulation, particularly involving estrogen and progesterone, may lead to abnormal proliferation and

shedding of the endometrial lining, resulting in irregular or excessive bleeding [2]. These hormonal disturbances are often associated with conditions such as anovulation, polycystic ovary syndrome, and perimenopausal transition.

Morphological changes of the endometrium play a crucial role in the pathogenesis of AUB. These changes may include endometrial hyperplasia, glandular irregularities, stromal edema, and inflammatory alterations. Histopathological examination remains the gold standard for identifying these abnormalities and distinguishing between benign and potentially malignant conditions [3].

The classification of AUB has been standardized by the FIGO system (PALM-COEIN), which categorizes causes into structural and non-structural factors. This classification has improved diagnostic accuracy and provided a framework for targeted treatment strategies [4]. However, despite these advancements, the relationship between clinical presentation and underlying morphological changes remains an area requiring further investigation.

Understanding the correlation between clinical symptoms and histological findings is essential for improving diagnostic precision and optimizing patient management. Early identification of pathological endometrial changes can help prevent complications, including progression to endometrial carcinoma.

Therefore, the aim of the present study is to investigate the morphological and clinical features of endometrial changes in women with abnormal uterine bleeding, with emphasis on histopathological patterns and their clinical significance.

Materials and Methods

This study was conducted as a descriptive observational investigation aimed at evaluating the morphological and clinical features of endometrial changes in women with abnormal uterine bleeding. A total of 72 women of reproductive age (18–45 years) presenting with AUB were included in the study. Patients were selected based on clinical symptoms such as prolonged, heavy, or irregular menstrual bleeding.

Inclusion criteria consisted of women diagnosed with abnormal uterine bleeding who underwent gynecological examination and endometrial sampling. Exclusion criteria included pregnancy-related bleeding, known malignancy, and systemic coagulation disorders.

Clinical evaluation included detailed medical history, menstrual pattern analysis, and physical examination. Transvaginal ultrasound (TVUS) was performed to assess endometrial thickness and exclude structural abnormalities such as polyps or fibroids. Endometrial thickness greater than normal reference values was considered suggestive of pathological changes [5].

Endometrial samples were obtained using endometrial biopsy or dilation and curettage (D&C) procedures under sterile conditions. The collected specimens were fixed in formalin and processed for histopathological examination. Tissue sections were stained with hematoxylin and eosin (H&E) and analyzed under light microscopy.

Morphological evaluation focused on identifying:

- Endometrial hyperplasia

- Glandular architecture abnormalities
- Stromal changes (edema, fibrosis)
- Inflammatory infiltration

Histopathological findings were classified according to established diagnostic criteria for endometrial pathology [6].

Table 1. Clinical and Morphological Parameters Assessed

Parameter	Method of Assessment	Clinical Significance
Endometrial thickness (mm)	Transvaginal ultrasound	Indicates hyperplasia or pathology
Menstrual pattern	Clinical history	Identifies type of bleeding
Histological structure	Microscopy (H&E staining)	Confirms morphological changes
Presence of inflammation	Histological analysis	Suggests chronic pathology

Note. Methods are based on standard gynecological and histopathological diagnostic guidelines [5,6].

All data were recorded and analyzed using descriptive statistical methods. Quantitative variables were expressed as mean \pm standard deviation, while qualitative findings were presented as percentages.

Results

The clinical and histopathological analysis revealed significant morphological changes in the endometrium of women presenting with abnormal uterine bleeding. Among the 72 patients included in the study, the most common clinical presentation was prolonged menstrual bleeding (46%), followed by heavy menstrual bleeding (32%) and irregular cycles (22%).

Histopathological examination demonstrated a wide spectrum of endometrial alterations. Endometrial hyperplasia was identified as the most frequent finding, observed in 38% of cases. Normal proliferative endometrium was present in 21% of patients, while secretory phase endometrium accounted for 17%. Inflammatory changes, including chronic endometritis, were detected in 14% of cases. A small percentage (10%) showed disordered proliferative endometrium [7].

Table 2. Distribution of Histopathological Findings in AUB Patients (n = 72)

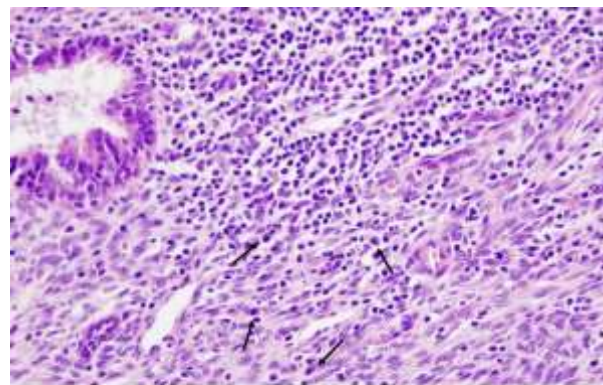
Histological Finding	Number of Cases	Percentage (%)
Endometrial hyperplasia	27	38%
Proliferative endometrium	15	21%

