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Original Research Article

Role of hysteroscopy and transvaginal sonography and its correlation with histopathological examination in perimenopausal abnormal uterine bleeding

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ABSTRACT

Background: Abnormal uterine bleeding is any abnormal uterine bleeding outside normal volume, duration, regularity or frequency. Transvaginal sonography allows detailed assessment of anatomical abnormalities of the uterus and endometrium pathologies of the myometrium. Visual assessment can be done by hysteroscopy and cellular assessment by histopathology.
Methods: This descriptive prospective cross-sectional study was conducted in Rama medical college hospital & research centre, Kanpur. 103 Perimenopausal women of 40-45 years of age with AUB attending gynecology OPD of RMCH were included. Particulars of woman regarding menstrual history, obstetric history were asked for. Systemic examination**,** gynaecological examination and Specific investigations like TVS, Hysteroscopy were also done.
Results: The mean ET by TVS for endometrial hyperplasia >15.59±6.22mm, uterine leiomyomas >13.5±2.12 mm, normal endometrium >7.57±3.28 mm and polyp >10.17±3.55 mm. The endometrium- normal on TVS 73 women (70.88%) followed by endometrial hyperplasia 22 women (21.36%), Uterine polyp 6 (5.82%) and Uterine leiomyoma 2 women (1.94%).
Conclusions: Causes of AUB- hormonal imbalance, endometrial polyp, endometrial hyperplasia, and leiomyomas were other causes of AUB in perimenopausal women. Hysteroscopy can detect endometrial pathology with varying accuracy which was better than TVS in detecting endometrial pathology. In the present study more than 50% women had normal findings on TVS and hysteroscopy.

Key words Perimenopausal women, Hysteroscopy, Fibroid, AUB

INTRODUCTION

Hippocrates described abnormal uterine bleeding first time around 460 BC. William Heberlen, a gynecologist had given best description of abnormal uterine bleeding. William Cullen, professor at the University of Edinburgh described menorrhagia as deviation from normal which are two high degrees and causes a state of disability.[1] Menstruation is cyclic shedding of endometrium in response to ovarian hormones which is under the control of hypothalamus-pituitary-ovarian axis. Abnormal uterine bleeding is any variation in the normal menstrual cycle and includes changes in the regularity and frequency of menses with respect to duration of flow or amount of blood loss during menstruation.[2] In 2001, the Stages of Reproductive Aging Workshop (STRAW) defined 'perimenopause' as the period beginning with menopausal transition and ending 12 months after the last menstrual period.[3,4] This may last for 4-8 years. The major challenge is to allay the worries about possible uterine cancer while treating a woman for abnormal uterine bleeding in perimenopause and postmenopause. One of the first clinical literatures on

aetiology of AUB was published as early as 1846-53, when French surgeon Robert (1846) postulates that hyperplasia of the endometrium is the aetiological factor.[5] The haemorrhagic episodes were known as "Elat Fungueux". Later various names such as "Chronic hypertrophic and hyperplastic endometritis" (Ruge and Gebhardt), "Endometritis Fugosa" (Brennecke ad Olshausen), and "Hemorrhagic metropathy" (Aschoff amd Pankow) were given.[6] Until the end of the 18th century the cause of abnormal uterine bleeding was thought to be inflammation.[7] It was then, the histological findings of the endometrium were termed as "Endometritis diffusa Fungiosa", "Endometritis Polyposa Cyctica", and "Endometritis Atrophicans" for many years to come. Goldstein et al defined abnormal uterine bleeding as "Patients having either metrorrhagia defined as vaginal bleeding separated from expected menses or menorrhagia defined as patients' subjective complaints of either increased duration or increased volume of flow or both".[8] Until the eighteenth century reason for menorrhagia was guessed by Aristotle. It was thought that excessive uterine bleeding was due to heating of blood, trauma, or due to breaking of veins.[9] AUB may be acute or chronic. Acute AUB is defined as bleeding sufficiently heavy to require immediate intervention to prevent ongoing losses. Chronic AUB is defined as bleeding that has been present during most of the prior 6 months. Menses are ideally categorized by four qualities; volume, duration, frequency, regularity. Heavy menstrual bleeding has been defined as >80 ml of blood loss per menstrual period. The duration of menses may vary, with prolonged bleeding lasting >8 days per menstrual period. In some cases women may complain of both which is described as heavy, prolonged menstrual bleeding. Frequent bleeding describes menses with <24 days intervening. Infrequent bleeding defined by menses with >38 days intervening. AUB accounts for 10% women in outpatient clinic. Menstrual dysfunction causes discomfort, inconvenience disrupts healthy lifestyle and interferes with family, personal and social life. AUB has broad range of differential diagnosis & so is challenging despite history, blood investigations, pelvic examination and investigations like TVS and hysteroscopy and accounts for 2/3rd of hysterectomies. AUB in Perimenopausal women may be simple DUB without any organic cause as seen in 10 to 15% of women. The perimenopause is often characterized by menstrual cycle irregularities in frequency and volume, due to fluctuating estrogen levels. These changes are unpredictable and are unique for each woman. Although irregular bleeding patterns are a normal and expected part of perimenopause, the incidence of uterine pathology and associated medical complications also increase in this age group, having an impact of this abnormal blood loss on the quality of the woman's life. Long anovulatory periods with unopposed estrogen stimulation may result in endometrial hyperplasia, thus increasing the risk of endometrial cancers.

