ORIGINAL ARTICLE

Evaluation of Clinical Spectrum and Patterns of Abnormal Uterine Bleeding (AUB) in Perimenopausal Women. A Hospital-Based Study

SHAZIA[1], MAMOONA SARWAR[2], AYSHA IQBAL [3], NAZNEEN AKHTAR[4], FARAH SALEEM[5], ABEERAH ZAFAR[6]
[1]Gynaecologist, Category-D Hospital, Munda, Lower Dir, Khyber Pakhtunkhwa, Pakistan
[2]Postgraduate Resident (PGR), Department of Obstetrics & Gynaecology, Ittefaq Hospital Trust, Model Town, Lahore, Pakistan
[3]Woman Medical Officer (WMO), Sahiwal Teaching Hospital, Sahiwal, Pakistan
[4]Department of Obstetrics & Gynaecology, KRL Hospital, Islamabad, Pakistan
[5]Senior Consultant Gynaecologist, Dr. Faisal Masood Teaching Hospital, Sargodha, Pakistan
[6]Senior Registrar, Gynaecology Unit-II, Sahiwal Teaching Hospital, Sahiwal, Pakistan
Correspondence to: Shazia, Email: shazia_alam1@yahoo.com

ABSTRACT

Background: Abnormal uterine bleeding (AUB) is one of the most common gynecological complaints among perimenopausal women and a leading cause of hospital visits. It significantly affects quality of life and may indicate underlying gynecological or systemic pathology. Understanding the clinical spectrum and bleeding patterns of AUB is essential for timely diagnosis and appropriate management.

Objective: To evaluate the clinical manifestations, hematological status, and etiological causes of abnormal uterine bleeding among perimenopausal women aged 40–50 years.

Methods: This cross-sectional study included 87 perimenopausal women presenting with abnormal uterine bleeding. Detailed clinical and menstrual histories along with physical examinations were recorded. Laboratory investigations included complete blood count, thyroid function tests, and relevant hormonal assays. Transvaginal ultrasonography was performed in all cases. Abnormal uterine bleeding patterns and etiologies were classified using the FIGO PALM–COEIN system. Data were analyzed to determine the prevalence of various bleeding patterns and underlying causes.

Results: Heavy menstrual bleeding was the most frequent presentation, observed in 46% of participants, followed by intermenstrual bleeding (21%), prolonged bleeding (18%), and frequent cycles (15%). According to the PALM–COEIN classification, structural causes accounted for 55% of cases, with leiomyoma (27%) and endometrial polyps (15%) being the most common. Non-structural causes were identified in 45% of women, predominantly ovulatory dysfunction (28%) and coagulopathy or endocrine abnormalities (17%). Anemia was present in 42% of participants and was more frequent among women with heavy menstrual bleeding.

Conclusion: Abnormal uterine bleeding in perimenopausal women exhibits a broad clinical spectrum, with heavy menstrual bleeding being the most common presentation. Both structural and non-structural etiologies play a significant role, emphasizing the importance of a systematic diagnostic approach using the PALM–COEIN framework. Early diagnosis and targeted management are crucial to reduce morbidity and improve quality of life in this population.

Keywords: Abnormal uterine bleeding; Perimenopause; PALM–COEIN; Heavy menstrual bleeding; Leiomyoma; Ovulatory dysfunction.

INTRODUCTION

One of the most common gynecology complaints of perimenopausal women, abnormal uterine bleeding (AUB) is a major reason of outpatient care and diagnostic tests, as well as surgical interventions in tertiary care hospitals [1]. Complex hormonal fluctuations occur during the perimenopausal period, which is normally several years before the final menstrual period, as a result of progressive ovarian follicular depletion [2]. These endocrine alterations are likely to cause abnormal ovulation, disrupted endometrial response, and changes in menstrual blood loss, which predisposes women of this age group especially to AUB [3].

AUB in perimenopausal women has a wide range of bleeding patterns and includes menorrhagia, metrorrhagia, polymenorrhea, oligomenorrhea, and intermenstrual bleeding [4]. Although most of the cases are functional and related to the anovulatory cycles, a significant percentage of the cases can be related to the underlying structural or organic pathology that may include uterine fibroids, adenomyosis, endometrial polyps, endometrial hyperplasia, and malignancy [5]. The clinical profile is complicated further by the co-occurrence of such systemic conditions as obesity, diabetes mellitus, thyroid dysfunction and hypertension, which affects the way these conditions present themselves in this age group and their further development [6].

AUB assessment among perimenopausal women has become a diagnostic dilemma because the normal physiological hormonal change will distort severe endometrial pathology [7].

