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Research Article

A study of PALM-COEIN Classification of Abnormal Uterine Bleeding (AUB) in Perimenopausal Women at a Tertiary Care Teaching Hospital

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Abstract
Background: *AUB is the commonest menstrual problem of women of reproductive age group specially during perimenopause. It significantly impacts women's personal, social, physical and quality of life. International Federation of Gynecology and Obstetrics (FIGO) developed a new classification system PALM-COEIN in order to standardise the terminology, diagnosis and investigations of the causes of AUB.*
Aims and Objectives: *1. To categorise the causes of AUB in perimenopausal women in context to PALM-COEIN classification system.*
2. To establish a clinico-pathological correlation of various causes of AUB.
Materials and Method: *All women of perimenopausal age group (40 and above till 1 year beyond menopause) with complaints of AUB, admitted in Gynec ward were studied. After detail history and clinical examination, clinical diagnosis was made based on PALM-COEIN classification. Relavant investigations were carried out. Various causes of PALM and COEIN were studied and a clinico-pathological correlation was analysed statistically.*
Results: *Total 253 women of perimenopausal age group were registered. Majority (43.47%) women were between 45-50 years of age. 56% were parity 3 and above. Most common complaint was heavy menstrual bleeding (67.8%). PALM and COEIN groups accounted for (60%) and (39.9%) respectively. Leiomyoma was the commonest cause of AUB (36.75%) followed by Ovulatory disorder (26%). Obesity (9.8%) found to be the commonest associated risk factor. Histopathological examination detected more cases of PALM (69.96%) as compared to COEIN component (30.03%). Coexisting AUB-A, L (6.1% , p=<0.0001) and AUB-E (2.82%, p=<0.001) were statistically significant. AUB-M (18.77%) and AUB-O (28.16) were in more as compared to clinical diagnosis.*
Conclusion: *PALM component contributes more to the causes of AUB. This classification system helps to understand the various causes of AUB, gives simpler terminology, diagnosis and investigations of the casuses of AUB and offers specific management. PALM-COEIN system and HPE are correlative. Regular review of both can provide effective means of quality assurance and appropriateness of treatment.*
Keywords: *Abnormal uterine bleeding, clinic-pathological, PALM-COEIN.*

Introduction

AUB is the commonest menstrual problem, affecting 14-25% of women of reproductive age group and 50% during perimenopausal period.[1,2,3] It significantly impacts women's personal, social, physical and quality of life and is major cause of hysterectomy[4,5]. AUB may be acute or chronic and is defined as bleeding from uterus corpus which is abnormal in regularity, volume, frequency or duration, occurring in absence of pregnancy.[6,7]

Due to general inconsistencies in the nomenclature, various potential causes, their coexistence, a need for simpler terminologies that have a potential to be understood by clinicians, researchers and patients alike was recommended.[8] To simplify the investigations and comparisons among homogenous populations and to aid in research and evidence based approach FIGO (2011) approved a new classification system PALM –COEIN for causes of AUB in non gravid women of reproductive age group.[6,9,10]. The classification has been categorized into nine categories based on acronym PALM-COEIN where PALM comprising of structural pathologies and stands for Polyp, Adenomyosis, Leiomyoma, Malignancy and Hyperplasia respectively. The COEIN is related to nonstructural causes and stands for Coagulopathy, Ovulatory disorders, Endometrial, Iatrogenic, and Not otherwise classified.

FIGO recommends endometrial tissue testing as a first line management in women of perimenopausal age group with AUB. Evaluation of endometrium on histology has dual advantage of detecting an accurate cause of abnormal uterine bleeding as well as to rule out potential endometrial and other type of cancers. Histopathological evaluation provides precision of diagnosis. Histopathological evaluation and clinical correlation is mandatory as there is always a chance of redistribution of category. It gives an insight to the accuracy of clinical assignment of categories in respect to PALM and COEIN components of the classification and standardization of treatment.[11,12,13]

We undertook present study to categorise the causes of AUB in perimenopausal women in context to PALM-COEIN classification system and to establish a clinic-pathological correlation of various causes of AUB.

