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Original Research Article

Clinical profile of patients with menorrhagia and its correlation with endometrial histopathology and sonographic features

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ABSTRACT

Background: Menorrhagia is one of the most common gynecologic complaints in contemporary gynecology. It is defined as total blood loss exceeding 80 ml per cycle or menses lasting longer than 7 days. Current gynecological survey reports that 30% of all pre-menopausal women perceive their menses to be excessive. So, the main aim of this study was to correlate clinical profile of patients with menorrhagia, etiological factors of menorrhagia, endometrial patterns in cases of menorrhagia, sonography findings in these patients.

Methods: This is a prospective study of 100 patients with complaints of menorrhagia that were randomly selected from out-patient department of a tertiary care hospital. In all cases of menorrhagia, detailed history followed by examination and a particular set of investigations including USG was done. All women were subjected to D and C and histo-pathological report taken into account. However all cases of Puberty menorrhagia were excluded from this study as D and C could not be done in them. Treatment was given depending upon cause/age/parity/family/completion/patient's desire.

Results: AUB is the most common cause of menorrhagia in this study group (60%) with leiomyomas as the second commonest cause (24%). Other causes found were adenomyosis (8%), polyp (4%), IUCD (4%). Maximum cases of menorrhagia are in 40-50 years age group.

Conclusions: To conclude AUB (60%) was the commonest cause of menorrhagia followed by leiomyomas (24%), adenomyosis (8%), IUCD (4%) and polyps (4%). Menorrhagia was most common in multiparous (78%) and perimenopausal age group (40-49 years). Proliferative endometrium was most commonly observed histo-pathological pattern in 58% cases. Leiomyoma was the commonest sonological finding seen in 24% cases followed by adenomyosis in 8% cases.

Keywords: Endometrium, Menstruation, Menorrhagia, Sonography

INTRODUCTION

Menorrhagia is regular menstrual cycles but with excessive flow and duration. Clinically, it is defined as total blood loss exceeding 80ml per cycle or menses lasting longer than 7 days. Menorrhagia is one of the most common gynecologic complaints in contemporary gynecology.¹ Current gynecological surveys report that 30% of all premenopausal women perceive their menses

to be excessive. The World Health Organization recently reported that 18 million women aged 30-55years perceive their menstrual bleeding to be exorbitant. Reports show that only 10% of these women experience blood loss severe enough to be defined clinically as menorrhagia.

A normal menstrual cycle is 21-35 days in duration with bleeding lasting an average of 7 days and flow of approximately 40ml.² Menorrhagia must be distinguished

clinically from other common gynecologic diagnoses mainly metrorrhagia (flow at irregular intervals), menometrorrhagia (frequent, excessive flow), polymenorrhoea (bleeding at <21 days interval) and abnormal uterine bleeding (without any obvious structural or systemic abnormality).³ Nearly 30% of all hysterectomies performed in the United States are performed to alleviate heavy menstrual bleeding. Definitive surgical correction has been the mainstay of treatment for menorrhagia. However, modern gynecology dictates the trends towards conservative therapy as many women desire to preserve their uterus. Alternatives to hysterectomy are also the result of statistics revealing that nearly 50% of uteri in hysterectomies done for menorrhagia are free of disease.

Heavy menstrual bleeding is a subjective finding, making the exact problem definition difficult. Treatment regimens must address the specific facet of the menstrual cycle the patient perceives to be abnormal (cycle length, quantity of bleeding). Finally, treatment success usually is evaluated subjectively by each patient, making positive outcome measurement difficult. While menorrhagia remains a leading reason for gynecologic office visits, only 10-20% of all menstruating women experience blood loss severe enough to be defined clinically as menorrhagia. Any woman of reproductive age who is menstruating may develop menorrhagia.

Most patients with menorrhagia are older than 30 years. This is because the most common cause of heavy menses in the younger population is anovulatory cycles in which bleeding does not occur at regular intervals. The average woman experiences about 400 ovulatory events over her reproductive lifetime, which represents a small percentage of the 6-7 million oocytes present at 20th week of gestation or even 700,000 presents at birth.⁴ This process of ovulation or the number of ovulatory cycles per se are therefore not unsurprisingly poor.

