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Original Research Article

Correlation of endometrial morphology by transvaginal sonography with histopathological examination in patients with abnormal uterine bleeding

Suguna Srinivasan*

Department of Obstetrics and Gynaecology, Shri Sathya Sai Medical College and Research Institute, Ammapettai, Tamil Nadu, India

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***Correspondence:**

Dr. Suguna Srinivasan,

E-mail: ohmsaivignesh@gmail.com

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is the most common complaint worldwide. Among Indian women, AUB not only affects the quality of life but also leads to serious consequences such as anemia. Prolonged and frequent periods lead to morbidity, diminished quality of life and social embarrassment. Hence this study is undertaken to correlate the endometrial morphology by transvaginal ultrasound with histopathological findings of endometrium in women with AUB.

Methods: In this study 173 women suffering from AUB were included. This cross-sectional study was conducted by Transvaginal ultrasound using a 7.5 Mhz Philips Transvaginal sonography (TVS) probe to study endometrial morphology (ET). It is measured at the thickest part in the longitudinal plane and included both endometrial layers. Endometrial sampling and histopathological examination were done.

Results: It is observed in our study, AUB is more common among the perimenopausal women (50.9%) and also in multiparous women (86.7%). The commonest problem in our study population is heavy menstrual bleeding (HMB) (45.7%). In our study, the endometrial morphology assessed by TVS correlated statistically with the histopathology of endometrium ($p < 0.001$). Hence, TVS, which is affordable and non-invasive can be used as the first line investigation of AUB, but histopathology of the endometrium always gives the confirmatory result.

Conclusions: TVS can be used as the initial investigation for AUB, as it is affordable, non-invasive and has good acceptability by the patients. The endometrial morphology assessed by TVS correlated statistically with histopathological examination.

Keywords: Transvaginal ultrasound, Endometrial thickness, Histopathological examination, AUB

INTRODUCTION

Abnormal uterine bleeding (AUB) is the most common complaint. About 70% of gynecological complaints are related to this particular symptom.¹ AUB is the term used to describe any departure from normal menstruation or from normal menstrual cycle pattern.² The worldwide prevalence of AUB varies from 4-52% and in India, the prevalence of AUB is 17.9%.³ Mostly 10-30% of the reproductive age groups and 50% of the perimenopausal

age groups are affected. In perimenopausal age group, assessment of the endometrial morphology by transvaginal ultrasound (TVS), a non-invasive investigation and endometrial biopsy are the two diagnostic tools used to rule out endometrial carcinoma. However, endometrial morphological assessment by TVS can be used to decide which women need endometrial biopsy. Hence this study is undertaken to correlate the endometrial morphology by TVS with the histopathological findings of the endometrium in women with AUB.

METHODS

This cross-sectional study was conducted from April 2019 to March 2020 in a tertiary care hospital, Shri Sathya Sai Medical College and Research Institute, Tamil Nadu, India. The study group consisted of 173 women suffering from AUB. The inclusion criteria are all married non-pregnant women of reproductive age group with a minimum age of 20 years, perimenopausal and postmenopausal age group with AUB and failed medical management. The exclusion criteria are women with intrauterine device in situ, bleeding disorders, women on oral contraceptive pills, thyroid disorders and pregnant women. After getting informed and written consent, patient's demographic data, detailed history were obtained. General physical examination, per speculum & per vaginal examination were done. Routine investigation was done. Complete blood count, serology, bleeding time, clotting time, blood grouping and typing, Random blood sugar, thyroid function test, urine routine, electrocardiogram and chest X-ray. TVS is done using a 7.5 Mhz Philips transvaginal probe to study endometrial morphology (ET). It is measured at the thickest part in the longitudinal plane and included both endometrial layers. The day of the menstrual cycle on which ultrasound performed is recorded along with any uterine abnormality if detected. Endometrial sampling by fractional curettage was done and endometrial sample was sent for histopathological examination and the results are collected.

Statistical analysis

The data collected were analyzed using statistical package for the social sciences (SPSS) software version 23 and p value estimated.

RESULTS

In this study, 173 women with AUB were considered and the data were analyzed. The mean age of the study population was 43.28 with the median age being 43 and a standard deviation of 8.124. The majority, 50.9% out of 173 participants having AUB were in perimenopausal age group (Table 1).

Table 1: Frequency and percentage distribution of age in years.

S. no.	Age in years	Frequency	Percentage (%)
1.	21-30	5	2.9
2.	31-40	59	34.1
3.	41-50	88	50.9
4.	51-60	17	9.8
5.	>60	4	2.3

In our study, most of the women were multiparous (86.70%) out of which 73% belongs to P2-P3 and 13.3%

had more than 3 deliveries. 4.1% were nulliparous (Table 2).

Table 2: Frequency and percentage distribution of parity.

S. no.	Parity	Frequency	Percentage (%)
1.	Primiparous	16	9.2
2.	Multiparous	150	86.7
	P2-p3	127	73
	>p3	23	13.3
3.	Nulliparity	7	4.1

In our study, out of 173 patients, only 2.3% women had $ET \leq 4$ mm whereas 69.4% (120) had ET between 9-15 mm. Only 18.5% (32) had $ET > 15$ mm (Table 3).