Materials & Method

The present study includes total 253 perimenopausal women (40 years and above till 1 year beyond menopause) with complaints of abnormal uterine bleeding (AUB), admitted in the department of Obstetrics and Gynaecology at NSCB Medical College and Hospital, Jabalpur, (MP). Study period extended from July - October 2017. Pregnancy, obvious cervical cause of bleeding per vaginum and local lesions on vagina and vulva were excluded. After approval from institutional ethical committee and women's consent data was collected in a pretested proforma. Demographic details were noted. Structured history of menstrual pattern, contraceptive history and other details, followed by general physical, systemic and thorough gynaecological examination in context to uterus cervix and adnexae were assessed. Pelvic ultrasound done to detect pelvic pathology. Endometrial biopsy and hysterectomy specimens were obtained where needed. Gross and microscopoic features on hysterectomy specimens were noted. The causes were categorised as per PALM-COEIN classification. Patients identified with polyp, adenomyosis, and leiomyoma after per speculum and per vaginal examination were categorized under AUB-P, AUB-A, and AUB-L, respectively. Bleeding due to endometrial carcinoma diagnosed on endometrial biopsy, hysterectomy or on histopathological examination was included under AUB-M category. Patients taking anticoagulants or with defective coagulation profile grouped under AUB-category C. Ovulatory disorders (AUB-C) were designated based on unpredictable timing and variable amount of bleeding. Endometrial disorders (AUB-

E) classified on the basis of predictable or cyclical pattern of bleeding. In cases of Iatrogenic (AUB-I) causes, history of steroidal hormones intake or contraception/device usage was noted. The others not fitting in any category were included in Not yet classified category (AUB-N).

Histopathological evaluation (HPE) was done for reallocation of the categories. The various categorised causes of AUB were then, correlated with histopathological based diagnosis. A complete blood count, coagulation profile, thyroid function test, blood sugar level estimation done wherever applicable.

Statistical analysis was done using frequencies percentages and t test.

Result

Total 253 women of perimenopausal age group were registered. Majority (43.47%) women were between 45-50 years of age. 56% were parity 3 and above. Most common complaint was heavy menstrual bleeding (67.8%) (Table 1). PALM and COEIN groups accounted for (60%) and (39.9%) respectively. Leiomyoma was the commonest cause of AUB (36.75%) followed by Ovulatory disorder (26%) (Table 2). Histopathological examination detected more cases of PALM (69.96%) as compared to COEIN component (30.03%). AUB-M (18.77%) and AUB-O (28.16) were more as compared to clinical diagnosis (Table 3). Obesity (9.8%) found to be the commonest associated risk factor (Table 4). Coexisting AUB-A, L(6.1%, p=<0.0001) and AUB-E (2.82%, p=<0.001) were statistically significant (Table 5).

Table 1 Distribution of cases based on symptoms (n=253)

Symptoms	No of cases	%
Heavy menstrual bleeding	173	67.58
Intermenstrual heavy bleeding	71	28.06
Postmenopausal bleeding	9	3.55

Table 2 Distribution of cases as per clinical diagnosis (n=253)

Diagnosis	No. of cases	%
AUB-P (Polyp)	14	5.53
AUB-A (Adenomyosis)	7	2.76
AUB-L (Leiomyoma)	93	36.75
AUB-M (Malignancy and hyperplasia)	38	15.01
AUB-C (coagulopathy)	0	0
AUB-O (Ovarian)	66	26.08
AUB-E (Endometrial)	30	11.85
AUB-I (Iatrogenic)	5	1.97
AUB-N (Not yet classified)	0	0

Table 3 Distribution of cases based on histopathological diagnosis (n=248)

Diagnosis	No of cases	%
AUB-P	15	6.04
AUB-A	10	4.43
AUB-A,L	15	6.45
AUB-L	89	35.88
AUB-M	44	17.74
AUB-O	69	27.82
AUB-E	6	2.82

