ORIGINAL ARTICLE

Correlation of Transvaginal Ultrasound Verses Histopathological Findings in Postmenopausal Bleeding

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ABSTRACT

Objective: To compare transvaginal ultrasound measured endometrial thickness and histopathological findings for detection of endometrial cancer in postmenopausal bleeding.
Study Design Comparative cross sectional study
Settings Department of Obstetrics and Gynaecology, Sir Ganga Ram Hospital, Lahore.
Duration of Study 18 months 19.02.2008 to 17.08.2009.
Subjects and Methods Fifty patients having more than one-year duration of menopause, and not on homone replacement therapy, complaining of vaginal bleeding or discharge presented through OPD , were included in the study. After informed consent and ensuring their confidentiality, the detailed history was taken including age, parity, and duration of menopause, postmenopausal bleeding, postcoital bleeding and vaginal discharge. After speculum and pelvic examination, endometrial thickness was measured with transvaginal ultrasound. Endometrial sampling was done by dilatation and curettage. Endometrial curetting were sent for histopathology. The result of histopathological findings was compared with the result of transvaginal ultrasonographic findings.
Results Mean age of the patients was found to be 57.92 + 6.25 years. Mean parity of the patients was P_5 with range of 2 to 10.Mean duration of menopause was 7.76+5.75 years. Mean duration of postmenopausal bleeding was 4+2.9 months. 26 % of patients had complaint of vaginal discharge and 36 % of patient had postcoital bleeding. Out of 8 cases of cancer patients, one case (12.5%) of endometrial cancer occurred in patients with endometrial thickness of less than 5mm but 7 cases (87.5%) of cancers occurred in patients whose endometrial thickness was between 5 to 16mm. On histopathology of endometrium, 84% had benign endometrium and 16% had endometrial cancer. The results of transvaginal ultrasound measured endometrial thickness shows the, sensitivity rate 87.5%, specificity rate 38.09%, diagnostic accuracy 46%, positive predictive value 21.21% and negative predictive value 94.12%.
Conclusion This study suggests that in postmenopausal bleeding, endometrial thickness measured by transvaginal ultrasound of <5mm does not appears to exclude endometrial cancer as a cause of postmenopausal bleeding so endometrial sampling must be done in all postmenopausal patients.

Key Words: Endometrial cancer, Postmenopausal bleeding, Transvaginal ultrasound.

INTRODUCTION

Postmenopausal bleeding refers to any uterine bleeding in menopausal women. It accounts for about 5 percent of office gynecology visit. All the postmenopausal women having unexplained uterine bleeding should be evaluated for endometrial carcinoma. Since it is potentially lethal disease and the cause of bleeding in 10 percent of patients. However, the most common cause of bleeding in these women is atrophy of the vaginal mucosa or endometrium.[1] Postmenopausal bleeding is traditionally investigated with invasive procedures. Recent studies have suggested that these procedures can be avoided, as ultrasounographic endometrial thickness of <5mm is not usually associated with malignancy.[2]

The clinical approach to postmenopausal bleeding requires prompt and effective evaluation to exclude or diagnose carcinoma. Women with PMB may be assessed initially with either biopsy or TVS; this initial evaluation does not require performance of both tests. TVS can be helpful in the triage of patients in whom endometrial sampling was performed but tissue was insufficient for diagnosis. When TVS is performed for patients with postmenopausal bleeding and endometrial thickness of less than or equal to 4mm is found, endometrial sampling is not required.[2]