Therefore, abnormal uterine bleeding in the perimenopausal period assumes significance. Abnormal uterine bleeding accounts for about 70% of all gynecologic outpatient visits in the perimenopausal women.[10,11] A careful consideration of various investigation and individualised of cases is necessary for clinician considering appropriate management. There is paucity of formulated guidelines for management of perimenopausal women in abnormal uterine bleeding. So, such studies in low resource setting will be of great value in synthesizing evidence regarding role of diagnostic hysteroscopy and transvaginal sonography in perimenopausal women in AUB.

METHODS

This descriptive cross-sectional study was conducted on 103 perimenopausal female patients aged between 40-45 years, presenting to the outdoor department of obstetrics and gynaecology at Rama medical college hospital and research centre, Kanpur during a period of 1 year starting from December 2021 to December 2022, after ethical clearance from the institutional committee. After written and informed consent, counselling of perimenopausal women with AUB fulfilling inclusion and exclusion criteria will be recruited in the study. Consecutive perimenopausal women fulfilling inclusion and exclusion criteria and willing to participate in the study and ready to get operated in the hospital.

Inclusion criteria

Inclusion criterion for current study was 40- 45 years women with abnormal uterine bleeding.

Exclusion criteria

Exclusion criteria for current study were; women with uterus >12 weeks pregnant size, cervical lesions on per speculum examination, women who had already received hormone therapy, morbid medical illness, pregnancy, pelvic inflammatory disease and bleeding disorder.

Particulars of woman regarding- name, age, menstrual history as to the cycle length, duration of flow, number of pads soaked per day, history of passage of clots, regularity of cycle, amount of bleeding, associated dysmenorrhea, obstetric history, history of tubal ligation, past medical history of associated medical disorders like thyroid, surgical history, family history was asked for. A thorough clinical examination including Height, weight, pallor, pulse, blood pressure, thyroid enlargement, etc. was done. This was followed by systemic examination and gynecological examination- Per speculum, per vaginal examination was done to assess cervix, vagina, size of uterus, mobility of uterus, tenderness in the fornices or mass in fornices. Routine investigations - complete blood count, Blood group with Rh typing, Sr. TSH, platelet count, fasting and post meal blood sugar, liver function test, kidney function test. Specific investigations like 2D TVS, Diagnostic Hysteroscopy were done. The outcome of test (hysteroscopy, TVS, HPE) were recorded in the

excel file according to the respected category (hyperplasia, leiomyoma, normal, polyp). Complaints of individual along with parity, age were also recorded. Agreement was seen by calculating kappa statistics.

RESULTS

The present study was undertaken to evaluate the endometrium by TVS, hysteroscopy and its correlation with histopathology in perimenopausal women with abnormal uterine bleeding. 103 perimenopausal women were incorporated in study and were subjected for TVS, hysteroscopy and were treated according to pathological finding. Sensitivity, Specificity, Positive predictive value, Negative predictive value of TVS and hysteroscopy, in detecting normal endometrium, endometrial hyperplasia, polyp, fibroid was found in relation to histopathology.

Table 1: Distribution of women according to age, parity and menstrual pattern.

Age (years)	N	%	Parity	N	%	Symptoms	N	%
40	23	22.33	0	1	0.97	Menorrhagia	54	52.43
41	4	3.88	1	15	14.56	Polymenorrhgia	37	35.92
42	34	33.01	2	41	39.81	Irregular menses	12	11.65
43	7	6.79	3	40	38.83			
44	13	12.62	4	5	4.86			
45	22	21.36	5	1	0.97			
Total	103	100	Total	103	100	Total	103	100

Table 2: Comparison between TVS and HPE.

