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Correlation between Transvaginal Sonography and Histopathological Examination Findings in Women with Postmenopausal Bleeding

Dr. Nabanita Deka[1], Dr. Gokul Chandra Das[2], Dr. Bijeta[3*]
[1]Assistant Professor, Department of Obstetrics & Gynaecology, Gauhati Medical College and Hospital, Under Srimanta Sankaradeva University of Health Sciences Guwahati, Assam, India
[2]Professor and Ex-HOD, Department of Obstetrics & Gynaecology, Gauhati Medical College and Hospital, Under Srimanta Sankaradeva University of Health Sciences Guwahati, Assam, India
[3]PG Student, Department of Obstetrics & Gynaecology, Gauhati Medical College and Hospital, Under Srimanta Sankaradeva University of Health Sciences Guwahati, Assam, India

Original Research Article

***Corresponding author**
Dr. Bijeta

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Abstract: Postmenopausal bleeding (PMB) accounts for 5% of all gynaecological Outpatient Department visits. PMB must be regarded as a symptom of genital tract malignancy until proved otherwise. Objective of the current study was to study the correlation between the Transvaginal Sonography findings and the Histopathological Examination findings of the endometrium in women with PMB. The prospective study was conducted from June, 2016 to May, 2017 in Gauhati Medical College and Hospital. 70 women with postmenopausal bleeding were subjected to transvaginal sonography and those with endometrial thickness of ≥ 4mm (no. = 50) were further subjected to dilatation and curettage; the TVS results were correlated to the histopathological picture of the endometrium in order to obtain appropriate diagnosis of endometrial lesions. Findings were compared and chi square test was used for statistical analysis. The most common cause of postmenopausal bleeding is atrophic endometrium followed by simple endometrial hyperplasia. This study reveals TVS can be used as a first line of investigation in women with PMB.
Keywords: Postmenopausal bleeding, transvaginal sonography, histopathological examination, dilatation and curettage.

INTRODUCTION

Menopause is derived from the Greek word men (month) and pauos (to stop) [1].

Postmenopausal bleeding is defined by World Health Organization as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity [2]. Postmenopausal bleeding represents 5% of all gynaecology outpatient attendance [3]. Menopause usually occurs between 45-52 years of age. In Western countries, the age of menopause has shifted from 47 to 51 years, reflecting the general improvement in the health and vigour of the community. In India, it is still estimated at 47.5 years of age [4]. Any women who are still menstruating after 55 years of age should be viewed with suspicion [5]. It must be regarded as a symptom of genital tract malignancy until proved otherwise [6].

Diagnostic curettage has been for many years, the method of choice to diagnose cancer of endometrium in patients with postmenopausal bleeding. But there is a great possibility that the pathologically altered area can be missed and hence, the biopsy not being representative. While traditional diagnosis took place via endometrial biopsy which is invasive and associated with 1-2% of complication rate, less invasive techniques are increasingly favoured for evaluating PMB cases [7].

The latest trend is towards the use of ultrasound. The advantages of ultrasound include its non-invasive technique, low cost and increased accuracy. The endometrium is defined as thick when it is sonographically 4 mm or more in postmenopausal women, although, few authors consider the cut-off to be 5mm. If sonographic endometrial thickness is less than 4 mm, the risk of endometrial malignancy is low and if it is 4mm or more, the risk is high[8].

In low risk group, expectant management is possible, no endometrial sample is taken, but the women are told to return if bleeding recurs and kept under strict follow up, so proper counselling of these cases are required [9]. Women with thick endometrium must undergo endometrial biopsy because of high risk of malignancy.

Table-1: Showing the cut-off values for endometrial thickness (ET) on TVS as suggested by different authors

Studies	Cut off endometrial thickness(mm)
Granberg *et al*. [10]	5mm
Karlsson *et al*. [11]	4mm
Smith-Bindman *et al*. [12]	5mm
JS Pyari *et al*. [13]	5mm
ACOG [14]	4mm
Agarwal *et al*. [15]	4mm
Present study	4mm

AIMS AND OBJECTIVES

- To evaluate endometrial pathologies in women with PMB with endometrial thickness ≥ 4mm by TVS.
- To correlate the TVS findings with the histopathological findings in women with PMB.

