Section: Obstetrics and Gynecology

Original Research Article

# ETIOLOGICAL FACTORS IN WOMEN WITH 'ABNORMAL UTERINE BLEEDING ACCORDING TO PALM COEIN CLASSIFICATION: A' CROSS-SECTIONAL STUDY

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**ABSTRACT**

**Background:** Abnormal Uterine Bleeding is one of the most common' and challenging 'problems in' gynecological cases 'in the' country. 'The PALM-COEIN system helps to ascertain the role of multiple pathologies in' patients with AUB. The accuracy of etiological diagnosis is important for subsequent therapeutic management. Hence, 'the purpose of this study was to' analyze and identify the exact 'etiological factors 'for 'abnormal uterine bleeding according to' the 'PALM COEIN classification' so that exact diagnosis leads to correct treatment.

**Materials and Methods**: A total of 125 women with AUB' from menarche to menopause were studied. 'A detailed history was obtained and a thorough' physical' examination', per abdomen and vaginal examination were carried out. All routine investigations, pap smear screening, and Ultrasonography were done. An endometrial biopsy or hysterectomy specimen was taken if needed.

**Results**: The mean age of cases was' 41.58 ± '7.4 years with a mean BMI of' 23.09 ± 2.69 kg/m2. The most common associated symptom was pain abdomen (59.2%) and the most common associated risk factor was hypertension (9.6%). Fibroid uterus (54.4%) was the most common finding on Ultrasonography and on examining endometrial thickness on ultrasound, maximum cases (29.6%) had endometrial thickness between 5-8 mm. According to 'the PALM COEIN classification. AUB-L' or Leiomyoma (52%) 'was the most 'commonly assigned category in cases followed by AUB-A or adenomyosis (24.8 %).

**Conclusion:** The present study' concluded that 'AUB- L was the most common' etiological factor contributing to' abnormal uterine bleeding'. Pain abdomen' is a common' symptom associated with heavy menstrual bleeding and fibroid uterus is a common cause for AUB.

**Keywords:** AUB, PALM-COEIN, OBG.

## INTRODUCTION

Abnormal Uterine Bleeding' (AUB) 'is one of the most common' and challenging' problems in' gynecological cases 'approaching outpatient clinics in the country'.[1] It makes up one-third of all cases in gynecology OPD.[2] 'In India',' the prevalence of AUB is reported to be 17'.6 %.[3] 'AUB is defined as bleeding from the uterine cavity 'which' is abnormal in volume, frequency, duration', regularity 'and occurs in the absence of pregnancy'.[4] It 'may be acute or chronic'.' AUB is a symptom and can arise from different causes like physiological processes in various age groups, structural lesions, systemic and hormonal causes as well as malignancy', and has different modes of

presentation. 'Due to general inconsistencies in the nomenclature, various potential causes, their coexistence', and 'a need for simpler terminologies that have the potential to be understood by clinicians, researchers,' and cases' alike', a classification system 'was recommended',[10] which 'has been named by International Federation of Gynaecology and Obstetrics in 2011' as 'PALM-COEIN'. This 'system helps to ascertain the role of multiple pathologies in any patient'. PALM component refers to structural causes that are- 'AUB-P (polyp), AUB-A (Adenomyosis), AUB-L (Leiomyoma)', and 'AUB-M (Bleeding due to malignancy).[4] COEIN holds for pathologies not related to uterine structural' 'anomalies,[6]: Coagulopathy, Ovulatory dysfunction, Endometrial disorders, Iatrogenic and Not otherwise classified. Category N has 'changed 'from "not yet classified" to "not otherwise classified".'

The accuracy of the etiological diagnosis of AUB is important for subsequent therapeutic management.[7] The history, physical, and pelvic examination done to determine the site of bleeding and the information gathered will suggest in what direction the investigation would take.[8] This is followed by the histopathological and Ultrasonographic studies and their correlation with cases wherever applicable, mainly for structural causes of PALM and AUB-E and AUB-O of COEIN aspect.[9] A thorough histopathological workup and clinical correlation are mandatory as there is always a possibility of relocation of category. Ultrasonography is a simple, inexpensive, non-invasive procedure to detect the endometrial thickness and also aids in the detection of any other organic pathology.[2] The texture of the endometrium can be evaluated for homogeneity or heterogeneity. Measurement of endometrium in AUB helps determine the necessity for Dilatation and curettage or further imaging study.

