Application of PALM-COEIN FIGO classification in diagnosis of abnormal uterine bleeding (AUB) patients

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Abstract
Objective: The aim is to categorize women with AUB as per the PALM-COEIN classification system as this is a step towards cause based diagnosis and focused management of patients. The acronym PALM-COEIN comes from arranging 9 basic categories of the classification system. The PALM group comprises the structural entities, which can be measured visually or by using imaging techniques and histopathology. The COEIN group comprises the non-organic types which cannot be defined by imaging or histopathology.

Materials and Methods: The study comprises 350 women of reproductive age with AUB for minimum 3 months time span. It describes and observes AUB in amount, interval and frequency for women attending outpatient Gynae department of AIIMS, Udaipur (Raj) from Nov 16 to Oct 17. They were assessed on the basis of structured history, physical examination, local pelvis examination, investigations, USG findings and endometrial histopathological report. Cause of AUB was determined and treatment was given to the patient as appropriated by categorization done in agreement with the PALM-COEIN classification.

Results: The most prevalent cause of AUB was ovulatory dysfunction (n=99, 28.2%). Next common cause was leiomyoma (n=90, 25.7%), followed by endometrial causes (n=52, 14.5%), adenomyosis (n=30, 8.5%), not yet classified (n=32, 9.7%), Malignancy & Hyperplasia (n=28, 8.1%), Polyp (n=9, 2.5%), Iatrogenic (n=7, 2.2%) and Coagulopathy (n=1, 0.3%).

Conclusion: The PALM-COEIN classification helps to practically ascertain the cause of AUB, and thereby effectively adopt the correct treatment for AUB patients.

Keywords: Abnormal uterine bleeding, AUB, Classification system, Polyp leiomyoma, Adenomyosis, Ovulation, Malignancy.

Introduction

AUB is a significant clinical entity, affecting 14-25% women of reproductive age.[1,2] It is a common and debilitating condition with high direct and indirect cost.

Since long, words such as menorrhagia, metrorrhagia and dysfunctional uterine bleeding have been used to describe AUB which are confusing, controversial and poorly defined. FIGO menstrual disorders working group proposed abandoning such terms for menstrual disturbances as such differing terms make it extremely difficult to interpret the patient's pathology or bleeding condition.[3] The consensus established that AUB is an appropriate term because it includes different types of menstrual bleeding and at the same time implies that it should exclude bleeding from the cervix or the lower genital tract. It also proposed that AUB in non-pregnant women can be Acute or Chronic.[5] Acute AUB requires prompt intervening to prevent further blood loss. Chronic AUB is bleeding from the uterine corpus persistent in the last 6 months and can be abnormal in terms of amount, interval or frequency.[4]

In recent years, concern regarding use of terminologies and definition around symptoms of AUB has increased. Simpler terms with clear meaning were needed that can be easily understood by the medical community. Therefore an improved classification system has been named by International Federation of Gynaecology and Obstetrics (FIGO) in 2011, which is called PALM-COEIN.[6] PALM holds for the pathologies related to the uterine structural anomalies (polyp, adenomyosis, leiomyoma, malignancy and endometrial hyperplasia). COEIN holds for the pathologies unrelated with uterine structural anomalies (ovulatory dysfunction, coagulopathy, endometrial, iatrogenic, and unclassified). The PALM-COEIN system structurally evaluates AUB in women which helps to understand and identify causes and contributors to the symptoms.[7]

Moreover, PALM-COEIN system also helps to ascertain the role of multiple pathologies in any patient. Any coincidental pathology, with no symptoms, which has little contribution towards AUB can also be identified.

Materials and Methods

The present study is descriptive observational conducted at obgyn department of AIIMS, Udaipur (Raj) over a period of 1 year from Nov 16 to Oct 17. In this study, we have enrolled 350 non grand women of age group 15 to 55 years with irregular, unpredictable, abnormal volume, excessive or scanty duration or abnormal frequency of menses and inter-menstrual bleeding for a minimum of 3 months duration attending obgyn outdoors.

Detailed medical history (including menstrual & obstetrics history, contraceptive use, drug use, any weight changes and systemic illness), along with physical examination, ultrasounds and other essential

imaging techniques were undertaken as per the PALM-COEIN classification system.