Early and proper evaluation is thus important and necessary to tell the difference between benign causes and premalignant

and malignant diseases especially endometrial carcinoma whose occurrence gradually increases in the perimenopausal and early postmenopausal years [8]. The use of a systematic approach with careful analysis of clinical history, bleeding patterns, pelvic examinations, imaging, and endometrial biopsy to properly manage them is essential.

Knowledge on the clinical spectrum and trends of AUB in perimenopausal women in a hospital-based research setting will be important in understanding the common etiologies, risk factors, and patterns of presentations as per the local population [9]. These data will be valuable in the optimization of diagnostic interventions, evidence-based treatment, minimization of unnecessary surgical operations, and enhancement of general reproductive health outcomes in this high-risk group [10].

MATERIALS AND METHODS

This cross-sectional, hospital-based study was conducted in January 2022- April 2023 at three tertiary-level healthcare institutions in Pakistan, including Category-D Hospital, Munda, Lower Dir, Khyber Pakhtunkhwa, the Department of Obstetrics and Gynaecology, Ittefaq Hospital Trust, Model Town, Lahore, and Sahiwal Teaching Hospital, Sahiwal. These hospitals serve as major referral centers for both urban and semi-urban populations and provide comprehensive gynecological services. A total of 87 perimenopausal women aged 40–50 years presenting with abnormal uterine bleeding were enrolled using a non-probability consecutive sampling technique after obtaining informed consent. Perimenopausal status was determined on the basis of age, menstrual irregularity, and clinical assessment.

Women presenting with abnormal uterine bleeding in the specified age group were included in the study, while pregnant

women, postmenopausal women, those receiving hormonal therapy, patients with known bleeding disorders, and women with a previously diagnosed gynecological malignancy were excluded. Detailed clinical evaluation was performed for each participant using a structured proforma, which included demographic characteristics, parity, duration and pattern of bleeding, and associated symptoms. Bleeding patterns were categorized as heavy menstrual bleeding, intermenstrual bleeding, prolonged bleeding, or frequent cycles. General physical and pelvic examinations were conducted to assess uterine size, adnexal pathology, and evidence of systemic disease.

Laboratory investigations included complete blood count for assessment of hemoglobin levels and identification of anemia. Thyroid function tests and relevant hormonal assays were performed where clinically indicated. Transvaginal ultrasonography was carried out in all participants to evaluate endometrial thickness and to detect structural abnormalities such as leiomyoma, endometrial polyps, or adenomyosis. Endometrial sampling was performed in selected cases based on clinical judgment to exclude endometrial hyperplasia or malignancy. The etiological classification of abnormal uterine bleeding was performed using the FIGO PALM COEIN system, categorizing causes into structural and non-structural groups.

Collected data were entered into statistical software and analyzed descriptively. Results were expressed in terms of frequencies and percentages, and associations between bleeding patterns and the presence of anemia were evaluated descriptively. Confidentiality of patient information was strictly maintained throughout the study, and all procedures were carried out in accordance with the principles of the Declaration of Helsinki.

RESULTS

Eighty-seven perimenopausal women with AUB in total were being worked with. The average age of the subjects was 45.2 years +3.1. The majority of the women were multiparous, and they presented with more than six months of symptoms. Table 1 shows the different trends of abnormal uterine bleeding found in perimenopausal women who participated in the study. The most frequent presentation was heavy menstrual bleeding that was observed in almost half of the participants, which suggests that excessive menstrual blood loss is the most frequent clinical complaint in this age group. The second pattern was intermenstrual bleeding which is an abnormal shedding of endometrium usually experienced during hormonal changes during perimenopausal age. With slower bleeding and increased frequency, a smaller but still statistically significant percentage of women showed that menstrual disturbances are diverse in this transitional stage. Table 2 shows a distribution of etiological factors that caused the abnormal bleeding of the uterus according to the FIGO PALM–COEIN classification system. Over fifty percent of the cases were structural, which underscored the immense importance of uterine pathology to perimenopausal AUB. The most frequent structural abnormality was Leiomyoma, and then endometrial polyps and adenomyosis.