Table 3: Frequency and percentage distribution of ET.

S. no.	Endometrial thickness (mm)	Frequency	Percentage (%)
1.	<4	4	2.3
2.	4-8	17	9.8
3.	9-15	120	69.4
4.	>15	32	18.5

In our study, on histopathological examination of the endometrium it was observed that in majority of women endometrial pattern showed proliferative changes (35.8%). Endometrial cancer was detected only in one case out of 173 (0.6%) (Table 4).

Table 4: Frequency and percentage distribution of histopathology.

S. no.	Histopathology	Frequency	Percentage (%)
1.	Atrophic	6	3.5
2.	Complex hyperplasia with atypia	3	1.7
3.	Complex hyperplasia without atypia	4	2.3
4.	Endometrial carcinoma	1	0.6
5.	Polyp	6	3.5
6.	Proliferative	62	35.8
7.	Secretory	31	17.9
8.	Simple hyperplasia with atypia	19	10.9
9.	Simple hyperplasia without atypia	41	23.7

In our study, it was observed around 30% had atrophic endometrium with ET <4 mm, 76.5% and 38.3% had proliferative endometrium with ET 4-8 mm and ET 9-15

mm respectively, 31.3% had secretory endometrium with ET >15 mm. Around 25% and 27.5% had SH with atypia and SH without atypia respectively with ET of 9-15 mm.

Table 5: Association of ET with histopathology.

S. no.	Histopathology	ET								Chi square	
		<4 mm		4-8 mm		9-15 mm		>15 mm		P value	Results
		F	%	F	%	F	%	F	%		
1.	Atrophic	4	30	2	11.8	0	0	0	0	<0.001	Significant
2.	Complex hyperplasia with atypia	0	0	0	0	3	2.5	0	0		
3.	Complex hyperplasia without atypia	0	0	0	0	2	1.7	2	6.3		
4.	Endometrial carcinoma	0	0	0	0	0	0	1	3.1		
5.	Polyp	0	0	1	4.2	5	5.8	0	0		
6.	Proliferative	0	0	13	76.5	46	38.3	3	9.4		
7.	Secretory	0	0	1	5.9	20	16.7	10	31.3		
8.	Simple hyperplasia with atypia	0	0	0	0	11	25	8	9.2		
9.	Simple hyperplasia without atypia	0	0	0	0	33	27.5	8	12		

For statistical correlation of ET measured by TVS and endometrial histopathological pattern, Chi-square test was used and it is found from above table that $p < 0.001$ which is statistically significant.

DISCUSSION

AUB affects 9-14% of women once in their lifetime from menarche to menopause and it has the greatest impact on quality of life affecting women physically, emotionally and socially.

The present study included participants in the reproductive, perimenopausal and postmenopausal age groups. On analyzing the data, it was noticed that around 50.9% of the study population were between 41-50 years.

Comparing results of the present study with Shrestha et al, it is evident that the occurrence of AUB is more common among the perimenopausal age group due to reduced follicular reserve with age, in turn, resulting in anovulatory cycles, subsequently leading to irregular and unpredicted bleeding pattern.

In the present study, AUB is more commonly seen in multipara (86.7%) compared to primipara (9.2%) and nullipara (4.1%). The occurrence of AUB is more common in Women having 2-3 children had 73% whereas, it is low in women having >3 children (13%). The results of the present study are comparable to that of studies conducted by Choudhary et al, Gorla et al, and Betha et al.⁴⁻⁶

A similar study conducted by Pillai et al reported that only 25% of the participants having children less than 3.⁷

On evaluating ET by TVS, in the present study it is observed that 69.4% of participants had ET of 9 to 15 mm. A similar observation was reported by Thulasi et al where in 66.66% of participants had ET of 10 to 15 mm.⁸

The study conducted by Wankhade et al had 67.50% of participants having ET of 8 to 14 mm. Reports of these studies are similar with that of our present study.⁹

The most common endometrial pattern on HPE in the participant of the present study was found to be of proliferative pattern in 35.8% and secretory endometrial pattern 17.9%.

A similar study was done by Shrestha et al to where in 30.4% had proliferative pattern followed by a secretory pattern in 22.8%.¹⁰ This study had findings similar to the present study where the proliferative pattern of the endometrium is the most common histopathological finding.

A similar study by Shobhitha et al also observed atrophic (1.8%) endometrial pattern in patient with ET – 4 to 8 mm, Proliferative pattern seen with mean ET 4 to 8 mm, most of the secretory pattern and endometrial hyperplasia is seen with ET 8-15 mm.¹¹ In this study also only 1 had endometrial cancer with ET 8 to 15 mm. All these findings are almost similar to Chakraborty and Shrestha.

CONCLUSION

The present study concludes that ET assessed by TVS correlated with endometrial histopathological pattern. Hence it is mandatory to do TVS as the initial investigation since it is affordable, non-invasive and acceptability by the patient is also good but histopathology of the endometrium always gives the confirmatory result.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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