Table 4 Associated risk factors

Risk facor	No of cases	%
Obesity	25	9.88
Thyroid disease	2	4.7
Hypertension	9	3.55
DM	8	3.1
PCOS	5	1.97
Family h/o endometrial cancer	2	0.79

Table 5 Correlation between clinical and histopathological diagnosis

Diagnosis	No of cases diagnosed clinically	No of cases diagnosed histopathologically	P value
AUB-P	14	15	0.85
AUB-A	7	10	0.46
AUB-A,L	0	15	<0.0001
AUB-L	93	89	0.78
AUB-M	38	44	0.28
AUB-O	66	69	0.68
AUB-E	30	6	<0.0001

Discussion

AUB is the commonest debilitating condition in perimenopausal age group women, which significantly affects their quality of life. In order to standardize definitions, nomenclature and the potential causes of AUB, FIGO developed PALM COEIN classification system .Our study aimed on

categorizing the patients of AUB based on PALM COEIN classification and to establish the clinic-pathological correlation of various causes of AUB so that a standard and appropriate management can be offered to the women suffering from menstrual irregularities during this period.[6,10,13,14,15,16,17]

Demographic profile and the pattern of menstrual complaints were similar with the studies.[13,18,19,20,21,22] Perimenopause is the menstrual transition ,usually begins in the late 40s and may extend to late fifties. Bleeding irregularities present as heavy menstrual, intermenstrual or post menopausal bleed. PALM component contributed more to the causes of AUB than COEIN in our study. AUB-L was the major contributor. AUB-O was predominant in COEIN group….Similar findings reported in the studies.[13,23,24]

Histopathological examination plays a major role in correct and accurate diagnosis which has a profound impact on the management of patients. It carries ethical, legal, diagnostic and therapeutic significance as well.[25]

Fibroids are frequently encountered with increase in age.HMB due to fibroids may be due to their site, size, increase endometrial surface area, hyperoestrogenemia. Leiomyoma (AUB-L) was the predominant finding in our study, clinically as well as on histopathology. which is similar to other studies.[6,13,21,24,25] During perimenopause ovarian function declines. The deranged H-P-O axis leads to rise in FSH and oestrogen levels and loss of ovarian follicles , thus resulting into anovulation and irregular unpredictable pattern of bleeding. AUB-O was the second commonest finding clinically and on histopathology.[13,27]

During perimenopause anovulatory cycles and unopposed oestrogen action causes endometrium to become hyperplastic and consequently into endometrial cancer. We found 23(9.27%) hyperplasia and 3(2.01%) adenocarcinoma in AUB-M( ) category.[13,23]

AUB-E (endometrial disorders) is a diagnosis of exclusion. Abnormal bleeding is cyclical with predictable pattern. Primarily it may be due to aberrant prostaglandin synthesis and excessive plasminogens. We found 2.82% in our study. which is similar with other studies.[27]

AUB-P(Polyps) are seen in women of all ages but peak incidence is between 40 to 49 years. We found majority of them as endometrial which were diagnosed on histopathology.[16,21,28]

Adenomyosis generally seen in forties and fifties and are common in multiparity. Oestrogen receptor mutations in the adenomyomatous areas and gene polymorphisms have been postulated in this regard. We found leiomyoma- adenomyosis (AUB-A,L) combination in a greater number as compared to the isolated ones.This could be due to the similar symptoms and signs of both the entities which often poses difficult in diagonising clinically.[12,13,18,19,20,21,29]

Exogenous therapy with anticonvalsants, hormonal steroids, and intrauterine contraceptive device (IUCD) contribute to AUB-I. We had 5 (1.97%) cases of IUCD insertion. Low grade endometritis and prostaglandin-throboxane ratio imbalance due to IUCD may cause AUB-I.[30]