MATERIALS AND METHODS

The prospective study was conducted in the Department of Obstetrics & Gynaecology, Gauhati Medical College and Hospital, on 70 patients who attended the Gynaecology Outpatient Department of the Hospital, over a period of one year from June 2016 to May 2017.

Inclusion criteria

Women who reported with postmenopausal bleeding after the age of 40 years, provided that the amenorrhoea was not explained by medications or diseases with the complaint of bleeding per vaginum

Exclusion criteria

- Women with bleeding diathesis.
- Women with grossly abnormal cervix.
- Women with diagnosed genital tract malignancy.

Method of collection of data

- All women with post-menopausal bleeding after excluding the exclusion criteria.
- A detailed history was taken and systemic and local examination was done.
- Routine investigations like Complete blood counts, Renal function test, Liver function test, blood grouping and Thyroid function test were done.
- Written and informed consent of all cases were taken.
- Transvaginal sonography was done to measure the endometrial thickness in mid-saggital plane at the thickest area of the endometrium.
- Thereafter, D&C was done in all cases of PMB with endometrial thickness ≥ 4mm.
- The TVS findings and the histopatholgy results were then analysed with statistical data.

RESULTS AND OBSERVATIONS

Table-2: Showing Age wise- Distribution of patients with PMB

Age Groups	No. of patients	Percentage
<50	27	54%
50-54	10	20%
55-59	7	14%
60-64	3	6%
65-69	3	6%
TOTAL	50	100%

In our study, majority of cases (54%) were in the age group of < 50 yrs & 6% of the cases were in the age group of 60-64 yrs and 65-69 years. It is seen from the above table that as the age increases the number of patient decreases. Mean age of the patients presenting with PMB in our study was 50.42 years with a standard deviation of 6.31.

Table-3: Showing Distribution according to Duration since Menopause in PMB cases

Years	No. of patients	Percentage
1-5	35	70%
6-10	9	18%
11-15	6	12%
TOTAL	50	100%

From the above table, it is seen that most of the patients with PMB present within 10 yrs of menopause (88%) and only 12 % of the cases had menopause more than 10 yrs ago. The mean duration since menopause in our study is 4.78+/-3.51 years.

Table- 4: Showing Distribution of according to Number of episodes of bleeding in PMB cases

No. of bleeding episodes	No. of patients	Percentage
One	21	42%
Two	22	44.0%
Three	5	10.0%
More than three	2	4.0%
TOTAL	50	100%

In our study, 44 % cases came to the hospital with 2 episodes of post-menopausal bleeding while 42 % came with one episode and 4% of the cases came when there were more than 3 episodes of postmenopausal bleeding.

Table-5: Comparing the findings of histopathology with TVS

Histopathology	**TVS**
Normal atrophy(22)	Atrophy (17)
	Hyperplasia (3)
	Myoma (1)
	Endometritis (1)
Inadequate (3)	Atrophy (3)
Hyperplasia (18)	Hyperplasia (15)
	Polyp (3)
Polyp (2)	Polyp (2)
Endometritis (1)	Endometritis (1)
Carcinoma (1)	Carcinoma (1)
Proliferative (2)	Hyperplasia (2)
Secretory(1)	Atrophic(1)

Out of the 21 cases with atrophic endometrium on TVS, HPE confirmed the diagnosis in 17, while 1 on HPE showed secretory endometrium and the remaining 3 were labeled as inadequate samples. TVS identified endometrial hyperplasia in 20 cases. HPE echoed the same finding in 15 cases while 3 cases showed atrophied and 2 cases showed proliferative endometrium. The case of endometrial cancer was identified by both the modalities of investigation. TVS identified 2 cases with endometritis, HPE showed endometritis in one and atrophic endometrium in the other. TVS also identified focal intrauterine leions- 5 polyps and 1 myoma, of which D&C and HPE confirmed polyp in 2, endometrial hyperplasia in 2 and missed the myoma.