Endometrium and hysterectomy specimen were obtained for histopathology where applicable. Women with vaginal bleeding because of cervical causes and pregnant women with bleeding were excluded from study. As per the PALM-COEIN classification system, the potential causes of AUB were established and then categorized accordingly. PALM-COEIN classification has the following categories:

P – Polyps were categorized either absent or present and diagnosed by history, perspeculum exam, ultrasound and/or histopathological exam.

A – Adenomyosis was identified based on medical history and ultrasound (asymmetrical myometrial appearance accompanied by a large uterus), and diagnosed by MRI and even on hysterectomy specimen.[16]

L – Leiomyoma was identified and diagnosed by ultrasound. This study includes only primary classification of leiomyoma, i.e., it reflects only the presence or absence of leiomyoma regardless of location, number and size.

M – If malignant or premalignant lesion was suspected, endometrial biopsy was performed for histopathology.

C – Coagulopathy was identified by patterned medical history, and diagnosed by coagulation test.

O – Ovulatory dysfunction included AUB cases of unpredictable time period and inconsistent amount of flow. It can be due to anovulation or disturbed ovulation. Endocrinopathies, polycystic ovarian syndrome, hypothyroidism, hyperprolactinemia and weight changes are included in this group. In few cases, bleeding was so unpredictable that medical intervention and emergency treatment was needed.

E – Endometrial causes include those AUB women who have predictable and cyclic bleeding typical of ovulatory cycles. The cause might be endometrial origin. It is a diagnosis of exclusion.

I – Iatrogenic group includes intrauterine contraceptives, gonadal steroids, anticonvulsant, antibiotics, antidepressants and anticoagulant drugs.

N – Not yet classified. It is inevitable that there will be pathologies that are either rare or poorly defined that do not easily fit within categories described earlier.

Results

Of the 6,300 women attending the gynaecology OPD during the study duration, 1170 (18.6%) women put up with AUB. Of these women, 350 were studied in this report. All these cases were placed in the nine categories of PALM-COEIN classification.

Maximum patients, 47.7%, were in the age group of 40 - 50 years and 37.4% were in the 30 - 40 years age group (Table 1).

Majority of patients, 37.4%, complained of heavy bleeding as chief complaint. 27% had irregular heavy bleeding and 22% had frequent bleeding (Table 2).

As per the PALM-COEIN classification, ovulatory dysfunction (28.2%) was the most prevalent cause of AUB in our study.

Simple ovarian cysts and PCOS were common sonographic findings. Hormone imbalance was common on endometrial histopathological report. Thyroid imbalance was also noted.

Next common category was Leiomyoma AUB-L (n=90, 25.7%), followed by Endometrial AUB-E causes (n=52, 14.5%), adenomyosis AUB-A (n=30, 8.5%), Malignancy AUB-M (n=28, 8.1%), Not classified AUB-N (n=32, 9.7%), Polyp AUB-P (n=9, 2.5%), iatrogenic AUB-I (n=7, 2.2%) and coagulopathy AUB-C (n=1, 0.3%) (Table 3).

Table 1: Age distribution of study population

Age Group	Total Number	Percentage
< 20 years	5	01.4 %
20-30 years	15	04.2%
30-40 years	131	37.4 %
40-50 years	167	47.7 %
> 50 years	32	09.1 %

Table 2: Distribution of study population based on presented complaints

Symptoms (Complaints)	Total Number	Percentage
Heavy Menstrual Bleeding	131	37.4 %
Irrregular Heavy Bleeding	95	27.0%
Intermenstrual Bleeding	7	02.0 %
Frequent Bleeding	77	22.0 %
Post Menopausal Bleeding	28	08.0 %
Infrequent or Scanty Bleeding	12	03.4 %

Table 3: Distribution of study population according to PALM-COEIN classification (total 350 patients)

	Causes	Total Number	Percentage
Structural	Polyp (AUB-P)	9	02.5 %
	Adenomyosis (AUB-A)	30	08.5 %
	Leiomyoma (AUB-L)	90	25.7 %
	Malignancy (AUB-M)	28	08.1 %
Non Structural	Coagulopathy (AUB-C)	1	00.3 %
	Ovulatory Dysfunction (AUB-O)	99	28.2 %

Endometrial (AUB-E)	52	14.5 %
Itrogenic (AUB-I)	7	02.2 %
Not Yet Classified (AUB-N)	32	09.7 %