In the computer evolution, transvaginal ultrasounographic diagnostics found to have excellent results. Due to these developments, we got an opportunity to look into to pelvis and obtain high quality real time images. TVS now has a

pivotal role for the assessment of postmenopausal bleeding patients due to its wide availability, good resolution, low cost and lack of ionization radiation. A scan should be seen as a part of the overall clinical assessment of patients and never be looked at in isolation. An accurate TVS can enable the clinician to avoid surgery in some cases and to select the correct surgical approach in others. It will not diagnose the cause of all presenting complaints; however the failure to demonstrate pathology can be highly reassuring and avoid the need for further investigations. Postmenopausal bleeding is a common problem in clinical practice with significant implications; however, the diagnostic strategies often vary among different centers. In the recent year, there was a trend to adopt less invasive procedures without compromising efficacy and safety. There is continuous debate about the different available modalities for investigation, and a large number of studies were conducted to define their roles. Some authors recommended that hysteroscopy should be the standard investigation procedure for women with postmenopausal bleeding. Nonetheless, there is a strong evidence to suggest that transvaginal ultrasound scanning, with or without endometrial biopsy, is a safe and more cost-effective. Initially, it highlights this important issue and discusses the role of these different modalities.[3]Several reports have indicated that cancer of the endometrium is more aggressive in black women than in white women. The most common presentation is postmenopausal bleeding for which there are a variety of endometrial causes, 90% of which are benign. Diagnostic tools such as dilatation and curettage and hysteroscopic directed biopsies are invasive. These procedures are also expensive and carry a possible anesthetic risk to the old patient; invasive procedures are also associated with increased patient anxiety. Other possible complications include spreading of malignant cells into the uterine wall during dilatation, perforation, infection and hemorrhage.[4]A non-invasive method of diagnosis would therefore be valuable to avoid these potential problems. Disposable suction piston biopsy devices have virtually replaced dilatation and curettage despite little scientific validation. In patients with known carcinoma, false negative rates with such devices range from 2.5-32.4%. Large prospective studies have shown that an endometrial thickness < or = 4mm on transvaginal ultrasound in postmenopausal women with bleeding has a risk of malignancy of 1 in 917.[5]Tansvaginal ultrasonography seems an excellent initial diagnostic method with high sensitivity in diagnosing endometrial abnormalities. In a study conducted by Nausheen and Iqbal in King Edward, sensitivity of transvaginal ultrasonography for uterine and adenexal masses were 88% and its specificity was 86%.[6]

MATERIAL AND METHODS

The study was conducted in the Department of Obstetrics and Gynaecology, Sir Ganga Ram Hospital, Lahore over the period of 18 months. 50 women with amenorrhea of more than one year who are not receiving hormonal replacement therapy complaining of vaginal discharge presenting through emergency or Gynaecology OPD were included in study. The confounding variables like patients taking hormonal replacement therapy and on progesterone pills, vaginal pessary and cervical growth were controlled by exclusion criteria. After informed consent and ensuring their confidentiality the detailed history was taken including age, parity, duration of menopause, postmenopausal bleeding and vaginal discharge. Examination including speculum and pelvic examination was done. Transvaginal ultrasound done to measure endometrial thickness and endometrial sample was taken by dilatation and curettage. Endometrial curettings were sent for histopathology to detect endometrial cancer. The result of histopathology was compared with transvaginal ultrasound findings. All information was recorded on Performa and analyzed on SPSS version 16 in tabulated form. The descriptive statistics was calculated. The study variables included age, parity, time since menopause and duration of postmenopausal bleeding, postcoital bleeding and vaginal discharge. These variables were presented as mean and standard deviation for age, duration of menopause and frequency and percentage for parity, postcoital bleeding and vaginal discharge. A 2X2 table was constructed to calculate sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of transvaginal ultrasonography by taking histopathological findings as gold standard for diagnosis of endometrial cancer.

RESULTS

The age of patients presenting with complaint of postmenopausal bleeding were in range of 46 to 70 years, with a mean of 57.92 years. The parity

ranged from 2 to 10 with mean of P_5 .The time since menopause ranged from 1.5 to 20 years. Mean duration of menopause was 7.7 years. According to presenting complaints, 52% of patients had vaginal discharge and 36% of patients had postcoital bleeding and duration of postmenopausal bleeding was 4 months.Of the 50 patients studied, 16%(8) had endometrial cancer, 10%(5) had complex hyperplasia, 12% (6) had simple hyperplasia, 10% (5) had proliferative endometrium, 24%(12) had atrophic endometrium, 16%(8) had chronic endometritis, 2%(1) had secretary phase endometrium, 10%(5) had endometrial polyp (Table.1).

