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"A CROSS-SECTIONAL STUDY TO ASSESS THE EFFECT OF BODY MASS INDEX ON ENDOMETRIAL THICKNESS AND IT'S CORRELATION WITH HISTOPATHOLOGICAL EXAMINATION IN WOMEN WITH POSTMENOPAUSAL BLEEDING"

Obstetrics & Gynaecology

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ABSTRACT

Background: After menopause, the endometrium shows atrophic changes. The cystic changes can also occur. In contrast, the endometrium is chronically exposed to estrogens during post menopause, but not to progesterone. Therefore, the endometrium becomes hyperplastic. **Material And Methods:** Present study was a cross Sectional study conducted in the Department of Obstetrics and Gynecology ,Maharaja Tukoji Rao Holkar women's Hospital. Mahatma Gandhi Memorial Medical College Indore M.P.for the period of 2 years from January 2021 to December 2023.Hundred symptomatic post-menopausal women in the age group of 40 - 80 years were include in the study. They were selected randomly from the outpatient/emergency of the hospital. **Results:** Twenty percent patients with atrophic findings on histopathological findings had a mean ET of 1.5mm to 5mm. (p value is <0.0001), which statistically significant .Factors associated with increased endometrial thickness were increased BMI (P < 0.0001). Endometrial thickness was not associated with age and parity. The Histopathological Examination was also not associated with age. In a final multiple variable analysis including age, BMI, increased endometrial thickness, in women with postmenopausal bleeding have statistically significantly associated with Histopathological Examination **Conclusion:** This study conclude that increased endometrial thickness and increased BMI have potential chances of histopathological change's increase simple hyperplasia in respective of age .Therefore, we can use the Trans vaginal sonogram and BMI as a screening tool to detect endometrial carcinoma.

KEYWORDS

INTRODUCTION

Menopause is defined as the time of cessation of ovarian function resulting in permanent amenorrhea. It takes 12 months of amenorrhea to confirm that menopause has set in, and therefore it is a retrospective diagnosis (1).

In postmenopausal women, unopposed estrogen may be obtained from extra gonadal endogenous estrogen production. The extra gonadal endogenous estrogen production is due to obesity. It results from increased aromatization of androgen to estrogen. In addition, low SHBG levels lead to increased levels of free and bioavailable, estrogen.

The uterus becomes smaller and the ratio between the body and the cervix appears to be 1:1 during post menopause (2). The endometrium in the uterus is a dynamic tissue, which responds to variations in the levels of estrogen and progesterone. Theendometrium becomes thin and atrophic. It measures about 1 to 3mm normally due to theatrophy of ovaries in the postmenopausal period. In some women, the endometrium may be proliferative or even hyperplastic due to high endogenous estrogen production in the body other than ovaries.

During the post menopause, the major source of estrogen is through peripheral aromatization of androgen by the action of the enzyme aromatase. The Aromatase enzyme is especially present in the adipose tissue. There will be increased adipose tissue in the obese person. Hence, there will be increased aromatase activity. This will cause theexcess secretion of estrogen, which is unopposed by progesterone. In addition, as the BMI increases, the concentration of sex hormone binding globulin will decrease. Obese postmenopausal women with high oestrogen levels experience significant endometrial change. This is a significant risk factor for endometrial cancer.

Inclusion Criteria: The women in the age group of 40 - 80 years with postmenopausal bleeding. Those were considered as symptomatic post-menopausal women.

4.3 Exclusion Criteria: 1. Patients diagnosed with PMB with Carcinoma cervix 2. Patients diagnosed with PMB with Carcinoma endometrium

This study wasdone after getting appval from Institutional Ethics committee, Mahatma Gandhi Memorial Medical College Indore M.P:Hundred symptomatic post-menopausal women in the age group of 40 - 80 years were include in the study. They were selected from the outpatient/emergency and inpatient Maharaja Tukoji Rao Holkar women's Hospital. Mahatma Gandhi Memorial Medical College Indore M.P.

