

**ORIGINAL ARTICLE****Sonographic Evaluation of Factors Influencing Endometrial Thickness in Postmenopausal Women**<sup>1</sup>Grish Govind Rao Kakde, <sup>2</sup>Sweta Sareen<sup>1</sup>Associate Professor, Department of Radiology, Heritage Institute of Medical Sciences, Varanasi, Uttar Pradesh, India;<sup>2</sup>Assistant Professor, Department of Obst & Gynaecology, Gouri Devi Institute of Medicine Sciences & Hospital, Durgapur, West Bengal, India**ABSTRACT:**

**Background:** The present study was undertaken for sonographic Evaluation of Factors Influencing Endometrial Thickness in Postmenopausal Women. **Materials & methods:** A total of 100 subjects which presented to department for gynecological evaluation were enrolled. Inclusion criteria for the present study included subjects with postmenopausal women with an intact uterus and no vaginal bleeding. Each subject's hemodynamic and biochemical profiles were assessed in addition to anthropometric factors. A pelvic exam and a TVS evaluation of the uterus were conducted. The measurement of endometrial thickness was made in the longitudinal plane, taking into account the thickness at where the two basal layers of the anterior and posterior uterine walls meet. The antero-posterior (AP) diameter, transverse diameter, and uterocervical length of the uterus were measured both longitudinally and transversely. **Results:** Overall, uterine volume and ovarian volume was 25.36 cm<sup>3</sup> and 1.87 cm<sup>3</sup> respectively. While assessing the factors assessing the mean endometrial thickness, it was seen that higher uterine volume, presence of myoma, visualization of both the ovaries and higher ovarian volume were found to be significant factors associated with higher endometrial thickness. **Conclusion:** Among postmenopausal women, various factors influence endometrial thickness, which includes presence of myoma, uterine volume and ovarian volume. Hence these factors have to be taken into consideration, while evaluating these women.

**Key words:** Endometrial thickness, Sonographic, Postmenopausal women

**Corresponding author:** Sweta Sareen, Assistant Professor, Department of Obst & Gynaecology, Gouri Devi Institute of Medicine Sciences & Hospital, Durgapur, West Bengal, India

**This article may be cited as:** Kakde GGR, Sareen S. Sonographic Evaluation of Factors Influencing Endometrial Thickness in Postmenopausal Women. J Adv Med Dent Sci Res 2017;5(10):132-134.

**INTRODUCTION**

Postmenopausal bleeding (PMB) can be defined as uterine bleeding occurring at least one year after menopause. PMB is a common clinical problem in both general and hospital settings. The incidence of spontaneously occurring PMB in the general population can be as high as 10% immediately after menopause.<sup>1-3</sup>

Postmenopausal bleeding is a cause of worry for the patient as well as the clinician. Often the cause of bleeding can be elicited by careful history taking (such as history of taking hormone replacement therapy) and clinical examination (which may detect vaginal or vulval growths, vaginitis etc.). For the rest of the cases in which a clear diagnosis cannot be arrived at, the only course left in the past was to do a dilation and curettage and send the endometrial tissue so obtained, for histopathological examination. There was always a chance of missing the precise site of intrauterine lesion and hence the biopsy not being representative.<sup>4-6</sup> Asymptomatic endometrial thickening found on ultrasound examination in postmenopausal women often poses a clinical management dilemma. Although the prevalence of endometrial cancer is relatively low in women with no vaginal bleeding, the disease has the best outcome when it is detected at an early stage. The diagnosis is straight forward and be picked up in early stage, when

postmenopausal women present with bleeding.<sup>7-9</sup> Hence; the present study was undertaken for sonographic Evaluation of Factors Influencing Endometrial Thickness in Postmenopausal Women.

**MATERIALS & METHODS**

The present study was undertaken for evaluating Factors Influencing Endometrial Thickness in Postmenopausal Women. A total of 100 subjects which presented to department for gynecological evaluation were enrolled. Inclusion criteria for the present study included subjects with postmenopausal women with an intact uterus and no vaginal bleeding. Subjects with presence of any other systemic illness, or any known drug allergy or presence of any other uterine malignant pathology were excluded from the present study. Complete demographic and clinical details of all the subjects was obtained. Complete data in relation to parity, age at menopause, duration of menopause (years since menopause [YSM]) etc. was also evaluated. Each subject's hemodynamic and biochemical profiles were assessed in addition to anthropometric factors. A pelvic exam and a TVS evaluation of the uterus were conducted. The measurement of endometrial thickness was made in the longitudinal plane, taking into account the thickness at where the two basal layers of the anterior and posterior uterine walls meet. The antero-posterior

(AP) diameter, transverse diameter, and uterocervical length of the fetus were measured both longitudinally and transversely. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software.

