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Original Research Article.

An Observational Study to Evaluate the Accuracy of Transvaginal Colour Doppler Sonography and its Correlation with Histopathology in Abnormal Uterine Bleeding: A Hospital Based Study

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ABSTRACT

Background: Uterine bleeding in perimenopausal age group stems from the fact that it may be the only clinical sign of an underlying hyperplasia or malignancy. Hence the need for prompt diagnosis is only reaffirmed. The aim of this study to correlated the sonographical findings with histopathology findings.

Material & Methods: A observational study done on 70 patients of 40yrs of age or above with abnormal uterine bleeding attending the Gynecology OPD in D.B. General Hospital, Churu, fulfilling the inclusion-exclusion criteria and giving informed and written consent was given. After completion of grey-scale USG, Color Doppler USG was carried out in same seating. The endometrial and subendometrial areas were seen and blood vessels were observed.

Results: The mean age was 47 year in pre-menopausal women & 64 year in post-menopausal women, which was statistical, significant and the obese patients was more common in pre-menopausal & post-menopausal women as compare to normal BMI. The chronic hemorrhage was mostly occurred in pre-menopausal & post-menopausal women. The diagnostic performance of TVS - color Doppler findings was sensitivity; specificity in abnormal endometrial thickness was 95.83%, 54.34% respectively.

Conclusion: Hysteroscopy is considered as the gold standard for the evaluation of endometrial pathology. On comparing Transvaginal Colour Doppler findings with those of hysteroscopy, it was observed that there was a good agreement between the results of the two techniques.

Keywords: Hysteroscopy, Transvaginal Colour Doppler, Pre-Menopausal, Post-Menopausal.

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INTRODUCTION

Abnormal uterine bleeding is one of the most common condition for which women of any reproductive age consult their gynaecologists.[1] AUB can occur at any age in various forms and modes of presentation. Perimenopausal period in a woman's lifetime marks a transition from reproductive phase to that of menopause. The physiological and endocrinological changes that occur during this period are complex and can hardly be explained based on falling estrogen levels, as it was thought earlier.[2,3] There is alteration in estrogen levels, follicular development becomes erratic, with more and more cycles becoming anovulatory. As a consequence, abnormal uterine bleeding (AUB) is a common complaint in this age group accounting for 33% of patients attending gynecologic outpatient departments.[4,5]

Uterine bleeding in perimenopausal age group stems from the fact that it may be the only clinical sign of an underlying hyperplasia or malignancy. With the marked increase in obesity, diabetes mellitus and metabolic syndrome- all known risk factors for importance of abnormal endometrial carcinoma, the incidence of endometrial carcinoma is increasing. Today endometrial carcinoma is the most common gynecologic malignancy in the United States and the incidence is expected to rises worldwide.[6] Hence the need for prompt diagnosis is only reaffirmed. Although several invasive and non-invasive methods like dilatation and curettage, hysteroscopy, transvaginal sonography (TVS) and power Doppler have been proved to be clinically useful for early detection of endometrial abnormality in women with AUB.[7,8] still there is insufficient data comparing the diagnostic accuracies of all three modalities. Histopathology is the gold standard in diagnosing causes for AUB. The present study aims to correlate sonographical findings with histopathology findings.

MATERIALS & METHODS

A observational study done on 70 patients of 40yrs of age or above with abnormal uterine bleeding attending the Gynecology OPD in D.B. General Hospital, Churu. Informed and written consent was taken from all participants.

Inclusion Criteria

- Women of 40years and more presenting with abnormal uterine bleeding after informed and written consent.

Exclusion Criteria

- Women on hormone replacement therapy
- Pregnancy and pregnancy related diseases
- Visible cervical or vaginal growth
- Pelvic inflammatory diseases

TRANSVAGINAL SONOGRAPHY

All women were examined transvaginally in lithotomy position, with empty bladder. 5 MHz transvaginal transducer was introduced into the vagina and conventional grey-scale ultrasound examination of uterus and adnexa was performed.

After completion of grey-scale USG, Color Doppler USG was carried out in same seating. The endometrial and subendometrial areas were seen and blood vessels were observed.