Common causes of menorrhagia include infection, bleeding disorders and organ dysfunction, thyroid and adrenal gland dysfunction pituitary tumors, anovulatory cycles, polycystic ovarian syndrome (PCOS) obesity and vasculature imbalance. Uterine leiomyomas, endometrial polyps, endometrial hyperplasia and intrauterine device (IUDs), steroid hormones and medications (anticoagulants) do contribute to menorrhagia. So understanding the etiology, arriving at diagnosis clinically and confirming it by investigations becomes imperative.

Menorrhagia is both physically and psychologically traumatic to the patient. So, it is up to the gynecologist to steer the course of these patients smoothly across the traumatizing influence of this condition. It is a situation where one has to decide when to treat conservatively and when to treat aggressively.

METHODS

This is a prospective study of clinical profile of patients with menorrhagia and its correlation with endometrial histopathology and sonography features, conducted in the Department of Obstetrics and Gynecology in a tertiary hospital of armed forces. In this study, 100 cases of menorrhagia were selected randomly of varied age groups from gynecological out-patient department of a tertiary hospital.

Inclusion criteria

- All cases of menorrhagia who visited the gynecological out-patient department were randomly selected
- A detailed history followed by examination and a particular set of investigations were done
- All sexually active women were subjected to D and C and histo-pathological report taken into account.

Exclusion criteria

- All cases of puberty menorrhagia as these patients are normally not subjected to D and C and noninvasive methods of investigations are usually preferred for them.

One hundred cases of menorrhagia excluding puberty menorrhagia were randomly selected from gynecological out-patient department of a tertiary care hospital. The symptoms related by a patient with menorrhagia often can be more revealing than laboratory tests. Considering the lengthy list of possible etiologies that contribute to menorrhagia, taking a detailed patient history is imperative. If menorrhagia is suspected based on women's description of bleeding, the gynecologist will try to determine the cause by taking a medical history and performing physical examination. The physical examination was done to look for signs of bleeding elsewhere in the body, which could indicate a bleeding disorder. A pelvic examination was done to determine the size and shape of uterus. In women with leiomyoma uterus is often enlarged or irregularly shaped. Laboratory tests were done to look for bleeding disorders or thyroid disease. Imaging tests, most commonly a pelvic ultrasound was done to look for endometrial polyps, leiomyomas or adenomyosis.

RESULTS

In the present study, 100 cases of menorrhagia were studied in reproductive to perimenopausal age group. Clinical diagnosis for the cause of menorrhagia is shown.

Table 1: Incidence of cases.

Causes of menorrhagia	Number of cases
AUB	60
Leiomyoma	24
Adenomyosis	08
IUCD	04
Polyp	04

AUB (60%) is the most common cause of menorrhagia followed by leiomyomas (24%). In this study as depicted in Table 1.

Most common age group affected is the peri-menopausal patients as depicted in Table 2.

Table 2: Age-wise distribution of cases.

Age in years	No. of cases	Percentage
20 - 29	12	12%
30 - 39	24	24%
40 - 49	64	64%
Total	100	100%

Table 3: Age-wise distribution of cases according to etiological factors (n=100).

Years	AUB	Leiomyomas	Adenomyosis	Polyp	IUCD
15 - 24	8	0	0	0	0
25 - 34	8	0	0	0	3
35 - 44	28	22	6	4	0
45 - above	16	2	3	0	0

Most common etiology of menorrhagia is AUB, seen in 60% of patients as shown in Table 1. About half of the cases are seen in 35-44 years (28%) as shown in Table 3. Leiomyoma is the second most common cause as shown in Table 1. Other causes of menorrhagia found were Adenomyosis (8%), Polyp (4%), IUCD (4%) as depicted in Table 1. Adenomyosis was found to be more common in the age group of 40 years and above as shown in Table 3. Cervical polyp was seen more in patients between 35-44 years age group as shown in Table 3. IUCD insertion was also seen as a cause of menorrhagia in the reproductive age group as shown in Table 3.