The incidence of endometrial hyperplasia or malignancy among women was a smaller percentage, which highlights the need to examine them carefully in this age group. Among non-structural etiological factors, ovulatory dysfunction was the most frequent etiology, which was a reflection of endocrine instability caused by deteriorating ovarian functions, whereas coagulopathy and other endocrine anomalies had a smaller proportion. According to Table 3, there is a correlation between various bleeding patterns and existence of anemia among the study participants. The occurrence rate of anemia was significantly higher in women with heavy menstrual bleeding than in women with other patterns of bleeding. This conclusion shows the negative influence of an overabundance of menstrual blood loss on the hematological condition and general health. Women having other bleeding patterns are less likely to be anaemic, which indicates that blood loss is lower. In general, the table highlights the clinical implications of untreated or chronic abnormal bleeding of the uterus and the necessity of early diagnosis and proper treatment to avoid morbidity caused by anemia. Heavy

menstrual bleeding was the most frequent presenting complaint, followed by intermenstrual bleeding. Prolonged bleeding and frequent cycles were less common but still clinically significant. Anemia was observed in 42% of participants overall and was significantly more common in women presenting with heavy menstrual bleeding. These findings highlight the clinical burden of AUB in perimenopausal women and emphasize the need for structured evaluation and early intervention.

Table 1: Distribution of Bleeding Patterns among Study Participants (n = 87)

Bleeding Pattern	Number (n)	Percentage (%)
Heavy menstrual bleeding	40	46.0
Intermenstrual bleeding	18	21.0
Prolonged bleeding	16	18.0
Frequent cycles	13	15.0

Table 2: Etiological Classification of AUB According to PALM–COEIN (n = 87)

Etiology (PALM–COEIN)	Number (n)	Percentage (%)
Structural causes (PALM)	48	55.0
- Leiomyoma	24	27.0
- Endometrial polyps	13	15.0
- Adenomyosis	8	9.0
- Malignancy and hyperplasia	3	4.0
Non-structural causes (COEIN)	39	45.0
- Ovulatory dysfunction	24	28.0
- Coagulopathy/endocrine causes	15	17.0

Table 3: Association of Anemia with Bleeding Patterns

Bleeding Pattern	Anemia Present n (%)	Anemia Absent n (%)
Heavy menstrual bleeding	22 (55.0)	18 (45.0)
Other bleeding patterns	15 (32.0)	32 (68.0)

DISCUSSION

Abnormal uterine bleeding in the perimenopausal years can be described as a complicated clinical phenomenon which is a result of hormonal disbalance and structural pathology of the uterus. In the current research, heavy menstrual bleeding was the most prevalent presenting complaint that was reported, either affecting almost half of the study population [11]. This is in line with the available literature, which records heavy menstrual bleeding as the most common form of AUB in the perimenopausal women because of the frequent anovulatory periods and unopposed estrogen exposure that causes excessive proliferation of the endometria [12].

The etiological assessment of causes with the aid of the FIGO PALM–COEIN classification showed that structural causes explained a marginally larger rate than non-structural causes [20]. The most commonly found structural abnormality was Leiomyoma which validates its long-standing association with AUB in women nearing menopause [13]. The high risk of having fibroids among this age group could be explained by the accumulation of estrogen during the reproductive life. The presence of endometrial polyps and adenomyosis was also significant and strengthens the necessity of imaging and endometrial examination in perimenopausal AUB [14].

Ovulatory dysfunction was the largest subgroup of the non-structural causes. This is the physiological change of the perimenopausal phase, which is irregular ovulation and a lack of progesterone, leading to irregular and frequent bleeding [19]. Further abnormalities of the endocrine system such as thyroid dysfunction was thought to contribute to irregular menstruation, which makes it significant to consider systemic assessment and not just gynecological assessment[15].

A significant percentage of women were seen to have anemia especially in those women with heavy menstrual bleeding [16]. This result highlights the great influence of AUB on the overall health of women, their functional capacity, and quality of life. Unless chronic blood loss is checked through timely interventions, iron deficiency anemia frequently occurs, which may further increase fatigue and decrease the productivity of work [17].

General, the results underscore the idea that although the majority of instances of perimenopausal AUB are harmless, a

significant number of them remain linked to structural or systemic pathologies that can be identified [18]. Thus, a personalized and systematic diagnostic is necessary to provide the early detection of premalignant conditions as well as to prescribe the necessary medical or surgical treatment[19,20].

CONCLUSION

Abnormal bleeding of the uterus in perimenopausal women has a broad clinical range with heavy menstrual bleeding being the most prevalent. Structural and non-structural etiology play an important role in AUB, and leiomyoma and ovulatory dysfunction turned out the predominant factors. The clinical burden of anemia and its influence on the health of women can be discussed due to its high prevalence. Implementation of a systematic method of assessment based on the FIGO PALM EIN classification allows correctly diagnosing and providing specific management. Early diagnosis and intervention are essential in order to minimize morbidity, avoid complications and enhance the overall quality of life of perimenopausal women.