Table-6: Showing association between endometrial thicknesss (ET) in TVS and Endometrial biopsy outcome

HPE		ET (mm) by TVS				
		4-8	9-13	14-18	19-22	Total
A	N	19	2	1	0	22
	%	86.36%	9.09%	4.54%	0%	100%
S	N	1	0	0	0	1
	%	100%	0%	0%	0%	100%
P	N	2	0	0	0	2
	%	100%	0%	0%	0%	100%
SH	N	0	15	1	0	16
	%	0%	93.75%	6.25%	0%	100%
CH	N	0	0	2	0	2
	%	0%	0%	100%	0%	100%
Po	N	0	2	0	0	2
	%	0%	100%	0%	0%	100%
Ca	N	0	0	0	1	1
	%	0%	0%	0%	100%	100%
E	N	0	0	1	0	1
	%	0%	0%	100%	0%	100%
Total	N	22	19	5	1	47
	%	44%	38%	10%	2%	94%
Chi sq value		98.69				
p-value		0.0001				

A- Atrophic, S- Secretory, P-Proliferative, SH- Simple Hyperplasia, CH- Complex hyperplasia, Po- Polyp, Ca- Adenocarcinoma, E- Endometritis.

In our study, 86.36% of the cases with atrophic endometrium had 4-8mm of endometrial thickness and only 4.5% of cases with atrophic endometrium had thickness of more than 14mm. 93.75% of the cases with simple endometrial hyperplasia had an endometrial thickness of 9-13mm whereas, 100% of cases with complex hyperplasia had ET of 14-18mm. 100% of patient with adenocarcinoma had endometrial thickness of 19-22 mm. The association between endometrial thickness and endometrial biopsy outcome is statistically significant (p - 0.0001).

DISCUSSION

Abnormal uterine bleeding at any stage in a woman's life is worrisome but post-menopausal bleeding is of special concern because it may be an indication of presence of endometrial carcinoma. Post-menopausal bleeding is associated not only with endometrial carcinoma but also various other causes like atrophic endometrium, endometrial hyperplasia, endometritis, polyps, submucous fibroids, etc. Majority of women with post-menopausal bleeding have benign or no cause at all and thus, may undergo the risk of an unnecessary surgical procedure.

In the study by Das *et al.* [16], it was seen that the majority (85%) of the patients who presented with PMB were in the age group of less than 55 years. This was also found similarly in the studies by Tandulwadkar *et al*. [17], Vishwanathan *et al.* [18] and Rekha B *et al.* [19]. In our study, we observed that 74% of the patients with PMB are in the age group of <55 years and only 6% in age group of >65 years.

Gredmark *et al.* 1995 in their study observed that the incidence of PMB decreased with increasing age but the probability of endometrial cancer increases with advancing age[20]. The maximum and minimum age of the patients in our study were 66 yrs and 42 years, while the mean age of the patients presenting with PMB was 50.42+/-6.31 years which was comparable to that observed by Vishwanathan *et al*. [18]. Studies by Sausa *et al.* [21] and van Doorn *et al.* [22] found the mean age to be 62 and 61 years respectively.

In our present study, we observed that PMB was more common within 1-5 years of menopause. Maximum number of patients (70%) had duration since menopause within 1-5 yrs and only 12% had duration since menopause of 11-15 yrs, indicating the inverse relationship between duration of menopause and frequency of PMB. This was similar to the results found by Das *et al*.[16]. However, Rathi *et al*. [23] and Rekha *et al.* [19] in their studies, found that the incidence of PMB is highest in the 6-10 years group, 47.12% and 45% respectively

In our study, atrophic endometrium was the most common finding on histopathological examination seen in 44% cases, followed by endometrial hyperplasia (36%). Out of which, 32% accounts for simple endometrial hyperplasia without atypia and 4%

accounts for complex endometrial hyperplasia with atypia. Gredmark *et al*. [20], Ind T [24] and Singh *et al.* [25] also reported in their respective studies that atrophic endometrium is the commonest finding on histopatholgical examination. Incidence of endometrial carcinoma in our study is less (2%), probably due to the small sample size but it was comparable to Rekha *et al*. (6%)[19] and Singh *et al.* (5.4%)[25].