Table 4: Parity and menorrhagia.

Parity	No. of cases
Nulliparous	08
Primiparous	10
II - IV	04
V and above	78

Present study shows that Menorrhagia was more common in multi-parous patients (78%) as depicted in Table 4.

Table 5: Association between parity and disorder.

Parity	AUB	Leiomyomas	Adenomyosis	Polyp	IUCD
Nulliparous	8	0	0	0	0
Primiparous	6	2	0	0	2
II - IV	42	22	8	4	2
V and above 4%	4	0	0	0	0

Table 6: Associated symptoms with menorrhagia.

Symptom	No. of cases	Percentage
Pain in lower abdomen	12	12%
Heaviness in lower abdomen	38	38%
Urinary complaint	04	04%
Backache	10	10%
No. associated symptoms	36	36%
Total	100	100%

The study shows AUB is more common in II-IV parity group as depicted in Table 5. Incidence of leiomyoma is also highest in II-IV parity group as shown in Table 5.

Table 7: Types of endometrium.

Type of endometrium	No. of cases
Proliferative	58
Hyperplastic	12
Secretory	30

Most common associated symptom was heaviness in lower abdomen (38%) as shown in Table 6. 10% patients complained of backache. 36% patients were asymptomatic in this study as shown in Table 6.

D and C was done to study endometrial pattern of bleeding in all patients. The greatest proportion of patients i.e., 58% had proliferative endometriomas shown

in Table 7. Secretory endometrium was found in 30% and hyperplasia was seen in 12% cases as shown in Table 7.

Porliferative endometrium which was most common finding was seen most commonly in II-IV parity, followed by secretory and hyperplastic changes as shown in Table 8.

Table 8: Histo-pathological correlation.

Parity	Proliferative	Secretory	Hyperplastic
Nulliparous	02 (02.0%)	06 (06.0%)	-
Primiparous	02 (02.0%)	04 (04.0%)	02 (02.0%)
II-IV	48 (48.0%)	20 (20.0%)	10 (10.0%)
V and above	04 (04.0%)	-	-

Ultra-sonography was used as an imaging modality in all these cases of menorrhagia. Most common positive finding was leiomyomas (24% cases) as shown in Table 9. In 60 (60%) cases, no finding was seen on USG. 8 (8%) cases showed Adenomyosis whereas endometrial polyp and IUCD were seen in 4% cases each as shown in Table 9. In 75% cases, leiomyoma was intra-mural, followed by Sub-mucous present in 16.67% and sub-serosal in 8.33% cases as shown in Table 11.

Table 9: Sonographic findings in patients.

Sonography finding	No. of patients
Normal	60
Leiomyoma	24
Adenomyosis	08
IUCD	04
Polyp	04

Table 10: Sonographic findings in menorrhagia.

Uterus size	DUB	Leiomyomas	Adenomyosis	Polyp	IUCD	Total
Normal	46 (76.67%)	02 (09.69%)	0	04 (100%)	04 (100%)	56 (56%)
Bulky	14 (23.33%)	22 (90.91%)	08 (100%)	0	0	44 (44%)
Total	60 (100%)	24 (1000%)	08 (100%)	04 (100%)	04 (100%)	100 (100%)

Table 11: Location of leiomyomas.

Intramural	Submucous	Subserosal	Broad ligament fibroid
75	17	8	0

Maximum cases of DUB (76.67%) presented with normal size uterus as shown in Table 10. 90.91% of leiomyomas present with bulky uterus. USG is one of the best non-invasive imaging study to assess uterine shape, size, and contour; endometrial thickness: and adnexal areas.⁵

DISCUSSION

Menorrhagia is primarily a subjective complaint perceived by a woman as heaviness of her periods. The cause of menorrhagia may often be recognized on a careful history and examination alone, although, the majority required more thorough evaluation. Causes may be local or systemic. Although, there is some reason to believe that disturbances of prostaglandin synthesis or metabolism or local coagulation metabolism may be

involved. Other local causes include leiomyoma, adenomyosis, endometriosis, endometrial polyps, IUCD, Endometrial hyperplasia. Organ dysfunction causing menorrhagia includes hepatic or renal failure.^{6,7}

Chronic liver disease impairs production of clotting factors and reduces hormone metabolism (e.g., estrogen).