Table 4: Comparison of distribution of causes

Causes	Category	Number of Patients (%)				
		Present Study	Gouri et al	Goel et al	Qureshi & Yusuf	Ratnani et al
Polyp	P	09 (02.5%)	06 (02.0%)	08 (02.7%)	30 (03.0%)	40 (13.3%)
Adenomyosis	A	30 (08.5%	38 (12.7%)	28 (09.3%)	150 (15%)	60 (20.0%)
Leiomyoma	L	90 (25.7%)	74 (24.7%)	68 (22.7%)	250 (25%)	105 (35%)
Malignancy or Hyperplasia	M	28 (08.1%)	15 (05.0%)	08 (02.7%)	66 (06.7%)	65 (21.6%)
Coagulopathy	C	01 (00.3%)	09 (03.0%)	03 (01.0%)	03 (03.0%)	02 (00.6%)
Ovulatory Dysfunction	O	99 (28.2%)	81 (27.0%)	85 (28.3%)	236 (24%)	60 (20.0%)
Endometrial	E	52 (14.5%)	27 (09.0%)	62 (20.7%)	48 (05.0%)	12 (04.0%)
Iatrogenic	I	07 (02.2%)	24 (08.0%)	13 (04.3%)	53 (06.0%)	03 (01.0%)
Not Yet Classified	N	32 (09.7%)	19 (6.3%)	25 (08.3%)	155 (15%)	03 (01.0%)

Discussion

The aim to conduct this study was to test the efficiency and practicality of PALM-COEIN classification system in clinical practice in determining the cause of disease and treatment modality for patient showing AUB at outpatient department. The new FIGO classification was developed to clear long standing apprehension regarding terminologies and definitions related to AUB. These terms referred to symptoms or diagnosis, were not clear, and on the contrary these terms created confusion in treatment of AUB cases.

This study focuses to categorize the patient of AUB as per the PALM-COEIN classification and is similar to studies by Khrouf et al;[8] Munro et al;[6] Madha et al;[9] Bahamondes and Ali.[10] With this, necessary investigations can be easily done and better management of specific causes can be planned.

In present study, most of the patients presented with AUB were in age group 40-50 years (47.7%) and 30-40 years (37.4%). Of the presented complaints, heavy menstrual bleeding (37.4%) was the most common, followed by irregular heavy bleeding (27%) and frequent bleeding (22%). It was also noted that infrequent and scanty bleeding was more common in obese and PCOS women.[11]

According to study done by Gouri et al[11] in May'16, category which had the most patients was ovulatory dysfunction (27%), followed by leiomyoma (24.7%). In study done by Goel P et al,[12] ovulatory dysfunction was found to be the most common cause of AUB (28.3%) followed by leiomyoma (22.7%). In present study also, ovulatory dysfunction was found to be the most common cause of AUB (28.2%) (Table 4). PCOS, hormonal dysfunction, thyroid dysfunction, simple ovarian cyst were included in this category.

In study done by Qureshi and Yusuf[13] in 2013, leiomyoma was most common category (25%) followed by ovulatory dysfunction (24%). In study for Ratnani R et al[14] in Sep'17, leiomyoma (35%) was the most common cause of AUB, followed by malignancy and hyperplasia, adenomyosis and ovulatory dysfunction. In present study, leiomyoma was found in 25.7% of women and endometrial category was applied for 14.5% patients. In study done by Gouri et al and Goel P et al, endometrial causes were found on 9% and 20.7 % respectively.

This study encapsulates the ease of use and implementation of this classification system. Moreover, treatment of pathology was easier where the cause of AUB was determined. In present study, we could understand the major causes of AUB grouped into structural and non-structural cause. In both groups, management plans were different, hence management was more focused and tailored to specific cause. The major disadvantage was in cases of patients who belonged to AUB-N category because treatment is vague in this category in absence of diagnosis. Also, COEIN part of classification needs further improvement through elaborate research.

Conclusion

To identify the exact cause is essential to successfully treat patients with AUB. The PALM-COEIN classification helps to practically ascertain the cause of AUB, and thereby effectively adopt and plan for focused treatment of patients.

It is also important to regularly improvise and improve this classification system in line with changes and improvements in medical science and technology. It also needs to adapt to the available options as per demographics.

Conflict of Interest: None

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