This common disorder has direct and indirect costs to the economic system. Due to the excessive burden that this disorder places on both cases and healthcare systems, it is important to completely describe the occurrence and risk factors associated with AUB in all populations, including the women most at risk because they live in underserved areas of the nation.[10]Hence, the purpose of this study was to analyze and identify the exact etiological factors for abnormal uterine bleeding according to PALM COEIN classification, as there can be more than one contributing pathology in symptomatic women, so that exact diagnosis leads to correct treatment.

## MATERIALS AND METHODS

The present study was conducted at a tertiary care center, Himalayan Institute of Medical Sciences (HIMS), Dehradun. This was a cross-sectional study conducted over one year. The sample size for the present study was calculated using the formula $Z2\alpha/2$ pq/d2. With p = 20% with a 7% margin of error, the minimum required sample size at a 5% level of significance is 125 cases.[3,5]

A total of 125 women with abnormal uterine bleeding from menarche to menopause having a history of irregular, unpredictable menstrual flow with excessive bleeding for a prolonged duration or increased frequency of menses and intermenstrual bleeding for a minimum 3-month duration attending obstetrics and gynecology outdoors were studied after obtaining written informed consent and ethical clearance from the institute of the ethics committee. Pregnant women with bleeding and women having vaginal bleeding of cervical cause were excluded from the study.

A detailed history of cases including the history of present illness, her menstrual and obstetrics history, sexual history, and contraceptive use, drug history, past history, family history of women with abnormal uterine bleeding included in the study was taken and thorough physical examination, per abdomen and vaginal examination were carried out at OPD / IPD / emergency / on admission. All routine examinations including complete blood count, urine routine, blood sugar, blood group, PT/INR, S. Prolactin, TSH, beta HCG (to exclude pregnancy), and pap smear screening were done. Ultrasonography (transabdominal/transvaginal) to see any structural causes was also done. An endometrial biopsy or hysterectomy specimen was taken if needed.

Descriptive statistics were analyzed with SPSS version 20 software. Continuous variables were presented as mean ± SD. Categorical variables were expressed as frequencies and percentages.

## RESULTS

A total of 125 cases were taken who came to OPD, IPD, and emergency having heavy menstrual bleeding as the main complaint. All 125 cases were studied and etiological factors were classified according to FIGO 2018 PALM COEIN Classification.

The majority (68 cases, 54.4%) were in between 40-49 years of age. 18 (14.4%) were more than 50 years of age while only one patient (0.8%) was in the age group less than 20 years. The mean age of cases was 41.58 ± 7.4 years. The mean BMI of the 125 cases was 23.09 ± 2.69 kg/m2. 4 cases (3.2 %) were obese, 5 (4%) were underweight, 24 (19.2%) were overweight, while the majority 92 (73.6 %) were in normal range of BMI. [Table 1]

Heavy menstrual bleeding was the main complaint in 125 patients of AUB. The most common associated symptom was pain abdomen (59.2%) followed by dysmenorrhea (32.8%). More than two symptoms were present in patients with AUB. [Table 2]

The most common risk factor associated with AUB was hypertension (9.6%) followed by thyroid disease (7.2%) and diabetes mellitus (7.2%). None of the studied cases had any family history of

breast/ovarian/endometrial cancer or Lynch or HNPCC syndrome. More than one comorbidity was present in cases of AUB. [Table 3]

Table 4 shows the Ultrasound findings in studied cases. On Ultrasonography of studied cases, the most common finding was Fibroid uterus (54.4% cases). The second most common finding was adenomyosis (24.8% cases). Normal uterus on USG was observed in only 11.2% of cases. The least common findings were bulky uterus, AV malformation, and hematometra. On examining endometrial thickness on ultrasound, maximum cases (29.6%) had endometrial thickness between 5-8 mm. <5mm endometrial thickness was observed in 26.4% of cases while ≥16.1 mm thickness was observed in 12% of the studied cases. [Table 4]