Either of these problems may lead to heavy uterine bleeding. Endocrine causes of menorrhagia include thyroid and adrenal gland dysfunction, pituitary tumors, anovulatory cycles, PCOS, obesity, and vasculature imbalance. Both hypothyroidism and hyperthyroidism result in menorrhagia.⁸ Even subclinical cases of hypothyroidism produce heavy uterine bleeding.

Dysfunctional uterine bleeding

It is generally accepted that all abnormal bleeding for which an organic cause cannot be found is classified as DUB. Novak ER et al, defined it as “abnormal bleeding from uterus unassociated with tumor, inflammation or pregnancy”, Field CS defined it as irregular, excessive, scant or prolonged bleeding of endometrial origin occurring without neoplasia, infection, pregnancy, blood dyscrasias, trauma or hormone administration as a cause.^{9,10} According to Davey DA DUB is a working clinical diagnosis and includes a whole range of endocrine and other dysfunctional disorders.¹¹

Davey DA and Taylor ES had 10% incidence in their studies. It is said to occur more frequently at the extremes of reproductive life, during adolescence and perimenopause. Davey DA suggested that DUB may be associated with any type of endometrium. Classification of DUB does not have a definite pattern.¹² Jeffcoate has classified it into ovulatory and anovulatory group.¹³ He included functional polymenorrhagia in ovulatory group and threshold bleeding in anovulatory group. While, Davey DA has classified DUB into primary, secondary and iatrogenic groups.

In a study of selected women who presented for evaluation of abnormal bleeding 58.5% of these women had “intramural myomas” compared to 13% of controls. In other imaging studies of women presenting with

bleeding, 14-27% were specifically found to have “submucosal or intra-cavitary” myomas on sonohysterographic evaluation.¹⁴ Several studies have shown that number of leiomyomas and size of leiomyomas do not influence whether a woman will develop abnormal bleeding dating back to early last century, several investigators have identified an increase in numbers of venules and arterioles in myomatous uteri, along with venule ectasia.^{15,16} More recently molecular techniques have revealed difference in growth factor expression and regulation in myomatous uteri.¹⁷

Adenomyosis

Adenomyosis is difficult to diagnose. In a review by Lee NC and colleagues, only 48% of preoperative diagnosis of adenomyosis were confirmed pathologically.¹⁸ Diagnosis has been problematic as the lesions are embedded in the myometrium out of reach of detection by hystero-salpingography (HSG) or hysteroscopy.¹⁹ Today, sonography and MRI are main imaging methods useful in diagnosing adenomyosis.²⁰

MRI accurately diagnosed the condition in 88% of cases compared to 53% by TVUS.²¹ Criteria include globular shaped uterus, myometrial cysts (2-6 mm in diameter), mottled in homogenous myometrium, indistinct borders to a myometrial mass indistinct endometrial stripe, hyperechoic myometrial nodules.²²⁻²⁴

Table 12: Causes of menorrhagia in various studies.

Author	DUB	Leiomyomas	Adenomyosis	Other
Purandare CN ²⁵	64.71%	23.53%	11.76%	-
Pilli GS et al ²⁶	85%	4%	6%	-
Shagufta, S et al ³⁰	20%	47%	33%	-
Present study	60%	24%	8%	8%

The present study shows that DUB is the most common menstrual abnormality which is correlated with study of Purandare CN, (64.71%) and Pilli GS, et al (85%) as shown in Table 12.^{25,26} The maximum cases of

leiomyoma (24%) were seen in 4th decade which also correlated with study by Purandare CN and the study published by Lady Reading Hospital, Peshawar in Marc. There were 4 cases of IUCD with menorrhagia and 4 cases of endometrial polyp with menorrhagia.²⁷

Table 13: Relation between menorrhagia and parity with other study.