METHODS

The present study was conducted in a 12-bedded obstetric intensive care unit (ICU) at a dedicated tertiary care centre, Mahatma Gandhi Memorial college and associated hospital Indore ,of central India. Obstetric service of the hospital provides antenatal and in-patients care round the clock during the study duration of 2 years from January 2020 to December 2021.critically ill antenatal and postnatal patients were identified and admitted in obstetric ICU for further managment. The data were collected like Basic demographic characteristics clinical presentations cause of ICU admission ,in patient or referred in details and maternal mortality with cause were entered in predesigned proforma from all ICU cases.

Thereafter these data entered in MS excel 2007 worksheet and logical validation and editing was done and then data was analysed. Statistical analysis was performed using stata12.1

RESULTS

Subjects (n = 100) were women with mean age 53.85 years (range 40-80 years, SD of 7.428), The height with mean of 149.3 cm (range 135 – 166 cm, SD 6.071cm) and weight with mean of 59.68 kg (range 40 – 90 kg, SD 11.85kg). The mean BMI is 26.34 (range 17.00 – 38.0, SD 4.885). The Endometrial thickness measurements ranged from 1mm to 20 mm (mean 6.620 mm, SD 4.322 mm). Table 8 showed the descriptive statistics. Majority of the patients (29 %) were in age group of 50-54 years. Majority (69%) of the cases had 2-3 children. The majority (37%) of patients had BMI 18.5-24.9. 34% of patient are in category of overweight with BMI more than 25. And 25% of cases falls under obese with BMI more than 30. The mean endometrial thickness

on TAS/TVS was 6.620± 4.322 mm with a range of 1mm to 20 mm. Majority of patients (51 %) had ET between 1mm to 5 mm. 31% patients had ET 6 to 10 mm. And 18% cases have ET more than 10mm. On histopathology, majority of patients (40%) had Simple hyperplasia without atypia (Table 8). Endometrial hyperplasia was detected in (45%) out of which40% had simple hyperplasia while 5% had atypical hyperplasia. Endometrial cancer was detected in 4 cases with atypical hyperplasia patients. Out of 4 cases of endometrial malignancy, one case was confirmed as endometrial adenocarcinoma on histopathology after hysterectomy. In patients with Simple hyperplasia without atypia had ET between 3mm to 16 mm and with polyp had ET >6 mm. Atypical endometrial hyperplasia had observed in 5% cases and ET range from 13 mm to 20 mm Statistical analysis revealed P value <0.0001 for ET at 1mm to 20mm which is highly .

Twenty percent patients with atrophic findings on histopathological findings had a mean ET of 1.5mm to 5mm. On application of chi-square test, the p value is <0.0001, which is extremely statistically significant.

DISCUSSION

From the study, a strong and consistent association between endometrial thickness and high body mass index with histopathological changes were observed. Other studies have described similar associations involving endometrial thickness, histopathological examination, and BMI. On histopathology, majority of patients (40%) had Simple hyperplasia without atypia (Table 8). Endometrial hyperplasia was detected in (45%) out of which 40% had simple hyperplasia while 5% had atypical hyperplasia. Endometrial cancer was detected in 4 cases with atypical hyperplasia patients. Out of 4 cases of endometrial malignancy, one case was confirmed as endometrial adenocarcinoma on histopathology after hysterectomy. In patients with Simple hyperplasia without atypia had ET between 3mm to 16 mm and with polyp had ET >6 mm. Atypical endometrial hyperplasia had observed in 5% cases and ET range from 13 mm to 20 mm. Studies about endometrial thickness and histopathological examination that correlate with present study are: 1) Endometrial thickness by ultrasonography and its correlation with histopathology in abnormal uterine bleeding among peri and post-menopausal women Jena, Pramila;Mishra, Priti;Panda, Somya Ranjan;Panda, Jyochanmati;Padhee, Sourav;Rath, Sibanarayan Less (31). In this study, patients with increase endometrial thickness that is consistent change in histopathological examination 2) Correlation of Endometrial Thickness with the Histopathological Pattern of Endometrium in Postmenopausal Bleeding Pushpa Singh, Pooja Dwivedi, and Shweta Mendiratta (32). Majority (38.33 %) of patients had atrophic endometrium or normal endometrium. Endometrium was hyperplastic in 18 (30 %) patients, polyp in 6 (10 %) patients, and growth in 7 (11.67 %) patients. 3) Tinelli R, Tinelle FG, Cicinelli E, et al. The role of hysteroscopy with eye directed biopsy in postmenopausal women with uterine bleeding and endometrial atrophy. Menopause. 2008;15(4):737–742. doi: 10.1097/gme.0b013e31815b644e. Studies, which correlate endometrial thickness and BMI, are 1) Katanozaka and Douchi Study-Relationship between BMI and transvaginal ultrasound endometrial thickness in postmenopausal women (34). The frequencies of thicker endometrium according to body mass index quartile (<23 ,23-26,26-29,>29) are 55.2%,66.1% ,69.7%, and 76.7%. Thus, patients with increased BMI had increased endometrial thickness which is consistent with the present study. 2) Andolf and Aspenberg study (1993)-Ultrasonic thickness of the endometrium correlated to body weight in postmenopausal women (35). According to this study the distribution of thicker endometrium among the BMI quartiles were 4.2mm, 7mm, 12.8mm, and 14.6mm, which is consistent with the present study.