Endometrial histology revealed the secretory phase of endometrium as the most common (31.2 %) finding in cases of AUB followed by simple hyperplasia without atypia (20%) and proliferative phase (16.8%). Other patterns seen in endometrium histology were simple hyperplasia with atypia (6.4%), anovulatory phase (4.8%), and progesterone effect (4%). Only one patient (0.8%) was seen in both the retained product of conception and tubercular endometritis category. [Table 5]

Table 6 shows the distribution of cases of AUB having heavy menstrual bleeding as the main complaint according to the PALM COEIN classification. AUB-L or Leiomyoma (52%) was the most common assigned category in cases followed by AUB- A or adenomyosis (24.8 % cases). The category least commonly assigned to cases was AUB – N (1.6 % cases). More than one etiological factor was seen in cases of AUB. [Table 6]

**Table 1: Baseline characteristics of cases (N = 125)**

| Variable | Mean ± SD | Median | Range |
|---|---|---|---|
| **Age (years)** | 41.58 ± 7.4 | 43 | 17-55 |
| **BMI (kg/m$^2$)** | 23.09 ± 2.69 | 22.9 | 17-32 |
| **Parity** | **Frequency (n)** | **Percentage (%)** | |
| **Unmarried** | 2 | 1.6 | |
| **Parity ≤ 2** | 61 | 48.8 | |
| **Parity 3** | 49 | 39.2 | |
| **Parity ≥ 4** | 13 | 10.4 | |

**Table 2: Symptom distribution in cases of AUB having heavy menstrual bleeding as a main symptom (N = 125)**

| Symptom | Frequency (n) * | Percentage (%) |
|---|---|---|
| **Pain abdomen** | 74 | 59.2 |
| **Irregular bleeding** | 26 | 20.8 |
| **Intermenstrual bleeding** | 10 | 8 |
| **Polymenorrhagia** | 24 | 19.2 |
| **Dysmenorrhoea** | 41 | 32.8 |
| *** Multiple response** | | |

**Table 3: Associated risk factors in cases of AUB (N = 125)**

| Associated Risk factor | Frequency (n) * | Percentage (%) |
|---|---|---|
| **Obesity** | 4 | 3.2 |
| **Thyroid disease** | 09 | 7.2 |
| **Hypertension** | 12 | 9.6 |
| **Diabetes Mellitus** | 09 | 7.2 |
| **PCOS** | 02 | 1.6 |
| **Family history of ovarian/breast/endometrial cancer/HNPCC** | 00 | 0 |
| *** Multiple response** | | |

**Table 4: USG findings in cases of AUB (N = 125)**

| USG Finding | Frequency (n) | Percentage (%) |
|---|---|---|
| Normal uterus | 14 | 11.2 |
| Bulky uterus | 01 | 0.8 |
| Thickened endometrium | 03 | 2.4 |
| Endometrial hyperplasia | 02 | 1.6 |
| Endometrial Polyp | 09 | 7.2 |
| Adenomyosis | 31 | 24.8 |
| Fibroid | 68 | 54.4 |
| AV Malformation | 01 | 0.8 |
| Hematometra with increased vascularity | 01 | 0.8 |
| PCOS | 02 | 1.6 |
| **Endometrial thickness(mm)** | | |
| < 5mm | 33 | 26.4 |
| 5-8 mm | 37 | 29.6 |
| 8.1-12 mm | 32 | 25.6 |
| 12.1-16 mm | 07 | 5.6 |
| ≥ 16.1 mm | 15 | 12 |
| Not done | 01 | 0.8 |

**Table 5: Endometrial pattern on histopathology in cases of AUB (N = 125)**

| Endometrial Pattern | Frequency (n) | Percentage (%) |
|---|---|---|
| Secretory Phase | 39 | 31.2 |
| Proliferative Phase | 21 | 16.8 |
| Atrophic endometrium | 0 | 0 |
| Tubercular endometritis | 01 | 0.8 |
| Endometritis | 0 | 0 |
| Anovulatory phase | 06 | 4.8 |
| Endometrial Polyp | 02 | 1.6 |
| Retained product of conception | 01 | 0.8 |
| Progesterone effect | 05 | 4 |
| Simple Hyperplasia without atypia | 25 | 20 |
| Simple Hyperplasia with atypia | 08 | 6.4 |
| Complex Hyperplasia without atypia | 0 | 0 |
| Complex Hyperplasia with atypia | 0 | 0 |
| Endometroid Cancer | 02 | 1.6 |
| Not done | 01 | 0.8 |