Table 1: Age wise distribution of pre-menopausal & post-menopausal women

Demographic	pre-menopausal (N=58)	post-menopausal (N=12)	P-value
Age (yrs) [Mean± SD]	47.16±4.364	64.50±7.268	<0.0001***
BMI (Kg/m²)	24.65±4.709	25.39±5.330	0.6322 NS

Table 2: Type of AUB pre-menopausal & post-menopausal women

Type of AUB	pre-menopausal (N=58)	post-menopausal (N=12)
Acute hemorrhage	8	4
Chronic hemorrhage	50	8
Total	58	12

Chi-square test (Fisher's extract test), 1 degree of freedom; P value=0.1021 NS

Table 3: Diagnosis in TVS Findings

Diagnosis	pre-menopausal (N=58)	post-menopausal (N=12)
Normal	24	2
Adenomyosis	2	0
Fibroid	4	0
Endometrial polyp	4	1
Atropic	1	2
Hyperplasia	20	4
Endometrial cancer	3	3

Table 4: Diagnostic performance of TVS-Colour Doppler findings

Diagnosis on Histopathology	TVS- Colour Doppler Findings			
	Sensitivity	**Specificity**	**PPV**	**NPV**
Abnormal endometrial	95.83%	54.34%	52.27%	96.15%
Hyperplasia without atypia	81.25%	74.19%	61.90%	88.46%
Endometrial polyp	71.42%	96%	83.33%	92.30%
Fibroid	66.66%	96%	80%	92.30%
Atropic	60%	96%	75%	92.30%
Adenomyosis	33.33%	92.30%	33.33%	92.30%
Endometrial cancer	100%	100%	100%	100%

RESULTS

The mean age was 47 year in pre-menopausal women & 64 year in post-menopausal women, which was statistical significant and the obese patients was more common in pre-menopausal & post-menopausal women as compare to normal BMI (table 1). The chronic hemorrhage was mostly occurred in pre-menopausal & post-menopausal women (table 2). The hyperplasia was most common occurred in both group, followed by fibroid & endometrial polyp (4 cases each) in pre-menopausal group (table 3).

The diagnostic performance of TVS- color Doppler findings was sensitivity, specificity in abnormal endometrial thickness was 95.83%, 54.34% respectively, in hyperplasia without atypia was 81.25%, 74.19% respectively, in endometrial polyp was 71.42% & 96% respectively, in fibroid was 66.66% & 96% respectively, in atropic was 60% & 96% respectively, in adenomyosis was 33.33% & 92.30% respectively and endometrial cancer was 100% & 100% respectively (table 4).

DISCUSSION

The prevalence of AUB is 11-13% in women at any age and heavy menstrual bleeding affects up to 30% of women throughout their reproductive lifetime. The mean age was 47.16±4.364 year in pre-menopausal women & 64.50±7.268 year in post-menopausal women with only one third being literate. Age is the most common risk factor, and recent longitudinal studies have estimated the lifetime risk in women over the age of 45 to be more than 60%. Feldman S. et al (1995) reported that the median age at diagnosis is the sixth decade, although 20 to 25 percent of cases will be diagnosed premenopausally.[9]

A study done by Astrup K et al[10] found that the proportion of women with irregular cycles increased from 58.3% at age 45-46 years to 100% at age 53-54 years (P < 0.001), Pascual A. et al[11] mean age of the patients was 44+10.6 year (23–73yrs).

The mean value of BMI was 24.65±4.709 in pre-menopausal and 25.39±5.330 in post-menopausal women. Women under the age

of 50 share many of the risk factors for endometrial cancer of older women including obesity, diabetes, nulliparity, history of PCOS, and family history of hereditary non-polyposis colorectal cancer.[12-14] Ferrazzi et al.[15] reported that the risk of endometrial cancer increased with increasing body mass index.

Our study showed that the hyperplasia was most common occurred in both group, followed by fibroid & endometrial polyp (4 cases each) in pre-menopausal group. Dragojevic S et al (2005)[16] found that abnormal uterine bleeding is more common in the perimenopausal than in the postmenopausal women, and it is more frequent sign of an endometrial proliferative or hyperplastic changes. Karlsson B et al[17] showed the mean endometrial thickness of malignant lesions was significantly higher than that of benign lesions The study showed that TVS has a better sensitivity and specificity for diagnosing endometrial abnormality in peri-menopausal women at endometrial thickness ≥8 mm as a cut-off limit. Mahmoud MA et al[18] found a cut off value of 5 mm for the prediction of endometrial carcinoma showed 100% sensitivity, 51.9% specificity, 60.9% positive predictive value, 100% negative predictive value, and 48.7% diagnostic accuracy. Conoscenti G et al[19] showed in his study that TVS showed sensitivity, specificity, PPV and NPV of 69.3%, 82.7%, 74.1% and 72.1% respectively. Another study done by Smith P et al[20] reported a good agreement between histology and ultrasound at endometrial thickness ≥8 mm where sensitivity, specificity, PPV and NPV were 67%, 75%, 14% and 97% respectively.

CONCLUSION

Hysteroscopy is considered as the gold standard for the evaluation of endometrial pathology. On comparing Transvaginal Colour Doppler findings with those of hysteroscopy, it was observed that there was a good agreement between the results of the two techniques. Transvaginal Colour Doppler can also be used as fairly good investigation technique for the diagnosis endometrial pathology.

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