Parameters	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
Normal	69.86	36.66	72.85	33.33
Hyperplasia	13.6	92.6	33.33	79.78
Polyp	50	79.38	13.04	96.25
Leiomyoma	0	99.01	0	98.4

Table 3: Comparison between hysteroscopy and HPE.

Parameters	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
Normal	86.79	52	65.71	78.79
Hyperplasia	22.22	94.12	44.44	85.11
Polyp	59.25	90.79	69.57	86.25
Leiomyoma	0	98.97	0	95.09

Table 4: Comparison between TVS and HPE.

Parameters	TVS	HPE			Total
	Hyperplasia	**Leiomyoma**	**Normal**	**Polyp**	
Endometrial hyperplasia	3	0	14	5	22
Uterine leiomyoma	0	0	2	0	2
Normal endometrium	6	1	51	15	73
Uterine polyp	0	0	3	3	6
Total	9	1	70	23	103
Agreement	**Expected agreement**	**Kappa statistic**	**Standard error**	**P value**	
55.34	51.35	0.0820	0.0638	0.0995	

Histopathology was considered to be the gold standard. During study period of 1 year, 103 perimenopausal women were incorporated in the study with age ranging from 40-45 years. Minimum age of women was 40 years and maximum age was 45 years. 34 women (33.01%) belonged to 42 years of age; 23 (22.33%) women were 40 years of age. Mean age of the perimenopausal women in the study was 42.48±1.80 years. The Parity of women in the study ranged from 0 to 5. (Table 1). The incidence of AUB was found to be highest in women with parity 2 (39.81%). followed by women with 3 parity (38.83%). AUB was found to be least in nulliparous women and women with parity 5 (Table 1). Menorrhagia was the most common symptom accounting to 52.43% in perimenopausal women

with AUB followed by polymenorrhagia in 35.92% of women. Irregular bleeding was seen in only (11.65%) women irregular bleeding means there was no pattern of bleeding (Table 1). The mean endometrial thickness by TVS for endometrial hyperplasia was 15.59±6.22mm, and for uterine leiomyomas it was 13.5±2.12 mm, whereas the mean endometrial thickness for normal endometrium was 7.57±3.28 mm and for polyp it was 10.17±3.55 mm. Uterine size by per vaginal examination in weeks ranging from 8.00±0.00 to 8.55±2.48 for various pathologies. 103 perimenopausal women underwent TVS for AUB. On TVS Minimum Endometrial echo complex was 2mm and maximum endometrial echo complex was 36mm with a mean endometrial complex of 9.56 ±5.26 mm. The Endometrium was normal on TVS in 73 women (70.88%) followed by Endometrial Hyperplasia in 22 women (21.36%), Uterine polyp in 6 of them (5.82%) and Uterine leiomyoma in 2 women (1.94%). 103 perimenopausal women underwent Hysteroscopy for AUB. Of which, endometrium was found to be normal in 53 women (51.45%). Polyp was seen in 27 women (26.21%).

Table 5: Comparison between hysteroscopy and HPE.

Parameters	Hysteroscopy	HPE			Total
	Hyperplasia	Leiomyoma	Normal	Polyp	
Endometrial hyperplasia	4	0	12	2	18
Uterine leiomyoma	1	0	3	1	5
Normal endometrium	2	1	46	4	53
Uterine polyp	2	0	9	16	27
Total	9	1	70	23	103
Agreement	**Expected agreement**	**Kappa statistic**	**Standard error**	**P value**	
64.08	42.40	0.377	0.067	<0.001	

Table 6: Comparison between TVS and hysteroscopy.

Parameters	TVS	Hysteroscopy			Total
	Hyperplasia	Leiomyoma	Normal	Polyp	
Endometrial hyperplasia	10	1	6	5	22
Uterine leiomyoma	0	0	2	0	2
Normal endometrium	8	4	43	18	73
Uterine polyp	0	0	2	4	6
Total	18	5	53	27	103
Agreement	**Expected agreement**	**Kappa statistic**	**Standard error**	**P value**	
55.34	41.82	0.232	0.060	0.0001	

