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Original Research Article

From symptoms to surgery: clinicopathological correlation in women undergoing hysterectomy for abnormal uterine bleeding

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is one of the most frequently encountered conditions in women which is defined as any variation from the normal menstrual cycle which includes changes in regularity, frequency of menses, duration of flow, or amount of blood loss. The PALM-COEIN system classifies different causes of AUB and is composed of nine basic categories arranged according to the acronym PALM-COEIN as polyp, adenomyosis, leiomyoma, malignancy and hyperplasia, coagulopathy, ovulatory disorders, endometrial, iatrogenic, and not yet classified. Definitive treatment of AUB is hysterectomy even though less invasive options are also available. This study explored clinicopathological correlation in women undergoing hysterectomy, analysing the diagnostic criteria, clinical presentations, histopathological findings with an aim of establishing better therapeutic strategies and improving patient management and in further research for comparative and epidemiological studies in diagnostic approaches for AUB in various population.

Methods: This was prospective observational type of study which included 126 women with abnormal uterine bleeding (AUB) planned for hysterectomy at SNR district hospital, Kolar during the study period. Detailed history, required investigations were done. Study material was from hysterectomy specimens of the patients who underwent total abdominal hysterectomy (TAH) or vaginal hysterectomy for abnormal uterine bleeding (AUB). Data of clinically diagnosed cases, USG report and histopathological reports (of endometrial tissue) was collected and compared to find the correlation.

Results: A total of 126 women underwent hysterectomy in the study period. Heavy menstrual bleeding (HMB) was commonest presentation (60%) followed by dysmenorrhoea (55%) and irregular menstrual bleeding (52%). AUB-L was commonest cause for AUB clinically (51.58%), sonologically (51.58%) and histopathologically (49.20%), followed by adenomyosis on USG (17.46%) and histologically (16.66%) and clinically followed by the cases without any organic pathology (AUB-O) (42.85%).

Conclusions: The present study confirms a good correlation between clinical findings and histopathology especially in benign conditions.

Keywords: Abnormal uterine bleeding, Heavy menstrual bleeding, Histopathology, PALM-COEIN classification, Total abdominal hysterectomy

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most frequently encountered condition in women which is defined as, any variation from the normal menstrual cycle which includes changes in regularity, frequency of menses, duration of flow, or amount of blood loss.[1] The older terminologies like menorrhagia, oligomenorrhea, polymenorrhea, metromenorrhagia, have been discontinued and FIGO has suggested newer

terminologies. Bleeding is said to be frequent when it occurs at an interval of <24 days and infrequent if >38 days. It is said to be irregular when the difference between the shortest and longest cycle is >10 days. It is said to be prolonged when the bleeding lasts for >8 days.[2] Heavy menstrual bleeding is increased menstrual volume regardless of regularity, frequency, or duration.[3]

Abnormal uterine bleeding (AUB) is responsible for around 20 to 30 % visits to the outpatient department in the reproductive age group[4]. It is estimated that about 10 % to 30 % of women will be affected by abnormal uterine bleeding (AUB) during their lifetime.[4]

The PALM-COEIN system classifies the causes of AUB and is composed of nine basic categories arranged according to the acronym PALM-COEIN as polyp, adenomyosis, leiomyoma, malignancy and hyperplasia, coagulopathy, ovulatory disorders, endometrial, iatrogenic, and not otherwise classified.[5] Etiology of abnormal uterine bleeding varies and hence the bleeding pattern. In reproductive age, ovulatory type of bleeding is most typical where mostly cyclical bleeding occurs with excessive amount or duration. Another type of ovulatory bleeding occurs as pre or post menstrual spotting. Anovulatory type of bleeding occurs in adolescent and perimenopausal age group.[6]

Management of AUB is mainly on the basis of evaluation by clinical, laboratory tests, ultrasonography (USG) which consists of medical and surgical methods. However, there is sometimes discrepancy in clinical and sonological findings with histopathological studies. Final diagnosis always has to be correlated with histopathological study as it confirms the diagnosis and also guides in correct management depending on the underlying cause of AUB, age of the patient and fertility goals of the patient. The definitive treatment of AUB however remains hysterectomy even though less invasive options of medical therapies and minor surgical procedures like endometrial ablation are available.[7]

METHODS

A prospective study was conducted at SNR district hospital, Kolar in department of obstetrics and gynecology in collaboration with pathology department over one year of study period, i.e. March 2023 to February 2024 with approval from the institutional ethical committee. It included all the women presenting with AUB. The sample size was 126.

