Role of Hysteroscopy in Anticipation of Endometrial Pathology in Women with Postmenopausal Bleeding

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Abstract: Background: Post-menopausal bleeding (PMB) occurs in approximately 5% -10% of post menopausal women. Postmenopausal abnormal bleeding is concomitant with carcinoma in about 10% of women in the endometrium, where, (PMB) is initially due to endometrial neoplasea until confirmatory tests to confirm the actual causes of PMB. The suitable method for assessment of the uterine cavity in women showing thickening in the endometrium or not showing any signs is the hysteroscopy. The advantages of hysteroscopy is the direct view of the endometrium, possible biopsies, which confirm the diagnosis of lesion, specially focal lesions. **Objective:** The goal from this work was to anticipate the possible endometrial pathology by hysteroscopy which will be assessed and confirmed by pathological examination of the curettage. **Patients and Methods:** The study was done in 40 patient complaining of postmenopausal bleeding and TV U/S show thickened pathology was suggesting endometrial polyps in 18%(50%) of cases the sensitivity of hysteroscopy in detection of endometrial polyps was 95% and the specificity was 95%, the PPV 95% and the NPP 95%. **Results:** endometrial hyperplasia was suggested in 16 (40%) of cases with sensitivity 88.23% and specificity 95.65% PPV 93.75% and NPP 91.66%.Atrophic and normal endometrium were suggested in 2 cases (5%) of cases. **Conclusions:** the results revealed that the hysteroscopy is a safe and dependable diagnostic technique for assessing lesions of endometrium. Diagnostic hysteroscopy is recommended with endometrial biopsy in women suffering from postmenopausal bleeding and 5 mm or more the thickening of endometrium (double-layer) estimated by transvaginal ultrasound even if the hysteroscopy not recording any abnormalities in the uterine cavity .

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Key words: hysteroscopy, postmenopausal bleeding, endometrial pathology

1. Introduction

The life expectancy of women nowadays has been increased and the post menopause lasts for one third of a woman's life. An initial detection of tumor in the endometrium has a very high recovery rate. Practically, the screening of uterine tumor is limited for and must be categorized as one of the high risk groups and required primary and secondary control measures (**1)**

An important cause for recommendation in the general gynecological practice is the complaining from postmenopausal bleeding. Generally, transvaginal sonography (TVS) is currently applied in clinical practice for measurement of double-layer endometrial thickness and also is used to decide if there is a necessity for uterine biopsy or not **(2).** Endometrial cancer is a common gynecological malignancy in women. Most common presentation of endometrial cancer is abnormal uterine bleeding. Among them, around 75% of the women were diagnosed to have early stage of endometrial cancer **(3)**

The available international and national rules define diverse diagnostic methods in the diagnosis of postmenopausal bleeding in women. The first step in every guideline concerning patient complaining from PMB is referral to a gynecologic practice for inspection, TVS and PAP smear **(4).**

The detection of endometrial pathology by using hysteroscopy method is a considerably more efficient, accurate and more specific than trasnvaginal ultrasound. Regarding, focal diagnosis of endometrial lesions, hysteroscopy demonstrate high accuracy in the diagnosis, which by ultrasonography are improbable recognized and should be demonstrated in cases of abnormal uterine bleeding **(5).**

Operative hysteroscopy involves an additional procedure such as a biopsy or treatment. The common uses of operative hysteroscopy include the removal of polyps, division of uterine adhesions, scars and septum, endometrial resection, resection of sub mucous fibroids, and removal of missing IUCDs **(6).**

Aim of the work

The present study was aimed to anticipate the possible endometrial pathology by hysteroscopy which will be assessed and confirmed by pathological examination of the curettage in cases postmenopausal bleeding.

2. Patients and methods

This is a cross section observational study applied upon women with postmenopausal bleeding who attended to gynecology department, Al-Zahra 'a University Hospital, between September 2011 and August 2012. Forty women

were included in the study complaining of postmenopausal bleeding.

Inclusion criteria:

Postmenopausal women > 1 year presenting with uterine bleeding

Exclusion Criteria:

Patients with the following criteria were excluded from the study: Use of hormone replacement therapy, obvious cause of bleeding from cervix and vagina, surgical menopause, and blood disease.

All patients in the study were submitted to:

A- Complete history including

B- Thorough general, abdominal and pelvic examination

- **Pelvic examination:**

○ Inspection of the external genitalia for potentially hemorrhagic lesions.

○ Speculum examination of the entire vagina for detection of traumatic vaginal lesions, severe vaginal infections, atrophic vaginitis and foreign.