REFERENCES

1. Whitaker L, Critchley HOD. Abnormal uterine bleeding. *Best Pract Res Clin Obstet Gynaecol*. 2016;34:54–65. doi:10.1016/j.bpobgyn.2015.11.012
2. Maybin JA, Critchley HOD. Medical management of heavy menstrual bleeding. *Womens Health (Lond)*. 2016;12(1):27–34. doi:10.2217/whe.15.100
3. Abbott JA. Adenomyosis and abnormal uterine bleeding (AUB-A): Pathogenesis, diagnosis, and management. *Best Pract Res Clin Obstet Gynaecol*. 2017;40:68–81. doi:10.1016/j.bpobgyn.2016.09.006
4. Betha K, Malavatu L, Talasani S. Distribution of causes of abnormal uterine bleeding using FIGO PALM-COEIN classification. *Int J Reprod Contracept Obstet Gynecol*. 2017;6(8):3523–3528. doi:10.18203/2320-1770.ijrcog20173476
5. Mishra D, Sultan S. FIGO's PALM–COEIN classification of abnormal uterine bleeding: A clinico-histopathological correlation. *J Obstet Gynaecol India*. 2017;67(2):119–125. doi:10.1007/s13224-016-0925-8
6. Friedman JA, Wong JMK, Chaudhari A, Tsai S, Milad MP. Hysteroscopic myomectomy for abnormal uterine bleeding. *Curr Opin Obstet Gynecol*. 2018;30(4):243–251. doi:10.1097/GCO.0000000000000467
7. Van der Meulen JF, Spaan JJ, Coppus SFPJ, Geomini PMAJ, Bongers MY. Results of hysteroscopic myomectomy for AUB. *J Gynecol Surg*. 2018;34(6):290–294. doi:10.1089/gyn.2018.0042
8. Jain V, Chodankar R, Maybin JA, Critchley HOD. Uterine bleeding and endometrial physiology. *Nat Rev Endocrinol*. 2022;18(5):290–308. doi:10.1038/s41574-021-00629-4
9. Lethaby A, Wise MR, Weterings MA, Rodriguez MB, Brown J. Combined hormonal contraceptives for heavy menstrual bleeding. *Cochrane Database Syst Rev*. 2019;2:CD000154. doi:10.1002/14651858.CD000154.pub3
10. Critchley HOD, Babayev E, Bulun SE, et al. Menstruation: Science and society. *Am J Obstet Gynecol*. 2020;223(5):624–664. doi:10.1016/j.ajog.2020.06.004
11. Mitra N, Patil P, Sethia A. Etiological factors of AUB according to PALM-COEIN. *Int J Reprod Contracept Obstet Gynecol*. 2020;9(2):799–803. doi:10.18203/2320-1770.ijrcog20200380
12. Upson K, Missmer SA. Epidemiology of adenomyosis. *Semin Reprod Med*. 2020;38(2–03):89–107. doi:10.1055/s-0040-1718920
13. Sharma S, Mahajan N. Polycystic ovarian syndrome and menopause in forty-plus women. *J Midlife Health*. 2021;12(1):3–7. doi:10.4103/jmh.jmh_8_21
14. Saunders PTK, Horne AW. Endometriosis: Etiology and pathobiology. *Cell*. 2021;184(11):2807–2824. doi:10.1016/j.cell.2021.04.041
15. Barros V, Hase EA, Salazar CC, et al. Abnormal uterine bleeding and chronic iron deficiency. *Rev Bras Ginecol Obstet*. 2022;44(12):1161–1168. doi:10.1055/s-0042-1760235
16. Nees LK, Heublein S, Steinmacher S, et al. Endometrial hyperplasia as a risk factor for cancer. *Arch Gynecol Obstet*. 2022;306(2):407–421. doi:10.1007/s00404-021-06380-5
17. Iyengar S, Iyengar K, Anand A, et al. Levonorgestrel-releasing intrauterine system in AUB. *Contracept X*. 2022;4:100079. doi:10.1016/j.conx.2022.100079
18. Jain V, Munro MG, Critchley HOD. Contemporary evaluation of AUB using FIGO systems. *Int J Gynaecol Obstet*. 2023;162(1):29–42. doi:10.1002/ijgo.14946
19. Kitahara Y, Hiraike O, Ishikawa H, et al. National survey of AUB according to FIGO classification. *J Obstet Gynaecol Res*. 2023;49(1):321–330. doi:10.1111/jog.15464
20. Temkin SM, Barr E, Moore H, et al. Chronic conditions in women: A national framework. *BMC Womens Health*. 2023;23:162. doi:10.1186/s12905-023-02319-x

---