Hyperplasia was detected in 18 women (17.49 %) and Leiomyoma was seen in only 5 woman (4.85%). 103 perimenopausal women underwent Histopathological examination of endometrium for AUB. Of which, endometrium was found to be normal in 70 women (67%). Polyp was seen in 23 women (22.33%). Hyperplasia was detected in 9 women (8.74%) and Leiomyoma was seen in only 1 woman (0.97%) Endometrial malignancy was not found in any of the perimenopausal woman with AUB in the present study. Out of 9 women detected with endometrial hyperplasia on histopathology, TVS could detect it in only 3 women. Of the 70 normal endometrial findings on histopathology, TVS could detect normal endometrium in 51 women. Out of 23 polyps detected on histopathology, TVS could detect polyp in only 3 women. However, TVS failed to detect leiomyoma. It was found that there was poor agreement between TVS and HPE. With kappa statistics 0.0820 and p value 0.0995 was not significant (Table 4). Out of 9 women with endometrial hyperplasia hysteroscopy could detect it in 4 women. Out of 70 normal endometrial findings on histopathology, hysteroscopy could detect only 12 and out of 23 polyp, hysteroscopy could detect it in 16 women. There was fair agreement between hysteroscopy and HPE with Kappa statistics of 0.377and p value being <0.001, which is statistically significant (Table 5). Out of 18 women detected with hyperplasia on hysteroscopy, TVS could detect it in 10 women. Out of 53 normal endometrium on hysteroscopy, TVS could detect it being normal in 43 women. It was found that there was fair agreement between hysteroscopy and TVS with Kappa statistics of-0.232 and p value being 0.0001 which is statistically significant (Table 6).

DISCUSSION

Abnormal uterine bleeding in perimenopausal women constitute to 69% of gynaecological consultations and account for two thirds of hysterectomies thereby causing morbidity and mortality in perimenopausal women. There is wide range of etiology from endometrial hyperplasia, polyp, and myoma as the cause of perimenopausal AUB.

Key to success of clinical management of AUB in perimenopausal age group is identify the cause behind it for which proper evaluation of case need to be done by detailed history, physical examination, and investigations. Evaluation of anatomic changes and for endometrium can be done by TVS, hysteroscopy and histopathology. Each of these procedures have different predictive value. Over the last decade there has been increased awareness about the preferred investigation but due to lack of large randomised trial the search for ideal protocol is still on. So present descriptive cross sectional study conducted over one year to evaluate the endometrium by ultrasonography, hysteroscopy, and its correlation with histopathology in perimenopausal women abnormal uterine bleeding. 103 perimenopausal women fulfilling the inclusion and exclusion criteria in the study. After detailed history gynaecological examination and basic investigation TVS, hysteroscopy and evaluation of endometrium by histopathology was done following hysteroscopic guided biopsy further the women were manage medically or surgically depend upon histhopathological report. In present study endometrial thickness by TVS for normal endometrium was 7.57±3.28 mm which correlates with Waleed et al.[12] Endometrial hyperplasia was 15.59±6.22 mm and Polyp was 10.17±3.55 mm. TVS finding in different studies in perimenopausal women in AUB. In present study normal endometrium 70.88% of women. For myoma 1.94% women which nearly correspond to study by Waleed et al.[12] Endometrial polyp 5.82% of women, endometrial hyperplasia 21.36% of women which corresponds to study by Waleed et al.[12] Hisotopathological examination finding in different studies. Present study in HPE Normal endometrium 67% women, myoma on HPE 0.97% women, endometrial polyp 22.33% women, endometrial hyperplasia 8.74% which nearly correspond to Rajshree et al.[14] Perimenopausal period in a woman's life has enormous impact on her health. In the present study more than 50% women had normal findings on TVS and hysteroscopy. The causes of AUB are hormonal imbalance, endometrial polyp, endometrial hyperplasia, and leiomyomas in perimenopausal women. Though multiple diagnostic modalities are available, according to our study TVS and hysteroscopy can detect endometrial pathology with varying accuracy. TVS in AUB may be suggested as initial investigation followed by hysteroscopy defining the intrauterine pathology and offering targeted endometrial biopsy and treatment, thus increasing the diagnostic yield in perimenopausal women with AUB. Our study adds to the body of evidence available in literature regarding usefulness of TVS and hysteroscopy, and development of algorithm in evaluation of endometrium in AUB in perimenopausal women. Larger studies are needed for confirmation.

CONCLUSION

Causes of AUB- hormonal imbalance, endometrial polyp, endometrial hyperplasia, and leiomyomas were other causes of AUB in perimenopausal women. Hysteroscopy can detect endometrial pathology with varying accuracy which was better than TVS in detecting endometrial pathology. In the present study more than 50% women had normal findings on TVS and hysteroscopy.

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