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Original Research Paper

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VALUE OF ENDOMETRIAL THICKNESS MEASUREMENT FOR DIAGNOSING ENDOMETRIAL HYPERPLASIA IN PERIMENOPAUSAL WOMEN

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ABSTRACT **Objective-** to determine the sonographic findings associated with endometrial hyperplasia (EH+) in perimenopausal women with abnormal uterine bleeding (AUB). Methods- a retrospective study, in which 150 subjects, perimenopausal women with AUB, underwent transvaginal sonography (TVS) and endometrial biopsy. The TVS findings were evaluated with regard to EH+. Result- Biopsy proven EH+ was seen in 18.67% of subjects. EH+ was not found in any patient with TVS showing endometrial thickness < 8 mm. **Conclusion-** There is a strong association between TVS endometrial thickness and endometrial biopsy findings. The risk of development of endometrial cancer is 29% in patients with complex atypical hyperplasia and 2% in patients with hyperplasia without atypia. Thus TVS should be in the first investigation in the management of AUB. Invasive method like dilatation and curettage (D&C) to be considered in cases with endometrial thickness > or = 8 mm.

KEYWORDS : endometrial thickness, endometrial hyperplasia, perimenopause

1.INTRODUCTION

Endometrial cancer (EC) is common gynaecologic malignancy in western women. The worldwide incidence of endometrial cancer has risen over the last 20 years [1]. Increases in the rates of obesity and decreases in the rates of fertility suggest that the incidence of endometrial cancer will continue to increase in postmenopausal women, becoming a substantial public health problem worldwide [2,3]. This rise in its incidence has implications for both primary prevention and screening.

Endometrial hyperplasia (EH^+) is a pathological condition characterised by hyperplastic changes in endometrial glandular and stromal structures lining the uterine cavity [4]. Most cases of EH^+ result from high levels of oestrogens, combined with insufficient levels of progesterone [5,6]. Unopposed oestrogenic stimulation of the endometrium causes proliferative glandular epithelial changes, including glandular remodelling, resulting in variably shaped, irregularly distributed glands. Risk factors for the development of EC include obesity, unbalanced oestrogen therapy, tamoxifen treatment, PCOS, and nulliparity [7].

Endometrial hyperplasia is one of the most frequent causes of abnormal uterine bleeding, which leads to EC if left untreated. Abnormal uterine bleeding (AUB) is the commonest presenting symptom and major gynaecological problem responsible for about 70% of all gynaecologic out patients visits in the perimenopausal women.[8] 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.[9,10]

Although irregular bleeding patterns are a normal and expected part of perimenopause, the incidence of uterine pathology and associated medical complication also increases in this age group.[11]

In the past, dilatation and curettage (D&C) has been the method of choice for obtaining an endometrial sample; it is an invasive and blind procedure that may require the use of general anesthesia, so it is better to use safer and simpler investigation such as Transvaginal Sonography (TVS) or hysteroscopy. Since its introduction in the mid-1980s, TVS has become the standard way to image the female pelvis in the gynaecologic community. With its improved resolution, this technology is chosen by many instead of endometrial biopsy as a first-line tool to assess abnormal bleeding. If abnormal bleeding stems from myometrial pathology, sonography offers anatomy information regarding the myometrium that is not afforded by hysteroscopy or endometrial biopsy. In addition, TVS offers greater patient comfort and comparable detection of endometrial hyperplasia and cancer.

Many studies have validated the use of transvaginal ultrasonography (TVS) as the initial screening method for endometrial cancer [12-15]. Although an endometrial thickness (ET) of ≥5 mm is regarded as the cut-off value for postmenopausal women who present with vaginal bleeding, it warrants further investigation[13]. Furthermore, there is no established consensus on the ET threshold that distinguishes normal from malignant pathology in postmenopausal women without bleeding. Because the factors associated with a thickened endometrium in these women remain undetermined, the clinical management of women with an incidentally detected thickened endometrium has not been standardized or established.

This study was designed to evaluate the diagnostic value of ET as a predictor of endometrial carcinoma in perimenopausal women with AUB. The optimal cut-off values distinguishing between women with and without intrauterine pathologies were determined. The knowledge of these cut-off values may avoid the need to perform more invasive and unnecessary diagnostic tests, such as endometrial biopsy in cases where it is not indicated.

2. Objectives of the Study

1. To determine sonographic findings associated with endometrial hyperplasia in perimenopausal women with AUB.
2. To determine the efficacy of TVS to make preliminary diagnosis of EH^+.

3. MATERIALS AND METHODS

This is an observational retrospective study including 100 perimenopausal women with AUB in GOPD, the department of obstetrics and gynaecology, Gauhati medical college and hospital from 1st February, 2019 to 30th November, 2019 over a period of 10 months. All patients provided written informed consent for the use of their data for research purposes.

All data were collected from medical records. Patient characteristics taken into account were age (years), age at menarche (years), parity, body mass index (BMI), presence of hypertension or diabetes, menstrual cycle phase, family history of breast and colorectal cancer, current hormonal therapy (progestogen only, combined oral contraceptives, and vaginal ring), smoking habit, endometrial thickness (mm), infertility,tamoxifen users, and duration of AUB (expressed in months from its beginning). Then we excluded women with fibroid uterus, IUCD, endocrine disorders, coagulation disorders, known cervical or uterine malignancy, on medications like cytotoxic agents, steroids, anticoagulants and neuroleptics.