Inclusion criteria

All women with severe abnormal uterine bleeding (AUB) planned for hysterectomy and the women with abnormal uterine bleeding not responding to medical management and who gave consent for the study.

Exclusion criteria

Diagnosed cases of malignancies of genital tract. Patients with bleeding disorders. Obstetric causes of vaginal bleeding.

Study procedure

Patients coming to gynecology OPD at SNR hospital during the study period with complaint of abnormal uterine bleeding and who meet the inclusion criteria were enrolled in the study. Detailed history was taken about the bleeding pattern, the severity, duration and any other associated symptoms. General physical examination, systemic and gynaecological examination was carried out. Routine blood investigations viz. complete blood count, random blood sugar, urine routine and microscopy, renal function tests, liver function test, thyroid function test, coagulation profile, HIV, HbsAg, VDRL, Pap smear, chest x-ray PA view, ECG were carried out. Ultrasonography was done. CT scan or MRI scan were done as per indication. Hysteroscopy as per indication and if required the endometrial biopsies were sent.

Study materials were collected from hysterectomy specimens of the patients who underwent total abdominal hysterectomy (TAH) or vaginal hysterectomy for abnormal uterine bleeding. Specimens were sent for histopathological examination and reports were collected. Data of clinically diagnosed cases, USG report and histopathological reports (of endometrial tissue) was collected and compared to find the correlation.

Statistical analysis

Data was entered into Microsoft excel data sheet and analysed using SPSS 22 version software. Categorical data was represented in the form of frequencies and proportions. MS Excel was used to obtain various types of graphs such as bar diagram. A ‘p’ value (probability that the result is true) of <0.05 was considered statistically significant after assuming all the rules of statistical tests.

RESULTS

A total 126 cases of AUB were included in the study.

Table 1: Distribution of cases according to age.

Age group (years)	Number of cases	Percentage
≤40	2	1.59
40 to 45	87	69.05
46 to 50	32	25.40
>50	5	3.96
Total	126	100

Table 1 showed distribution of cases according to age. Majority cases were from age group 40 to 45 years i.e., 87

(69.05 %) cases followed by 32 (25.40 %) cases from age group 46 to 50 years.

Table 2: Distribution of cases according to parity.

Parity	N	Percentage of cases
Nulliparous	5	3.96
Para 1	13	10.31
Para 2	78	61.90
Para 3 and above	30	23.80
Total	126	100

Table 2 showed distribution of cases according to parity. Five (3.96%) cases were nulliparous, 13 (10.31%) were having parity 1, 78 (61.90%) were having parity 2 and 30 (23.80%) were having parity 3 or above.

Table 3: Distribution of cases according to symptoms.

Symptoms	Present (%)	Absent (%)	Total (%)
Heavy menstrual bleeding	76 (60.31)	50 (39.68)	126 (100)
Dysmenorrhoea	70 (55.55)	56 (44.44)	126 (100)
HMB and dysmenorrhoea	26 (20.63)	100 (79.36)	126 (100)
HMB and irregular menstrual	16 (12.69)	110 (87.31)	126 (100)
Irregular menstrual bleeding	66 (52.38)	60 (47.61)	126 (100)
Intermenstrual bleeding	29 (23.01)	97 (76.98)	126 (100)
Postmenopausal bleeding	5 (3.96)	121 (96.03)	126 (100)

Table 3 shows distribution of cases according to menstrual bleeding pattern. Heavy menstrual bleeding was present in 76 (60.31%) cases, dysmenorrhoea in 70 (55.55%) cases, HMB and dysmenorrhoea in 26 (20.63%) cases, HMB and irregular menstrual bleeding in 16 (12.69%) cases, irregular menstrual bleeding in 66 (52.38%) cases, metrorrhagia in cases 29 (23.01%), postmenopausal bleeding in 5 (3.96%) cases.