○ Bodies in the vagina, inspection of the cervix leads to the diagnosis of cervical polyps, erosions, cervicitis, cervical myoma or a lesion suspicious for cancer.

○ Bimanual assessment of the uterine size and position, the presence or absence of adnexal mass or palpable ovaries will be determined.

C- Laboratory investigations:

Routine laboratory investigations included complete blood count (CBC), bleeding and clotting time, fasting and postprandial blood glucose level, liver and kidney function tests were performed.

D- Ultrasound examination:

The vaginal ultrasonographic examination was performed in the ultrasound in outpatient clinic. Each patient is advised to empty the bladder before examination. The patient lies in lithotomy position. A double-layer measurement of the endometrium at its thickest part in the longitudinal plane was performed by TVU. Using Medisone SA6000 C, vaginal probe FA5/6.5 MHz endometrial thickness was measured as the maximal distance between the two myometrial interfaces in a longitudinal scan. The adnexal region was also examined during TVU to exclude extra uterine pelvic masses.

E- Hysteroscopy examination

Hysteroscopy was performed with Storz Hamou II micro-hysteroscopy (4 mm diameter, 30 angle and 50.0 mm sheath). Sodium chloride (0.9) was used as a distension medium. General or spinal anesthesia used and the patient in dorsal lithotomy position with her legs in adjustable stirrups. Sterilization was done followed by bimanual examination to ascertain the position and mobility of the uterus. The cervix should be cleaned with an antiseptic solution a speculum is used to bring the cervix into view. Vollcelum then applied to the anterior lip of the cervix.

- The hysteroscopy was introduced to the external cervical os and advanced into the endocervical canal under visual control.
- The distal tip of the hysteroscopy then gently advanced through the length of the cervix, taking care to keep the endocervical canal central on the viewing field.
- The cavity and endometrial surface was inspected systematically, and the tubal Ostia identified by rotation of the hysteroscopy. Hysteroscopy was defined as completed when the entire uterine cavity was visualized.

F- Curettage

Curettage was done to all cases. All tissue samples were placed in a solution of 10% formaldehyde and sent to the histopathology laboratory.

G- Statistics

Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation, analysis of variance (ANOVA) tests by SPSS V17.

3. Results

The study included 40 postmenopausal women complaining of uterine bleeding. The age ranged from 47-78 years with a mean of 55.356.608 SD. The ages of menopause women was ranged from 41 to 58 years with an average of 49.45±4.206 SD while the age elapsed since menopause ranged from 1 to 20 years with a mean of 6305±3.935 SD.

Table (2) shows that the mean age of menopause is 49.45 years. The maximum number of patients was between 46-50 years then between ages 51-55 years

Table (3); shows that 65% of the patients had postmenopausal bleeding within 5 years after menopause and 35% of patients has symptom after 5 years.

Table (7) shows that the mean endometrial thickness measured by TV U/S was 14.9 mm with SD 5.135 mm, ranged from 6 mm – 24 mm.

Table (9) shows that the most common suggested hysterscopic finding suggestive endometrial polyp in 20(50%) of patients followed by endometrial hyperplasia in 16 (40%) of patients.

Table (10) shows that the most common histopathological finding is endometrial polyp 18(45%) followed by simple endometrial hyperplasia with no a typia 16(40%). Two cases were diagnosed as atrophic endometrium (5%), leiomyomatous polyp 2 (5%) adenomatous endometrial hyperplasia without atypia only 1(2.5%) one of patient were found proliferative endometrium.

Table (11) shows that in cases suggestive endometrial polyp the ET measured by TV U/S were 14-24 mm. in cases suggested endometrial hyperplasia the E T were 8-21 mm. in normal cases

ET were 7.7-8.6 mm and in atrophic cases were 6-8.5 mm.

Table (13) show that the 2 cases were suggested by hysteroscopy to be have normal endometrium one of them was proliferative endometrium by histopathology and the other was simple endometrial hyperplasia no atypia.

Table (1): Shows the age of menopause and the duration of menopause.

Descriptive statistics		
	Range	**Mean ± SD**
Age of menopause	41.00-58.00	49.45±4.206
Duration of menopause	1.00-20.00	6.05±3.935

Table (2): Age distribution in patients at menopause

Age of patient in years	**No of pt**	**% of pt**
41-45	9	22.50%
46-50	16	40.00%
51-55	13	32.50%
> 56	2	5.00
Mean age of menopause 49.45		

Table (3): Years elapsed since menopause

Duration in yrs.	**No of pt**	**% of pt.**
< 5	26	65%
6-10	10	25%
> 10	4	10%
Mean age 6.05		