Histological Finding	Number of Cases	Percentage (%)
Secretory endometrium	12	17%
Chronic endometritis	10	14%
Disordered proliferative pattern	8	10%

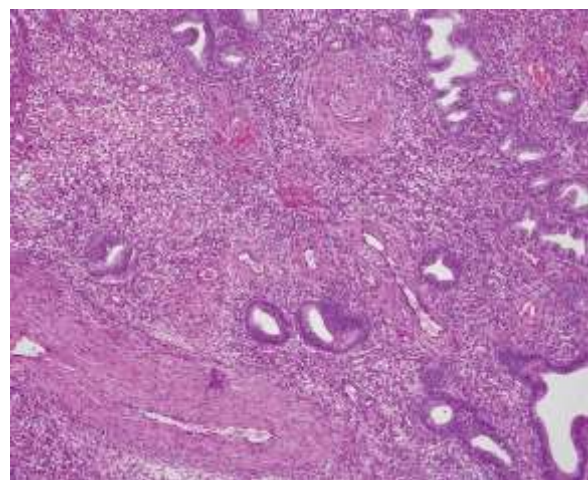
Note. Classification based on standard histopathological diagnostic criteria [7].

In addition, transvaginal ultrasound findings showed that increased endometrial thickness (>12 mm) was strongly associated with hyperplastic changes. Patients with inflammatory pathology demonstrated moderate thickening with irregular endometrial contours. These findings highlight the correlation between clinical presentation and underlying morphological alterations [8].

Figure 1. Histopathological Features of Endometrial Changes in AUB



Chronic endometritis; arrows point to plasma cells



Note. Representative histological patterns of endometrial tissue demonstrating hyperplasia, proliferative, secretory, and inflammatory changes [7,8].

Discussion

The findings of the present study demonstrate that abnormal uterine bleeding is strongly associated with significant morphological alterations of the endometrium. The predominance of endometrial hyperplasia observed in this study is consistent with previous research, where prolonged estrogen exposure without adequate progesterone opposition has been identified as a key factor in the development of hyperplastic changes [9].

Endometrial hyperplasia was the most frequent histopathological finding, accounting for 38% of cases. This result supports the concept that hormonal imbalance, particularly unopposed estrogen stimulation, plays a central role in the pathogenesis of AUB. Similar studies have reported comparable prevalence rates, emphasizing the importance of early detection of hyperplastic lesions to prevent progression to endometrial carcinoma [10].

The presence of proliferative and secretory endometrium in a significant proportion of patients indicates that not all cases of AUB are associated with pathological changes. In some cases, functional disturbances of the menstrual cycle may lead to abnormal bleeding without structural abnormalities. However, disordered proliferative patterns observed in this study suggest an intermediate stage between normal physiology and pathological hyperplasia [11].

Inflammatory changes, including chronic endometritis, were identified in 14% of cases. These findings highlight the role of infectious and inflammatory processes in the development of abnormal uterine bleeding. Chronic inflammation may disrupt normal endometrial function, leading to irregular shedding and prolonged bleeding episodes [12].

Ultrasound findings in this study demonstrated a strong correlation between increased endometrial thickness and histopathological abnormalities. Patients with endometrial hyperplasia showed significantly increased thickness, while inflammatory changes were associated with irregular endometrial patterns. These results confirm that transvaginal ultrasound is a valuable non-invasive diagnostic tool for the initial evaluation of AUB [13].

From a clinical perspective, the integration of imaging and histopathological assessment provides a comprehensive approach to diagnosis. While ultrasound helps identify structural abnormalities, histological examination remains essential for definitive diagnosis and classification of endometrial pathology. This combined approach improves diagnostic accuracy and guides appropriate treatment strategies [14].

Despite the strengths of this study, certain limitations should be acknowledged. The sample size, although adequate for descriptive analysis, may limit generalizability. Additionally, the study design does not allow for long-term follow-up to assess progression of endometrial changes. Future studies should include larger populations and longitudinal analysis to better understand the evolution of endometrial pathology in AUB.

In conclusion, the results confirm that abnormal uterine bleeding is closely associated with a wide range of morphological changes in the endometrium, with endometrial hyperplasia being the most common finding. Early identification and accurate classification of these changes are essential for effective clinical management and prevention of serious complications.

Conclusion

In conclusion, abnormal uterine bleeding is closely associated with a wide range of morphological changes in the endometrium. The study demonstrates that endometrial hyperplasia is the most common pathological finding, followed by functional and inflammatory alterations.

The results highlight the important role of hormonal imbalance in the development of abnormal endometrial patterns. In addition, the correlation between ultrasound findings and histopathological changes confirms the value of combined diagnostic approaches in clinical practice.

Early detection and accurate classification of endometrial abnormalities are essential for effective treatment and prevention of complications, including progression to malignant conditions. Histopathological examination remains the gold standard for diagnosis, while non-invasive methods such as ultrasound serve as important initial screening tools.

Overall, a comprehensive clinical and morphological assessment of the endometrium is crucial for improving diagnostic accuracy and optimizing patient management in women with abnormal uterine bleeding.

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