Table 4: Distribution of cases according to clinical diagnosis.

Clinical diagnosis	Number of cases	Percentage
Leiomyoma	65	51.58
AUB (abnormal uterine bleeding)	54	42.85
Cervical polyp	5	3.96
Ovarian cyst	1	0.79
Endometriosis	1	0.79
Total	126	100

Table 4 shows distribution of cases according to clinical diagnosis. In 65 (51.58%) cases clinical diagnosis was fibroid followed by AUB in 54 (42.85%) cases, cervical polyp in 5 (3.96%) cases, ovarian cyst and endometriosis in 1 (0.79%) case each.

Table 5: Distribution of cases according to USG diagnosis.

USG diagnosis	Number of cases	Percentage
Leiomyoma	65	51.58
Adenomyosis	22	17.46
Leiomyoma and adenomyosis	3	2.38
Polyp	7	5.55
Endometrial hyperplasia	1	0.79
Myometrial hyperplasia	1	0.79
Endometrial hyperplasia + myometrial	4	3.17
Ovarian cyst	7	5.55
Endometriosis	1	0.79
NAD (no abnormalities detected)	15	11.90
Total	126	100

Table 5 shows distribution of cases according to USG diagnosis. Leiomyoma was detected in 65 (51.58%) cases, adenomyosis was detected in 22 (17.46%) cases, both leiomyoma with adenomyosis was detected in 3 (2.38%) cases, polyp was detected in 7 (5.55%) cases, endometrial hyperplasia was detected in 1 (0.79%) case, myometrial hyperplasia was detected in 1 (0.79%) case, ovarian cyst was detected in 7 (5.55%) cases, endometriosis was detected in 1 (0.79%) case.

Table 6: Distribution of cases according to histopathological diagnosis.

Histopathological diagnosis after surgery	Number of cases	Percentage
Leiomyoma	65	51.58
Adenomyosis	21	16.66
Leiomyoma with adenomyosis	3	2.38
Polyp	7	5.55
Endometrial hyperplasia	1	0.79
Myometrial hyperplasia	2	1.58
Endometrial hyperplasia with myometrial	4	3.17
Ovarian cyst	7	5.55
Endometriosis	1	0.79
NAD (no abnormalities detected)	15	11.90
Total	126	100

Table 6 is showing distribution of cases according to histopathological diagnosis. Leiomyoma was detected in

65 (51.58%) cases, adenomyosis was detected in 21 (16.66%) cases, both leiomyoma and adenomyosis was detected in 3 (2.38%) cases, polyp was detected in 7 (5.55%) cases, endometrial hyperplasia was detected in 1 (0.79%) case, myometrial hyperplasia was detected in 2 (1.58%) cases, ovarian cyst was detected in 7 (5.55%) cases, endometriosis was detected in 1 (0.79%) case.

Table 7: Distribution of cases according to diagnosis on clinical, USG and histopathology.

Diagnosis	Clinical (%)	USG (%)	HP (%)
Leiomyoma	65 (51.58)	65 (51.58)	62 (49.20)
Leiomyoma + adenomyosis	0 (0)	3 (2.38)	6 (4.76)
Adenomyosis	0 (0)	22 (17.46)	21 (16.66)
Polyp	5 (3.96)	7 (5.55)	7 (5.55)
Ovarian cyst	1 (0.79)	7 (5.55)	7 (5.55)
Endometriosis	1 (0.79)	1 (0.79)	1 (0.79)
Endometrial hyperplasia	0 (0)	1 (0.79)	1 (0.79)
Myometrial hyperplasia	0 (0)	1 (0.79)	2 (1.58)
Endometrial hyperplasia + myometrial	0 (0)	4 (3.17)	4 (3.17)
AUB-O	54 (42.85)	0 (0)	0 (0)
NAD	0 (0)	15 (11.90)	15 (11.90)
Total	126 (100)	126 (100)	126 (100)

Table 7 shows distribution of diagnosis on clinical, USG and histopathology. 3 (2.38%) cases of leiomyoma were found to have co-existing adenomyosis on histopathology.