Table (4): Reproductive status of the patient with postmenopausal bleeding

Parity		
	N	**%**
Nulliparous	2	5.00
1-3	15	37.50
4-6	13	32.50
>6	10	25.00
Total	40	100.00

Table (5): Relation between risk factors and histopathology

Risk factor		**Histopathology**						
		Normal	**Simple endometrial hyperplasia no atypia**	**Polyp**	**Adenomatous endometrial hyperplasia without atypia**	**Leiomyometous polyp**	**Atrophic changes in endometrium**	**Total**
Negative	N	0	4	2	0	1	1	8
Hypertension	N	0	6	6	0	1	1	14
Obesity	N	0	11	5	1	0	0	17
Diabetic	N	1	8	3	1	0	0	13
Other	N	1	4	1	0	0	0	6

Table (6): The uterine size measured by transvaginal ultrasound in patients with endometrial hyperplasia

parity	**N**	
Nulliparous	2	5.00
1-3	15	37.50
4-6	13	32.50
>6	10	25.00
Total	40	100.00

Table (7): Endometrial thickness measured by TV U/S

	Range (mm)	Mean±SD
Endometrial thickness measured by transvaginal U/S	6.00-24.00	14.945±5.135

Table (8): The ovarian size measured by transvaginal ultrasound

Ovaries		
	N	**%**
Normal ovary	35	87.50
Ovarian cysts	5	12.50
Total	40	100.00

Table (9): Distribution of hysteroscopic findings in 40 patients studied.

Hysteroscopic finding		
	N	**%**
Picture suggested normal	2	5.00
Picture suggested endometrial polyp	20	50.00
Picture suggested atrophic endometritis	2	5.00
Picture suggested endometrial hyperplasia	16	40.00
Total	40	100.00

Table (10): Histopathology of the studied cases

Histopathology		
	N	**%**
Proliferative endometrium	1	2.50
Simple endometrial hyperplasia no atypia	16	40.00
Polyp	18	45.00
Adenomatous endometrial hyperplasia without atypia	1	2.50
Leiomyometous polyp	2	5.00
Atropic changes in endometrium	2	5.00
Total	40	100.00

Table (11): Relation between endometrial thickness and hystrscopic findings

Hysteroscopic findings	**Endometrial thickness (mm) measured by transvaginal U/S**	
	Range (mm)	**Mean±SD**
Normal	7.700-8.60	7.300±1.838
Endometrial polyp	14.00-24.00	18.8503.392
Atrophic endometrium	6.00-8.50	8.100±0.566
Endometrial hyperplasia	8.000-21.000	11.875±3.052

Table (12): Correlation between endometrial thickness and hystopathological findings

Hystopathological findings	**Endometrial thickness (mm) measured by transvaginal U/S**	
	Range (mm)	**Mean±SD**
Proliferative endometrium	7.7000	7.7000 ± .
Simple endometrial hyperplasia no atypia	8.000 – 21.00	11.913±3.198
Endometrial polyp	11.000 – 24.000	19.056±3.670
Adenomatous endometrial hyperplasia without atypia	11.000	11.000± .
Leiomyometous polyp	14.000 – 17.000	15.500±2.121
Atrophic changes in endometrium	6.00 – 8.500	7.250 + 0.566

Table (13): Correlations between the hysteroscopy finding and histopathological finding

Hystroscopic finding		Histopathology						
		Proliferative endometrium	**Simple endometrial hyperplasia no atypia**	**Endometrial polyp**	**Adenometous endometrial hyperplasia without atypia**	**Leiomyometous polyp**	**Atrophic changes in endometrium**	**Total**
Normal	N	1	1	0	0	0	0	2
	%	2.50	2.50	0.00	0.00	0.00	0.00	5.00
Endometrial polyp	N	0	1	17	0	2	0	2
	%	0.00	2.50	42.50	0.00	5.00	0.00	50.00
Atrophic endometrium	N	0	0	0	0	0	2	2
	%	0.00	0.00	0.00	0.00	0.00	5.00	5.00
Endometrial hyperplasia	N	0	14	1	1	0	0	16
	%	0.00	35.00	2.50	2.50	0.00	0.00	40.0
Total	N	1	16	18	1	2	2	40
	%	2.50	40.00	45.00	2.50	5.00	5.00	100
Chi-Square	X2	58.460						
	P value	< 0.001						

4. Discussion

Postmenopausal bleeding is diagnosed accurately by using hysteroscopy which considered as a valuable and safe diagnostic procedure with a low frequency of clinically important complications. Hysteroscopy method is valuable in the diagnosis of intracavitary lesion which permits for better visualization of the possible uterine source of uterine bleeding, in addition to the possibility of taking tissue biopsy from the endometrium for confirmatory diagnosis via histological examination of tissues .The disadvantages of hysteroscopy are attributed to considering the method as invasive in nature, require general anesthesia and the necessity for costly instruments **(7).**

In case of hysteroscopy outcomes, there was a great variation among each level of thickening in the endometrium. 6 to 8.6mm thickening of the endometrium is called atrophic endometrium, whereas, when the thickening varied from 8 to 21 mm is called endometrial hyperplasia. This is similar to a study done by **Hosana et al. (2)** found that an atrophic endometrium was 6 to 7 mm polyp and when the thickness of endometrium was 10 mm or more is called endometrial hyperplasia.