The mean endometrial thickness in cases with atrophic endometrium in our study is 5.45+/-2.53mm which is comparable with that of Chaudhari *et al*. [26]. However, studies by Granberg *et al*. [10], Botsis *et al.* [27] and Karlsson *et al*. [11] found the mean atrophic endometrial thickness to be lesser; 3.4+/-1.2 mm, 3.2+/-1.1 mm and 3.9+/- 2.5 mm respectively.

The mean endometrial thickness in cases of endometrial hyperplasia in our study is 12+/-2.09mm which is comparable to that of El Mowafi *et al*.[28]. In their study, Botsis[27] *et al.* found the value to be around 9.5+/-2.3mm. In our study, the only case of PMB with endometrial carcinoma on biopsy had an endometrial thickness of 21 mm. This was similar to the findings by El Mowafi [28] and Karlsson [11]. They also found the mean endometrial thickness in cases with endometrial carcinoma to be 21 mm. Granberg [10] and Botsis [27] found the value to be 18mm and 16 mm respectively.

In 3 patients, the endometrial curettings were scanty and reported as inadequate for diagnosis. According to a study conducted at the School of Medicine, Philadelphia, to determine the Negative Predictive Value (NPV) of endometrial tissue reported as inadequate for endometrial carcinoma, concluded that inadequate endometrial sample can be considered to rule out endometrial cancer because of its high NPV [29].

CONCLUSION

TVS is used as a first line of diagnostic tool in patients with PMB as it is safe, simple, non-invasive and cost-effective. From our study, it is suggested that TVS may exclude patients with endometrial carcinoma or those at risk of it. This is especially beneficial for those who are old.

The endometrium can be easily visualized by TVS and measurement of its thickness can be used as a screening method to avoid unnecessary curettage in these patients. D&C should be done in cases with endometrial thickness of at least 4mm.

The limitations of the present study are

- Saline infusion sonography would have been more valuable in diagnosing focal intrauterine lesions.
- Office hysteroscopy and hysteroscopy guided biopsy as an OPD procedure will further improve the diagnosis.
- More number of cases is to be studied for giving a definite conclusion.

REFERENCES

1. Dawood NS, Peter K, Ibrar F, Dawood A. Postmenopusal bleeding: Causes and risk of genital tract malignancy. J Ayub Med Coll Abbottabad. 2010;22:117-20
2. WHO Research on the Menopause in the 1990s? Report of a WHO Scientific Group. WHO Technical Report Series. 1996;866:1-107.
3. Moodley M, Roberts C. Clinical pathway for Evaluation of Postmenopausal Bleeding. J Obstet Gynecol. 2004 Oct;24(7):736-41.
4. Indian MenopauseSociety Report, 2008.
5. Wagman H. Postmenopausal bleeding. Baileres Clin Obstet Gynecol. 1998. Jun; 2(2):35-62.
6. Dewhurst J: Postmenopausal bleeding from benign causes. Clin Obstet Gynecol. 1983.26(3): 769.
7. Palter SF, Olive DL. Reproductive physiology. Berek & Novak's Gynecology 14th Ed. Lippincot Williams. 2007.149-160.
8. The role of Transvaginal Sonography in the evaluation of postmenopausal bleeding. ACOG Committee Opinion No.- 440. Am College of Obstet Gynecol Journal. 2009. 114; 409-411.
9. Gull B, Carlsson S, Karlsson B,Ylostalo P, Milsom I, Granberg S. Transvaginal sonography of the endometrium in women with postmenopausal bleeding: Is it always necessary to perform endometrial biopsy? Am J Obtet Gynecol. 2000 Mar. 188; 509-515.
10. Granberg S, Wildland M, Karlsson B, Norstrom A and Friberg L. Endometrial thickness as measured by transvaginal ultrasonography for identifying endometrial abnormality. Am J Obstet Gynecol.1991.
11. Karlsson B, Granberg S, Wikland M, Ylostalo P, Torvid K, Marsal K, Valentin L. Transvaginal ultrasonography of the endometrium in women with postmenopausal bleeding. A Nordic multicenter study. Am J Obstet Gynecol.1995.172;1488-94.
12. Smith- Bindmann R, Kerlikowske K, FeldesteinVA, Subak L, Segal M. Endovaginal ultrasound to exclude endometrial cancer and other endometrial abnormalities. JAMA.1998 Nov4;280(17):1510-7.
13. Pyari JS, Rekha S, Srivastava PK, Goel M, Pandey M . A comparative diagnostic evaluation of hysteroscopy, transvaginal sonography and histopathological examination in cases of abnormal uterine bleeding. Obstet Gynecol India.2006 May;56:240-3.