Table 8: Distribution of cases according to route of operative procedure.

Route	No. of cases	Percentage
Vaginal	29	23.01
Abdominal	97	76.98
Total	126	100

Table 8 shows distribution of cases according to route of operative procedure. Maximum patients i.e. 97 (76.98%) underwent abdominal hysterectomy and 29 (23.01) underwent vaginal hysterectomy.

Table 9: Distribution of cases according to operative procedures.

Operative procedures	No. of cases	Percentage
TAH and BSO	66	52.38
TAH and BS	15	11.90
TAH	13	10.31
NDVH	15	11.90
VH	14	11.11
TAH and USO	3	2.38
Total	126	100

Table 9 shows distribution of cases according to operative procedures. In maximum cases i.e., 66 (52.38%) TAH and BSO was performed followed by TAH and BS performed in 15 (11.90%) cases.

Table 10 shows distribution of cases according to complications of hysterectomy, 2 (1.58%) cases developed wound sepsis, 7 (5.55%) cases developed pyrexia, 2 (1.58%) cases developed respiratory infection, 2 (1.58%) cases developed UTI, 1 (0.79%) case developed thrombophlebitis and 112 (88.88%) were without complication in postoperative period.

Table 10: Distribution of cases according to complications of hysterectomy.

Complication	No. of cases	Percentage
No complication	112	88.88
Pyrexia	7	5.55
Wound sepsis	2	1.58
UTI	2	1.58
Respiratory infection	2	1.58
Thrombophlebitis	1	0.79
Total	126	100

DISCUSSION

In the study by Radhika et al, Misra et al and Prema et al, most cases belonged to 5th decade, i.e. 42.3%, 41.25% and 68.7% respectively and in study by Nahar et al the commonest age group was between 41-45 years (35%), followed by 36-40 years (22%) and 31-35 years (16%).[8-11] In the study by Anupamasuresh et al the maximum incidence of AUB was seen in women between 35-40 years (40.2%) and 40-45 years (33.7%).[12] Looking at the results of present study and the similar studies done, the maximum cases of AUB belongs to perimenopausal age or fourth and fifth decade of life.

Looking at the results of this study AUB is commonly seen in multiparous women. Other studies done by Misra et al, Radhika et al and Prema et al also had maximum number of cases i.e., 62.5%, 53.33% and 69.2% respectively with a parity of two.[8-10] Jahan et al, Nahar et al, Doddamani et al, Ramesh et al Anupamasuresh et al showed maximum number of cases were multipara.[11-15]

In present study, heavy menstrual bleeding was present in 76 (60.31%) cases, dysmenorrhoea in 70 (55.55%) cases, HMB and dysmenorrhoea in 26 (20.63%) cases, HMB and irregular menstrual bleeding in 14 (11.11%) cases, irregular menstrual bleeding in 66 (52.38%) cases, metrorrhagia in 29 (23.01%) cases and postmenopausal bleeding in 5 (3.96%) cases. Radhika et al in their study showed HMB was commonest presentation seen in 48.89% of cases followed by dysmenorrhea in 15.56% of cases and irregular bleeding in 12.22% of cases.[8] In the study by Jahan et al maximum number of cases presented with HMB (62%) followed by intermenstrual bleeding

(18%), frequent menstrual bleeding (12%), heavy and prolonged bleeding (8%).[13] The study by Prema et al showed HMB the commonest presentation (24.3%), followed by irregular menstrual bleeding (18.7%).[10] Prema et al, Misra et al, Singh et al, Kamrun nahar et al in their study found that HMB was the commonest presenting symptom.[9,10,11,16]

In the present study, in majority cases i.e., in 65 (51.58%) cases clinical diagnosis was fibroid followed by AUB-O in 54 (42.85%) cases, polyp in 5 (3.96%) cases, ovarian cyst and endometriosis in 1 (0.79%) case each.