CONCLUSION

From the study, histopathological examination co-related well with endometrial thickness & BMI in women's postmenopausal bleeding. The risk factors associated with studied are the age of the patient, age of menarche, parity, age at menopause, and BMI. The statistically significant risk factors in the study group are the age of the patient, and increased BMI. Thus, the trans abdominal/vaginal ultrasound measurement of endometrial thickness is a validated tool to diagnose early endometrial pathology in symptomatic postmenopausal women. It can be used as a first line screening to endometrial pathology in early. The Trans vaginal sonogram is a simple, non-invasive convenient way to indirectlyvisualize the endometrial cavity.

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Declarations
Funding: No funding
Conflict Of Interest: None
Ethical Approval: This study was approved by the institutional ethical committee

Analysis And Observation

Table 1 - Histopathological Findings In Postmenopausal Women

HISTOPATHOLOGICAL FINDINGS	Frequency	%	Valid %
Simple hyperplasia without atypia	40	40%	40%
Atrophic epithelial cells	30	30%	30%
Proliferative phase endometrium	18	18%	18%
Atypical endometrial hyperplasia	5	5%	5%
irregular ripening of glands	3	3%	3%
Benign endometrial polyp	3	3%	3%
grade 2 squamous cell carcinoma	1	1%	1%
Total	100	100%	100%

Table: 2 Correlation Of Age And Postmenopausal Endometrial Thickness

		AGE	in mm
AGE	Pearson Correlation	1	-.1669**
	Sig. (2-tailed)		.7633
	N	100	100
in mm	Pearson Correlation	-.1669**	1
	Sig. (2-tailed)	.7633	
	N	100	100
**. Correlation is significant at the 0.05 level (2-tailed).			

Note: Significant NO correlation is seen between the age and postmenopausal ET

Table: 3 Correlation Of Age And BMI

		in YEARS	BMI
in YEARS	Pearson Correlation	1	-.07599
	Sig. (2-tailed)		.4524
	N	100	100
BMI	Pearson Correlation	-.07599	1
	Sig. (2-tailed)	.4524	
	N	100	100

Note : No significant correlation between the age and BMI

Table: 4 Correlation of BMI and ET

		in mm	BMI
in mm	Pearson Correlation	1	.0001
	Sig. (2-tailed)		.4846
	N	100	100
BMI	Pearson Correlation	.0001	1
	Sig. (2-tailed)	.4846	
	N	100	100

Note : significant correlation between the BMI and postmenopausal endometrialthickness.

Note : Positive significant correlation is seen between the BMI and ET. As the BMI increases, the ET increases.

Table: 5 Correlation of BMI, ET and Histopathological Examination

		topathological Examination	in mm	BMI
opathological Examination	Pearson Correlation	1	.92**	.92**
	Sig. (2-tailed)		.001	.001
	N	100	100	100
in mm	Pearson Correlation	.92**	1	.452**
	Sig. (2-tailed)	.001		.001
	N	100	100	100
BMI	Pearson Correlation	.92**	.452**	1

	Sig. (2-tailed)	.001	.001	
	N	100	100	100
**. Correlation is significant at the 0.01 level (2-tailed).				

Note : Positive significant correlation is seen between the BMI, ET and Histopathological Examination As the BMI increases, leads to increase in ET significant changes in Histopathological Examination

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