We did not find any cases under category AUB-C and AUB-N in present study, though many researchers reported it.[16,17]. Obesity (9.8%) was the leading risk factor found associated in our study followed by thyroid disorders (4.7%).It increases oestrogen levels which predisposes women to the risk of developing polyps, leiomyomas and endometrial cancer[31]

On analysis of various categories the difference in clinical and histopathological diagnosis of the categories AUB-P, AUB-A, AUB-L and AUB-M was not statistiacally significant but was highly significant in the category AUB-A,L(6.45% ,p= <0.0001) and AUB-E(2.82% , p= <0.0001).It is difficult to diagnose coexisting adenomyosis and leiomyoma clinically as both present with similar symptoms and signs. Histopathology could diagnose the AUB-A,L unlike clinically, thus emphasizes its pivotal role in accurate diagnosis. This is in accordance to the other studies.[12,13,18,19,21,25,31]

In AUB-E we found more cases clinically as compared to histolopathology. This category is based on exclusion of defianable causes because at present there is no authenticated specific routine diagnostic methods to categorizing the cases primarily as AUB-E… Primary endometrial disorder can be attributed to disturbed metabolic pathway, prostaglandin synthesis, plasminogen activity or vasoactive mediators.[13]

There were more numbers of AUB-M and AUB-O but not statistically significant.

Conclusion

PALM component contributes more to the causes of AUB. Though on histopathology evaluation more AUB-M and AUB-O detected, AUB A, L and AUB-E were statistically significant. This classification system helps to understand the various causes of AUB, gives simpler terminology, diagnosis and investigations of the casuses of AUB and offers specific management. PALM-COEIN system and HPE are correlative. Regular review of both can provide effective means of quality assurance and appropriateness of treatment.

References

1. Fraser IS, Langham S, Uhl-Hochgraeber K. Health-related quality of life and economic burden of abnormal uterine bleeding. Expert Rev Obstet Gynecol. 2009;4:179-89
2. Shapley M, Jorden K, Croft PR. An epidemiological survey of symptoms of menstrual loss in the community. Br J Gen Pract. 2004;54:359-63
3. Hoffman BL. Williams Gynecology. 2nd edition p.a Mc Graw Hill;2012:219-40
4. NICE. Clinical Guideline 44; Heavy menstrual bleeding 2007. National Institute for Health and Clinical Excellence(NICE); Available at http://www.nice.org.uk/nicemedia/pdf/CG44 FullGuideline.pdf.
5. Awwad JT, Joth TL, Schiff I. Abnormal uterine bleeding in perimenopause. Int J Fertil Menopausal Stud. 1993;38(5):261–269. [PubMed]
6. Munro MG, Critchley HO, Broder MS, Fraser IS, FIGO working group on menstrual disorder system. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. Int J Gynecol Obstet. 2011;113(1):3-13
7. Diagnosis of abnormal uterine bleeding in reproductive aged women. Practice Bulletin No. 128. American College of Obstetricians and Gynecologists. Obstet Gynecol. 2012;120:197–206. [PubMed]
8. ACOG Committee on Practice Bulletins – Gynecology. ACOG Practice Bulletin No 108: Polycystic ovary syndrome. Obstet Gynecol 2009;114:936- 49
9. Bahamondes L,Ali M . Recent advances in managing and understanding menstrual disorders. F1000Prime Rep 2015;7:33
10. Committee on Practice Bulletins—Gynecology. Practice bulletin No 128: Diagnosis of abnormal uterine bleeding in reproductive-aged women. Obstet Gynecol 2012;120:197-206.
11. FIGO Committee on Gynecologic Practice. Management of Acute AUB in non pregnant reproductive age group women Committee opinion No. 557. April 2013.
12. Ramachandran T, Sinha P. Subarmanium. Correlation between clinico-pathological and ultrasonographical findings. J Clin Diagn Res. 2011;5(4):737–740.
13. Mishra D, Sultan S. FIGO's PALM–COEIN Classification of Abnormal Uterine Bleeding: A Clinico-histopathological Correlation in Indian Setting. J Obstet Gynecol India. 2017;67(2):119-25.
14. Goel P,Rathore SB. PALM-COEIN FIGO classificationfor diagnosis of Abnormal Uterine Bleeding: Practical utility of same at tertiary care centre in North India. Sch J Appl Med Sci2016;4:2771-3