In similar studies by Radhika et al, Misra et al and Prema et al the most common clinical diagnosis was leiomyoma (AUB-L) i.e., structural causes were more common than the non-structural causes.[8-10] But in contrast to present study there are studies by Jahan et al, Kamrunnahar et al and Doddamani et al in which the most common cause of AUB was AUB-O i.e., ovulatory disorder followed by AUB-L and then AUB-A i.e., non-structural causes were more common than structural causes.[11,13,14]

In the present study and in similar studies by Radhika et al, Misra et al the most common ultrasound diagnosis was leiomyoma/fibroid/AUB-L, followed by adenomyosis/ AUB-A i.e., structural causes were more common than non-structural.[8,9] In contrast to the study done, according to Anupamasuresh et al the most common USG diagnosis was non- structural followed by structural causes (AUB-L, AUB-A).[12] But from USG, all the cases cannot be diagnosed, so whenever indicated endometrial biopsy was performed in present study.

In present study and in similar study by Radhika et al and Misra et al most common HP diagnosis was leiomyoma (51.58%, 40% and 39.75% respectively), followed by adenomyosis (16.66%, 21.1% and 23.5%), both leiomyoma with adenomyosis was detected in 3 (2.38%) cases, in study by Nahar et al on histopathology in 34% of cases histopathological findings were unremarkable.[8,9,11]

In present study for AUB-L clinical diagnosis correlate with histopathological diagnosis in 90% of cases (65 cases versus 58 cases), for AUB-A clinical diagnosis correlate with histopathological diagnosis in 80% of cases (30 cases vs 24 cases), for AUB-L+A clinical diagnosis is less sensitive in comparison to histopathological diagnosis (8 cases versus 10 cases), for AUB-P clinical diagnosis is less sensitive in comparison to histopathological diagnosis (5 cases versus 9 cases). From the above discussion it is clear that histopathology gives confirmed diagnosis and excludes the wrong clinical diagnosis. Clinically 52% were having AUB (O) i.e., ovulatory disorder but on ultrasound 28% were having ovarian changes and histopathologically proliferative endometrium without atypia was seen in 45% of cases. Clinically AUB(A) was diagnosed in 23% of cases, on ultrasound in 15% cases and on histopathology in 34% cases. In similar study by Misra et al they found that diagnostic accuracy of clinical diagnosis was 78% and ultrasound diagnosis was 100%.[9] In similar study by Singh et al the clinical and histopathological results were concordant in 85.03%.[16] The concordance rates in the clinical and histopathological diagnosis in the cases of AUB-P, AUB-A, and AUB-L were good with 90%, 90.9%, and 91%, respectively. In similar study by Nahar et al on correlating histopathological findings with clinical diagnosis they, for AUB-O the clinical diagnosis correlate with histopathological findings in 72% cases (44% versus 32%), for AUB-L clinical diagnosis correlate with histopathological diagnosis in 90% cases (30% versus 27%), for AUB-P clinical diagnosis correlate with histopathological diagnosis in 100% cases (5% versus 5%) and for AUB-A clinical diagnosis correlate with histopathological diagnosis in 130% cases (10% versus 13%).[11]

CONCLUSION

AUB comprises a wide spectrum of symptoms and presentations, taking into consideration various factors. Every case of AUB has its own characteristic findings on USG, endometrial biopsy and histopathology; hence a generalized or a single modality of treatment cannot be applicable for every patient. The clinical findings suggest the different causes of AUB are narrowed by taking proper history, ultrasonography and the confirmed diagnosis is achieved after histopathological examination. In patients with AUB the most common complaint and clinical presentation is HMB. Among them the most common histopathological diagnosis is Leiomyoma. The present study confirms a good correlation between clinical findings and histopathology especially in benign conditions.

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