Table -1: Endometrial histology; numbers are whole numbers and percentages

Histological type of endometrium	Frequency	Percentage
Atrophic endometrium	12	24%
Chronic endometritis	8	16%
Endometrial cancer	8	16%
Simple hyperplasia	6	12%
Complex endometrial Hyperplasia	5	10%
Proliferative endometrium	5	10%
Endometrial polyp	5	10%
Secretary phase endometrium	1	2%

Table- 2: Linear relationship between cancer diagnosis and number of years since menopause

Years	Cancer	No Cancer	Total
<5	0	22	22
5-10	2	10	12
11-15	6	6	12
16-20	0	4	4
Total	8	42	50

On comparing the histopathological findings with the time since menopause, two-endometrial cancer occurred between the duration 1.5 to 10 years following menopause and six occurred between 10 to 20 years since menopause. (Table.2). Out of 8 cases of cancer patients, one case (12.5%) of endometrial cancer occurred in patients with endometrial thickness of less than 5mm but 7 cases (87.5%) of cancers occurred in patients whose endometrial thickness was between 5 to 16mm. A 2X2 table was made to compare the TVS measured endometrial thickness and histopathological findings. Out of 8 cases of endometrial cancer 7 were true positive and 1 was false negative. In benign cases 26 were false positive and 16 cases were true negative (Table-3) The sensitivity rate of TVS was found to be 87.5%, specificity rate was 38.09%, and diagnostic accuracy was 46%. Positive predictive value was 21.21% and negative predictive value was 94.12 %.

Table -3: Comparison of Transvaginal ultrasound vs. Histopathology (Gold Standard)

TVS endometrial thickness	Endometrial cancer	No cancer endometrium	Total
> Or =5mm	(TP) 7	(FP) 26	33
<5mm	(FN) 1	(TN) 16	17
Total	8	42	50

Table-4: Sensitivity, specificity and accuracy of transvaginal ultrasound

Sensitivity rate = True Positive x 100 =
True Positive + False Negative
7 x100 = 87.5%
7 + 1
Specificity rate= True Negative X100=
True Negative +False Positive
16 X100 =38.09%
16 + 26
Diagnostic Accuracy = True Positive +True Negative x100 =
Total
7+16 x100 = 46%
50

DISCUSSION

The data confirmed that in the women presenting with postmenopausal bleeding, 90% cases are benign as it is seen in study of Shabnam Shamim.[7] We found that endometrial cancer occurs at any age over 50 years, but more commonly in ages above 60 years. In this study 87% of cases with endometrial cancer occurred in patients above 60 years. This agrees with the study of Van Doorn