15. Gouri SR, Lakshmi PV, Rani NG, Kumar NA. Categorization of the causes of Abnormal Uterine Bleeding according to PALM-COEIN classification. Int J Sci Stud 2016;4:104-6

16. Betha K, Malvatu L, Talasani S. Distribution of causes of abnormal uterine bleeding using new FIGO classification system-PALM COEIN: a rural tertiary based study. International Journal of Reproduction, Contraception, Obstet Gynecol.2017 Aug;6(8):3523-3527.

17. Sudha R,Pallavi YR.Distribution of causs of Abnormal Uerine Bleeding according to polyp adenomyosis leiomyoma malignancy and hyperplasia coagulopathy ovulatory dysfunction endometrial iatrogenic not yet classified Classifiction in a Tertiary Care Centre.International Journal of Scientific Study.January 2017 vol 4 issue 10.

18. Bhosle A, Fonscea M. Evaluation and histopathological correlation of abnormal uterine bleeding in perimenopausal women. Bombay Hosp J. 2010;52(1):69–72.

19. Jetley S, Rana S, Jairajpuri ZS. Morphological spectrum of endometrial pathology in middle aged women with atypical uterine bleeding. J Midlife Health. 2013;4:216–220. [PMC free article][PubMed]

20. Perveen S, Perveen S. Endometrium histology in abnormal uterine bleeding. Q Med Channel. 2011;17(4):68–70.

21. Khan S, Hameed S, Umber A. Histopathological pattern of endometrium on diagnostic D&C in patients with abnormal uterine bleeding. ANNALS. 2011;17(2):166–170.

22. Dadhania B, Dhruva G, Agravat A, et al. Histopathological study of endometrium in dysfunctional uterine bleeding. Int J Res Med. 2013;2(1):20–24.

23. Qureshi FU, Yusuf AW. Distribution of causes of AUB using the new FIGO classification system . J Pak Med Assoc 2013;63:974

24. Praveen S, Perveen S. Endometrium histology in abnormal uterine bleeding . Q Med Channel 2011;17(4):68-70

25. K. McPherson, A. Herbert, Judge et al., Psychosexual health 5 years after hysterectomy: population-based comparison with endometrial ablation for dysfunctional uterine bleeding, Health Expectation 2005;8(3);234-243

26. Jonathan AA,Saravanan S.A two year clinicopathologicalstudy of non gravid women abnormal uterine bleeding in a rural tertiary care centre in Tamilnadu:in concur-enca with the FIGO recommendations. J Evol Med Dental Sci.2015:4(63);1009-1001

27. Shankar M, Lee CA, Sabin CA, Economides DL, Kadir RA. von Willebrand disease in women with menorrhagia: a systematic review. BJOG 2004;111:734-40

28. Doraiswami S, Johnson T, Rao S, Rajkumar A, Vijayaraghavan J, Panicker VK. Study of endometrial pathology in abnormal uterine bleeding. J Obstet Gynaecol India. 2011;61(4):426-30.

29. Taran FA, Weaver AL, Coddington CC, Stewart EA. Characteristics indicating adenomyosis coexisting with leiomyomas: a case control study. Hum Reprod. 2010;1177-82.

30. Whitaker L, Critchley HO. Abnormal uterine bleeding. Best Pract Res Clin Obstet Gynecol 2016;34:54-65

31. Nouri M, Tarakkolian A. Association of dysfunctional uterine bleeding with high body mass index and obesity as a main predisposing factor. Diabetes Metab Syndr. 2014;8(1):1–2. doi: 10.1016/j.dsx.2013.10.013. [PubMed] [Cross Ref]