**Table 6: Distribution of study population according to PALM COEIN classification (N = 125)**

| Causes | | Frequency (n) * | Percentage (%) |
|---|---|---|---|
| **Structural** | P- Polyp | 19 | 15.2 |
| | A- Adenomyosis | 31 | 24.8 |
| | L- Leiomyoma | 65 | 52 |
| | M – Malignancy and hyperplasia | 29 | 23.2 |
| **Non Structural** | C-Coagulopathy | 05 | 04 |
| | O- Ovulatory | 07 | 5.6 |
| | E - Endometrial | 03 | 2.4 |
| | I - Iatrogenic | 06 | 4.8 |
| | N- Not yet classified | 02 | 1.6 |
| *** Multiple responses** | | | |

## DISCUSSION

Abnormal uterine bleeding is the common presenting complaint in the Gynaecology outpatient department in all age groups. Abnormal uterine bleeding can affect 10-30 % of women in the reproductive age group including adolescents and may affect up to 50% of perimenopausal women.[11] By using the FIGO PALM COEIN classification, we can identify the exact etiology of AUB and the exact diagnosis leads to correct treatment.

In the present study, the study population belonged to the age group where the age range varied from less than 20 years to more than 50 years. The majority of women screened belong to 40-49 years (54.4%) of age followed by 30-39 years (20.8%). This was similar to the findings of other studies.[1,4,6,11] Thus, it can be concluded that the majority of cases of AUB occur in the age group of 40-49 years of age.

We have seen in the current study that the majority of cases (73.6%) were in the normal range of BMI which was similar to the observation of Ravi KS et al on the Jaunsari tribe population of Dehradun district of Uttarakhand.[12] On the contrary, Lapidus L et al in their study on the Latvian population found that the majority of cases of AUB (58.3%) were obese and only 25% had normal BMI.[11]

In this study, maximum females (48.8 %) had parity 2 which was contrary to the findings of other studies.[7,13] This can be explained by the fact that multiparity has been a significant associated risk factor for abnormal uterine bleeding in the reproductive age group.

The most common associated symptom with heavy menstrual bleeding is pain abdomen which was also observed in our study.[11,14,15]

In most of the studies conducted on cases of AUB of all age groups, obesity is the commonest risk factor of AUB, [11,16,17] However, in our study, the most common risk factor for AUB was hypertension. This may be explained by the normal BMI of the majority of the studied cases in the present study.

In the current study, the fibroid was the most common ultrasound finding seen in 68 patients (54.4%) which coincided with the findings of Nath P et al and Begum et al.[3,7] Hence, it can be concluded that fibroid uterus is the most common ultrasound finding seen in patients with abnormal uterine bleeding

In this study, most of the patients (31.2%) having Abnormal uterine bleeding had secretory endometrium in their histopathology which was contrary to the observations of a study conducted by Modak et al in 2020 in India on 197 women having abnormal uterine bleeding which suggested proliferative endometrium (37.06%) was most common histopathology.[18]

AUB-L or Leiomyoma (52%) has been observed as the most common and AUB-N as the least common in etiology cases of AUB,[14,16,17] which corroborated with our study where AUB-L or Leiomyoma was the etiological factor in 52% cases of AUB while AUB – N was the etiology of AUB in only 1.6% cases.

## CONCLUSION

The present study concludes that AUB- L was the most common etiological factor contributing to abnormal uterine bleeding. The most common age group contributing to Abnormal uterine bleeding was 40-49 years. The majority of patients were in the normal BMI category and obese patients were least common in AUB cases. The most common symptom associated with heavy menstrual bleeding was pain abdomen followed by irregular menses and intermenstrual bleeding was the least common symptom. It was concluded that hypertension followed by diabetes mellitus and thyroid disease was the most common association and PCOS was the least common risk factor contributing to AUB.

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