HC, who found the highest incidence of endometrial cancer in this age group. This study was conducted to assess among women with postmenopausal bleeding the relationship of age and time with menopause on one hand and the presence of endometrial cancer and atypical hyperplasia on the other hand. The conclusion was that, in postmenopausal women with vaginal bleeding, the risk of (pre) malignancy of endometrium is low in women under 50 years of age, increases considerably until 55years of age, and rises only modestly with further advancing age.[8] These results are consistent with my study. The mean age menopause of 57 years is also similar to the mean age of 63 years found in a retrospective study in a cohort of 629 women with postmenopausal bleeding as seen by Escoffer C 2002.[9] In this study we found that one case (12.5%) of endometrial cancer was detected with <5mm endometrial thickness so results does not agree with recently proposed study conducted by Gull B, where cut-off value of TVS measured endometrial thickness is 4mm.[10] To find out the incidence of endometrial carcinoma in women with postmenopausal bleeding, a similar study was conducted on 45 patients by Asifa G, Shazia J. Benign lesions accounted for majority (65%) of the causes of postmenopausal bleeding, followed by adenomatous hyperplasia (11%), carcinoma endometrium (11.1%) and carcinoma cervix (8.8%), results are comparable with my study. As the postmenopausal bleeding still remains the commonest symptom of carcinoma of the endometrium, hence patients presenting with it should be worked up on a priority basis to detect and manage carcinoma at an early stage.[11] About 12.5% of the endometrial cancers were discovered in women whose endometrial thickness was between 4 and 5 mm. This finding supports those of H. Phillip et al 2004.[4] This is an important finding, as it suggests that in Pakistan, doctors should not place too much reliance on non-invasive ultrasounographic findings in helping to decide on intervention in patients with postmenopausal bleeding. A study was conducted by Sibte H, Uzma (2005) in 100 cases of postmenopausal bleeding to see the cause of bleeding. Atrophic endometrium was the commonest cause. These results are comparable to my study. Out of malignant causes, carcinoma cervix is the commonest and then endometrial malignancy. Postmenopausal bleeding should be taken seriously; no matter how less the bleeding is and malignant cause should be ruled out.[8] Dangal G. conducted a study to know the cause of abnormal uterine bleeding in perimenopausal and postmenopausal women of age more then 45 years, by comparing the histopathological findings.[57] Majority of patients were postmenopausal presenting with postmenopausal bleeding and the age range was 45 to 81 years. These results are close to our study. So, a thorough work up is needed for the elderly women presenting with postmenopausal bleeding especially to rule out malignancies.[12]

Patients with postmenopausal bleeding tend to present late with mean of 4 months of bleeding and we believe this may cause differences in endometrial thickness on presentation, this agrees with study by Escoffery C.[9] The later the presentation the greater the possibility that some of the tissue will have been passed vaginally leading to reduced endometrial thickness. Further studies should explore whether these findings can be incorporated in the diagnostic work-up with postmenopausal bleeding.[9 In]

Complex hyperplasia occurred at any age and seemed unrelated to the time since menopause. It was found that in these patients, endometrial thickness was between 3mm to 13mm, with a mean thickness of 6.8mm. However in a study by H. Phillip, endometrial thickness in complex hyperplasia was 14mm, which results are not consistent with my study most probably because of intraobserver variation. In our study the mean atrophic endometrial thickness was 3.3mm, which lies close to the results by H. Phillip (2004). [4] Skaznik and Wikiel (2008) conducted a study to determine whether an endometrial thickness less than 5mm on transvaginal ultrasound is sufficient to exclude benign endometrial lesions in postmenopausal women with bleeding and to determine the cut-off value below which benign endometrial pathology could be rule out. In study total 135 patients were included .The endometrial echo on TVS was less than 5mm in 43% and 5mm or greater in 57%. Using the endometrial echo less than 5mm, sensitivity was 76%, specificity was 63%, positive predictive value was 67% and negative predictive value was 72%. However, the results of my study were, as: sensitivity rate 87.5%, specificity rate 38.09%, diagnostic accuracy 46%, positive predictive value 21.21% and negative predictive value 94.12%, which are nearly consistent with the study by Skaznik. The conclusion was that we were unable to determine

a cut-off value below which benign endometrial pathology could be excluded.[14]

CONCLUSION

Postmenopausal bleeding accounts for a significant proportion of gynaecological referrals and diagnostic strategies often vary among different centers. In the recent years, there is a trend to adopt less invasive procedures without compromising efficacy and safety. This study suggests that in postmenopausal bleeding, endometrial thickness measured by transvaginal ultrasound of <5mm does not appears to exclude endometrial cancer as a cause of postmenopausal bleeding so endometrial sampling must be done in all postmenopausal patients.

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