## RESULTS

A total of 100 subjects were analyzed. Mean age of the subjects was 48.3 years. Mean BMI was 26.9

Kg/m<sup>2</sup>. Mean YSM was 7.1 years. Overall, uterine volume and ovarian volume was 25.36 cm<sup>3</sup> and 1.87 cm<sup>3</sup> respectively. While assessing the factors assessing the mean endometrial thickness, it was seen that higher uterine volume, presence of myoma, visualization of both the ovaries and higher ovarian volume were found to be significant factors associated with higher endometrial thickness.

**Table 1: Variables**

Variable	Mean	SD
Age (years)	48.3	3.1
BMI (Kg/m <sup>2</sup> )	26.9	3.7
YSM	7.1	5.9
Uterine volume (cm <sup>3</sup> )	25.36	12.31
Ovarian volume (cm <sup>3</sup> )	1.87	1.38

YSM: Years since menopause

**Table 2: Endometrial thickness and various influencing factors**

Variable	Number	Mean endometrial thickness (mm)	p-value
Uterine volume (cm <sup>3</sup> )	Less than 15	25	0.001 (Significant)
	15 to 35	51	
	More than 35	24	
Presence of myoma	Yes	23	0.001 (Significant)
	No	77	
Ovarian status	Both ovaries seen	43	0.001 (Significant)
	One ovary seen	29	
	None	28	
Ovarian volume (cm <sup>3</sup> )	More than 3	31	0.001 (Significant)
	1 to 3	33	
	Less than 1	36	

## DISCUSSION

PMB is often caused by abnormalities of the endometrium, whether they are benign or malignant. Of postmenopausal women with vaginal bleeding, 10%–15% have endometrial carcinoma. In contrast, the prevalence of endometrial polyps in patients with PMB and an increased endometrial thickness measured with transvaginal sonography (TVS) is estimated to be around 40%.<sup>7-10</sup> Hence; the present study was undertaken for sonographic Evaluation of Factors Influencing Endometrial Thickness in Postmenopausal Women.

A total of 100 subjects were analyzed. Mean age of the subjects was 48.3 years. Mean BMI was 26.9 Kg/m<sup>2</sup>. Mean YSM was 7.1 years. Overall, uterine volume and ovarian volume was 25.36 cm<sup>3</sup> and 1.87 cm<sup>3</sup> respectively. Wierzbowski T et al evaluated hysteroscopy for the recognition of pathologies causing postmenopausal uterine bleeding. Seventy-nine women aged 48-80 without hormonal replacement therapy hospitalized were included. In each case diagnostic hysteroscopy with visualisation of the uterine cavity was performed and then histopathologic biopsy by a curettage was taken. Hysteroscopic images were analyzed and compared with the histopathological results. 2 women had the

oncologically suspected hysteroscopic images. In both cases endometrial adenocarcinoma was histopathologically confirmed. Among 5 patients with hysteroscopic images suggesting non-malignant endometrial proliferation 4 cases of endometrial hyperplasia were found. 11 times hysteroscopic visualisation of endometrial polyps enabled their complete deletion. In 8 cases intrauterine adhesions were found and dissected: 11 patients presented submucous myomas during hysteroscopy. In 3 cases visualisation of the uterine cavity was not possible because of technical failure. Any patient with absence of hysteroscopically found uterine abnormalities had a poor histopathological result. Hysteroscopic investigation in postmenopausal women with uterine bleeding reduce the risk of false negative histopathological result.<sup>11</sup>

While assessing the factors assessing the mean endometrial thickness, it was seen that higher uterine volume, presence of myoma, visualization of both the ovaries and higher ovarian volume were found to be significant factors associated with higher endometrial thickness. Tandulwadkar S et al studied the etiology of postmenopausal bleeding (PMB). Sixty postmenopausal women with complaint of bleeding per vaginum. On hysteroscopy, endometrium was

classified as suggestive of normal, atrophic, endometrial hyperplasia or endometrial carcinoma. Histopathologic diagnosis is taken as a gold standard to determine the efficacy of hysteroscopy in diagnosing endometrial pathologies. The sensitivity and specificity of hysteroscopy in diagnosing endometrial pathologies was assessed. In women with PMB, hysteroscopy is the basic tool that allows precise diagnosis of various endouterine pathologies.<sup>12</sup> The meta-analysis of Smith-Bindman et al combined published data from different studies. Using the reported data,  $2 \times 2$  tables per included study were constructed that compared endometrial thickness measured at TVS to presence or absence of endometrial carcinoma. Results across studies were combined in a summary Receiver Operator Characteristics (ROC) Curve. At a 5 mm cutoff the sensitivity for detecting endometrial cancer was 96% for a 39% false-positive rate. Such a combination of sensitivity and specificity would reduce a pretest probability of 10% for endometrial cancer to a posttest probability of 1%.<sup>13</sup> Gupta et al conducted a comprehensive systematic review in which they focused on the study quality assessment of each study. Only four studies were identified as best-quality studies. For each paper a  $2 \times 2$  table was constructed and likelihood ratios (LR) were calculated. Pooling of the results of these four studies for endometrial thickness  $\leq 5$  mm resulted in a LR of a negative test of 0.16. In a patient with a negative test result, the posttest probability was 2.5%.<sup>14-17</sup>