14. ACOG Committee Opinion no.426. The role of TVS in the evaluation of postmenopausal bleeding. American College of Obstetricians and Gynecologists. Obstet Gynecol.2009.113(2 Pt1): 462-464
15. Agarwal PM, DS Kadam, A Dhok, KA Tayade, G Singh, KS Bajwa. Evaluation of the endometrium in post-menopausal bleeding by Transvaginal sonography.2017. J Med Sci and Clin Research. Vol 05. Iss 06. 24187-24194.
16. Das PS. A clinicopathologic study of the endometrium in case of post-menopausal bleeding per vaginum. Submitted to Rajiv Gandhi University of Health Sciences,2003.
17. Tandulwadkar S, Deshmukh P, Lodha P, Agarwal B. Hysteroscopy in postmenopusal bleeding. J Gynec Endosc Surg. 2009.1;89-93.
18. Vishwanathan M, Daniel S, Shailaja M, et al. Socio-demographic profile of patients with postmenopausal bleeding attending the out-patient department in a tertiary hospital. Sh J App Med Sci 2014; 2(2C):681-4.
19. B Rekha, AS Rani . An analysis of Histomorphological Findings In Women with Post-menopausal bleeding in a tertiary care Hospital. IOSR J Dental Medical Sci. Vol 15,Issue 9.p 1-12.
20. Gredmark T, Kvint S, Havel G, Mattsson LA. Histopathological findings in women with postmenopausal bleeding. Br J Obstet Gynecol 1995;102(2):133-6.
21. Sousa R,Silvestre M, Almadie E Sousa L, Silva T,Oliviera T. Transvaginal sonography and hysteroscopy in the in the postmenopausal bleeding: a prospective study. Acta Obstet Hynecol Scand 2001;80:856-62.
22. HC van Doorn, BC Opmeer, MJ Duk,RFMP Kruitwagen, FPHLJ Dijkhuizen, BW Mol. The relation between age, time since menopause and endometrial cancer in women with postmenopausal bleeding. Int J Gynecol Cancer 17(5),1118-1123.
23. Sonali Rathi, Sangeeta K, Manisha K. Histopathological evaluation in women with postmenopausal bleeding and associated risk factors for endometrial cancer. J Evolution of Med and Dent Sci. 2013. Vol2,Issue 23,June 10,p-4397-4402.
24. Ind T. Management of postmenopausal bleeding . Prog Obstet Gynecol . 1998:10;361-377.
25. Singh A & Arora S. The red alert- postmenopausal bleeding. Obs & Gynae Today.2005.10;592-93.
26. L Chaudhari, MN Satia. To study the correlation between endometrial thickness onTVS and endometrial histopathology in women with postmenopausal bleeding. Int J Repro, Contracep, Obstet and Gynecol.2016 May;5(5):1309-1315.
27. D Botsis, D Kassanos, E Pyrigiotis, PA Zourlas. Vaginal sonography of the endometrium in postmenopausal bleeding. 1992 Feb. Pubmed.
28. El Mowafi. Transvaginal sonography and hysteroscopy versus Histopathology in Post-menopausal bleeding. Geneva Foundation for Med Edu & Research.2016.
29. Harmanli OH, Shunmugham S, Shen T, Houck CL, Chatwani AJ. The negative predictive value of inadequate endometrial biopsy in diagnosing endometrial neoplasia. J Obstet Gynecol Surg 2004;20 (1):13-16.