Author	Nulliparous	Primiparous	II-IV	V & Above
Joshi SK et al ³¹	25.9%	12.5%	35%	26.6%
Present study	8%	10%	78%	4%

Age

Present study shows that maximum numbers of cases of menorrhagia were in 40-49 years group (64%). It correlated with study by Sharma S, where maximum patients (76%) belong to 4th decade.

Of the fifty cases of menorrhagia majority of patients were multiparous (82%) which correlated with study with Joshi SK et al, (61.6%) as shown in Table 13. Pilli GS et al, also had similar findings and found DUB to be present maximum in multiparous (87%). Higher incidence in multiparity can be explained on the basis of general

clinical population which has higher incidence of multiparas. Adenomyosis was present in multiparous patients (100%).

Endometrial correlation

The present study shows that proliferative endometrium was found in maximum patients (58%). Similar observation was made by other workers as shown in the table below. Secretory endometrium was found in 30% of cases. This indicates anovulatory endometrium is more common than secretory endometrium.

Hyperplastic (CGH and adenomyotic hyperplasia) was found in only 12% cases as shown in Table 14. Incidence quoted by other workers for the same vary between 19.3-60.6%. This wide difference may be due to some confusion with regards to term hyperplasia. Some limit it to full blown growth picture, others extending its use to include minor degree of growth effect, perhaps not distinguishable from those seen in first half of a normal cycle. According to Novak term hyperplasia includes increase in number of tissue elements both stromal and epithelial. The most distinct feature is gland pattern which does not show any uniformity in size and configuration.

Table 14: Endometrial pattern in various studies.

Author	Proliferative	Secretory	CGH	Adenomatous hyperplasia	Atrophic
Joshi SK ³¹	51.9%	17.9%	25%	6.3%	-
Bhattacharji SK ²⁹	19.6%	43.9%	29.3%	-	7.3%
Maheshwari V ³²	30.77%	25%	20.19	-	0.96%
Pili GS et al ²⁶	34%	13%	44%	-	-
Shagufta S et al ³⁰	58.5%	34.71%	4.95%	-	-
Present study	58%	30%	12%	-	-

Histopathological correlation

In the present study, correlation of endometrial pattern and parity was done which showed that majority of the patients were multiparous. Purandare CN, also found that majority of patients were multiparous. In the present study correlation was found that maximum cases of proliferative endometrium were multiparous patients. The higher incidence of multiparity can be explained on basis of general clinical population which shows higher incidence of multiparity. It also shows menorrhagia is commonly associated with proliferative endometrium (58%). Maheshwari V also found that proliferative endometrium in maximum number of cases.²⁸ Secretory and hyperplastic endometrium were found in 30% and 12% of all cases of menorrhagia.

Histopathological and radiological correlation

In our study, all cases subjected to D and C. 56 (56%) cases showed normal uterine size and 44 (44%) showed bulky uterus. Of the 58 cases showing proliferative endometrium, 66 (62.07%) showed normal uterine size and 22 (37.93%) cases showed bulky uteri on USG. Of the 30 cases showing secretory endometrium, 16 (58.33%) showed normal uterine size and 14 (46.67%) cases showed bulky uterus on USG.

Of the 12 cases showing cystic glandular hyperplasia, 4 (33.33%) showed normal uterine size and 8 (66.67%) cases showed bulky uterus on USG. In the study conducted by Bhattacharji SK in 1964 showed

approximately the similar results as compared to our study.²⁹

CONCLUSION

The present study consists of clinical profile of menorrhagia and its correlation with endometrial histopathology and USG. DUB was the most common cause of menorrhagia (60%) followed by leiomyomas (24%), adenomyosis (8%), IUCD (4%) and polyp (4%). Menorrhagia was most common in perimenopausal age group i.e. 40-49 years. Menorrhagia was most common in multiparous patients (78%). Proliferative endometrium was found in maximum patients (58%) with menorrhagia followed by secretory. In party II-IV proliferative endometrium was most common findings. In USG findings, maximum cases of menorrhagia (76.67%) presented with normal size uterus. Leiomyomas was most common USG finding in 24% cases followed by Adenomyosis. 90.91% of leiomyomas presented with bulky uterus.

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