## CONCLUSION

Among postmenopausal women, various factors influence endometrial thickness, which includes presence of myoma, uterine volume and ovarian volume. Hence these factors have to be taken into consideration, while evaluating these women.

## REFERENCES

1. Bettocchi S, Ceci O, Vicino M, Mareello F, Impedovo L, Selvaggi L. Diagnostic inadequacy of dilatation and curettage. *Fertil Steril*. 2001;75:803–5.
2. Cicinelli E, De Ziegler D, Nicoletti R, Colafoglio G, Saliani N, Resta L, et al. Chronic endometritis: Correlation among hysteroscopic, histologic, and bacteriologic findings in a prospective trial with 2190 consecutive office hysteroscopies. *Fertility Sterility*. 2008;89:677–84.
3. Baggish MS, Barbot J. Contact hysteroscopy. *Clin Obstet Gynecol*. 1983;26:219–241.
4. Bhattacharya BK. Hysteroscopy for gynaecologic diagnosis. *J Obstet Gynecol India*. 1992;42:373–375.
5. Mencaglia L. Hysteroscopy and adenocarcinoma. *Obstet Gynecol Clin North Am*. 1995;22(3):573–579.
6. Nagele F, Kurz C, Benes K, Patersky N. Initial experiences with ambulatory irrigation hysteroscopy. *Geburtshilfe Frauenheilkd*. 1995;55(8):464–467.
7. Vigada G, Malanetto C. Usefulness of hysteroscopy in the management of abnormal uterine bleeding and intrauterine benign disease. *Minerva Ginecol*. 1995;47(5):179–182.
8. Dijkhuizen FP, Mol BW, Bongers MY, Brölmann HA, Heintz AP. Cost-effectiveness of transvaginal sonography and saline infused sonography in the evaluation of menorrhagia. *Int J Gynaecol Obstet*. 2003;83:45–52.
9. Mihm LM, Quick VA, Brumfield JA, Connors AF, Jr, Finnerty JJ. The accuracy of endometrial biopsy and saline sonohysterography in the determination of the cause of abnormal uterine bleeding. *Am J Obstet Gynecol*. 2002;186:858–60.
10. Valle RF, Illinois C. Hysteroscopic evaluation of patients with abnormal uterine bleeding. *Surg Gynecol Obstet*. 1981;153:521–526.
11. Wierzbowski T, Gottwald L, Bieńkiewicz A, Suzin J. Histeroskopowa ocena błony śluzowej macicy u pacjentek po menopauzie z krwawieniem z dróg rodnych [Hysteroscopic evaluation of the uterine cavity in postmenopausal women with uterine bleeding]. *Ginekolog Pol*. 2003;74(9):892–896.
12. Tandulwadkar S, Deshmukh P, Lodha P, Agarwal B. Hysteroscopy in postmenopausal bleeding. *J Gynecol Endosc Surg*. 2009;1(2):89–93. doi:10.4103/0974-1216.71614
13. Smith-Bindman R, Kerlikowske K, Feldstein VA, et al. Endovaginal ultrasound to exclude endometrial cancer and other endometrial abnormalities. *Journal of the American Medical Association*. 1998;280(17):1510–1517.
14. Gupta JK, Chien PFW, Voit D, Clark TJ, Khan KS. Ultrasonographic endometrial thickness for diagnosing endometrial pathology in women with postmenopausal bleeding: a meta-analysis. *Acta Obstetrica et Gynecologica Scandinavica*. 2002;81(9):799–816.
15. Grigoriou O, Kalovidourous A, Papadias C, Antoniou G, Antonaki V, Giannikos L. Transvaginal sonography of the endometrium in women with postmenopausal bleeding. *Maturitas*. 1996;23(1):9–14.
16. Gupta JK, Wilson S, Desai P, Hau C. How should we investigate women with postmenopausal bleeding? *Acta Obstetrica et Gynecologica Scandinavica*. 1996;75(5):475–479.
17. Nasri MN, Coast GJ. Correlation of ultrasound findings and endometrial histopathology in postmenopausal women. *British Journal of Obstetrics and Gynaecology*. 1989;96(11):1333–1338.