We included all those perimenopausal women who had a definitive histological diagnosis of Endometrial hyperplasia (18.67%) which we considered our reference standard. Histological diagnosis of endometrial hyperplasia (EH^+) refers to the WHO 2014 classifcation: atypical and non-atypical [16].

All histopathological examinations, of endometrial sampling collected by D&C, were performed by pathologists not involved and not blinded to the patients' pelvic ultrasonographic findings.

TVS was performed before D&C procedure in all these women using ultrasonography machine Mindray Z6 and a vaginal probe V10 – 4BP to measure endometrial thickness.

4. Results and Observations

Of the 150 study women, 28 (18.67%) were diagnosed with endometrial pathology (EH^+), and 122 (81.3%) were assessed to have other pathology (proliferative, secretory, disordered, atrophic) based on the results of the final pathological analysis of the endometrial biopsy samples.

Of the 28 patients in the EH+ group, 12 (42.8%) had simple hyperplasia without atypia; 9 (32.1%) had complex hyperplasia without atypia ; 7 (25%) had atypical complex hyperplasia.

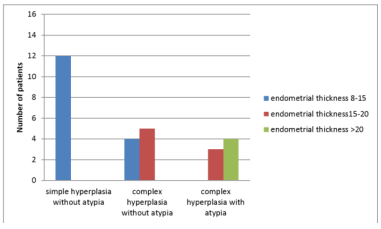

Fig 1: Graph showing comparison between endometrial thickness by TVS and types of endometrial hyperplasia

- In this study when endometrial thickness was < 4 mm, no cases showed endometrial hyperplasia.
- When endometrial thickness is between 4–8mm, no cases showed endometrial hyperplasia.
- When endometrial thickness is between 8–15mm, 25.8% cases showed endometrial hyperplasia.
- When endometrial thickness is between 15 – 20 mm, 34.7% cases showed endometrial hyperplasia.
- When the endometrial thickness is ≥ 20mm, 50% cases showed endometrial hyperplasia.

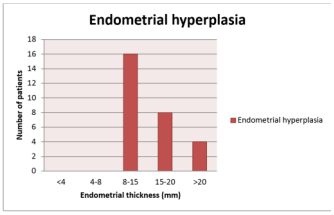

Fig 2: Graph Showing Correlation Between Endometrial Thickness And Endometrial Hyperplasia

Table 1: Correlation Of Endometrial Thickness With Endometrial Hyperplasia

Endometrial thickness(mm)	No. Of patients	ENDOMETRIAL HYPERPLASIA	PERCENTAGE
<4	10	0	0
4-8	47	0	0
8-15	62	16	25.8
15-20	23	8	34.7
>20	8	4	50

The p value of the above table is 0.0002 and chi square value is 21.5, which is highly significant. Thus the association between endometrial thickness and endometrial hyperplasia is highly significant.

With endometrial thickness ≥8 mm, the specificity of TVS in detecting endometrial hyperplasia is 100% and positive predictive value is 100%. p value is < 0.0001 and chi square value is 17.543, which is highly significant.

5. DISCUSSION

In the present study when endometrial thickness was < 8mm, no cases showed endometrial hyperplasia. All the 7 cases that showed major abnormality on histopathological evaluation i.e., complex hyperplasia with atypia had endometrial thickness >15mm. With endometrial thickness ≥8 mm, the specificity of TVS in detecting endometrial hyperplasia is 100% and positive predictive value is 100% .

This study thus corroborated the findings of similar study done by Aliya Aslam et al.[17] in 2009. Their study found that no major endometrial pathology is detected when endometrial thickness is <14 mm. No significant pathological changes were detected by Acharya Veena et al.[18] when endometrial thickness was <14 mm. Deshmukh V et al.[19] concluded that pathological endometrium was not found on histopathological examination report in patients with endometrial thickness <14.9mm. Study by Machado et al.[20] in 2005 concluded that endometrial thickness less than 5 mm did not need D&C as none of these patients had atypia or malignancy which is also corroborated in the present study. The study by Chatapavit et al.[21] concluded that endometrial thickness of 8 mm or less is less likely to be associated with malignant pathology in perimenopausal women with abnormal uterine bleeding. Shobhitha GL et al.[22] found sensitivity, specificity, NPV, PPV for TVS is 93.2%, 68.96%, 72.72%, 90.9% respectively in detecting endometrial hyperplasia with an endometrial thickness cut off of 8mm. ET=8 mm with sensitivity of 83.6%, specificity of 56.4% and NPV of 95.6% was proposed as the cut-off point for detection of the abnormal endometrium by Ozdemir et al.[23]

6. CONCLUSION

Abnormal uterine bleeding is a common and sometimes a debilitating condition in peri-menopausal women. To establish specific diagnosis in the most efficient way, in a least invasive manner TVS is used as the initial screening method for endometrial pathology; it has replaced dilatation and curettage as the first-line investigation method for women with incidental vaginal bleeding and spotting. However, there is no consensus on the cut-off value for endometrial thickness for detecting the presence of any abnormality. No screening guidelines for pre- and peri-menopausal women who experience irregular menstruation.

In conclusion, TVS is useful for assessing endometrial pathology and diagnosing early endometrial cancer. Early detection of these conditions in patients with no specific symptoms (e.g., vaginal bleeding or spotting) can result in good patient outcomes. An ET of ≥8 mm was found to be the optimal cut-off value for detecting endometrial pathologies and cancers. Prospective studies with larger sample sizes are

needed to confirm our findings.

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