In our study endometrial polyp was diagnosed at 14-24 mm hyperplasia at 8-21 mm and atrophy at 6-8.5 mm while **Rita et al. (8)** Diagnose 9 case atrophy by histopathology at ET 4-8 mm in 12 cases and 4 cases at ET >8 mm by histopathology. However the cut-off value for endometrial thickness more than 5mm, in this case further diagnostic methods can be recommended. It is remarkable that when the thickening of endometrium is 5 mm or more detected by ultrasound, not mean as an indicator of disease in the endometrium, but it means that ultrasonography is incapable to eliminate disease.

Our study revealed that the size of the uterus and both ovaries measured by to US were insignificant with the hystroscopic and the histopathological findings. In the present work the most common suggested hysteroscopic pathologies in 40 women suffering from postmenopausal bleeding and thickened in the endometrium were most frequently in the form of endometrial polyps (50%) 20 case. Histological inspection, post dissection of these polyps, demonstrated the occurrence of an endometrial polyp in 17 cases (85% for suspected cases with hysteroscopy). 2 cases diagnosed by histopathology to be leiomyomatous polyp. One case diagnosed as simple endometrial hyperplasia without atypia. The sensitivity of hysteroscopy for endometrial polyp compaired the histopathology was 95%.

In our study cases with endometrial hyperplasia, there were 16 (40%) cases suggested by hysteroscopy as endometrial hyperplasia 14 case were confirmed by histopathology one case was diagnosed as adenomatous hyperplasia without atypia and another one as endometrial polyp. One case was missed by hysteroscopy and was suggested to be endometrial with no pathology. The sensitivity o hysteroscopy of endometrial hyperplasia compared the histopathology was 88.23% specificity 95.65% PPV 93.75% and NPV 91.66%.

In this study patient with normal and endometrial atrophy, endometrial atrophy was suggested in 2 cases (5%) and the 2 were accurately diagnosed by histopathology 2 cases with normal endometrium and no suggested abnormality was diagnosed, one was accurately diagnosed and the proven to be simple endometrial hyperplasia with no atypia.

Schmidt et al. (9) hysteroscopy suggested the presence of endometrial polyps in 226 women (74.3%), simple endometrial hyperplasia in 34 (11.2%), atrophic endometrium in 18 (5.9%).

A study was done by **Hosana et al. (2)** found that the most common hysteroscopic finding in postmenopausal women and endometrial thickening was suggested to be polyp in (55.62%)

of 183 patient and endometrial atrophy (16.72%). The sensitivity and specificity of hysteroscopy for diagnosing polyps was reached 96.61% and 99.32%, respectively. The negative predictive value (NPV) was reached 100% (99.26% accuracy), whereas, the positive predictive value (PPV) was reached 84.62% . The sensitivity and specificity for hyperplasia was reached 58.33% and 98.45%, respectively, while, the PPV and NPV was reached 63.64% and 98.07% (96.67% accuracy), respectively.

Neto et al. (10) carried an investigation on 58 postmenopausal women with >4 mm endometrial thickening by ultrasound, and reported that polyps were the principle etiology of endometrial thickening in (51.7%, 30 cases) of patients. **Whereas, Loizzi et al. (11)** found that polyps were the foremost lesions (23.2% of 155 patients) which were misguided for endometrial thickening.

Sunita et al. (2009) (12) find that atrophic endometrium was the most common suggested pathology in 65%of cases 11.66.3%were endometrial cancer. 11.66%were polyp with sensitivity 100%. **Lawrence et al. (13)** benign findings (atrophic and Proliferative changes) occurred in 58% of 104 studied patients. The prevalence of endometrial polyps was (32%).

Litta et al. (14) reported that the histolotgical findings for <4 mm level indicated that atrophy was found in 48 (65%), whereas, endometrial tumor was showed in 2 cases (2.7%); Also, for > or=4 mm endometrial thickness , 86 (59 %) were polyps and myomas and 11 (7.5%) were endometrial tumor.

Summary

The main target from the present study was to identify or exclude endometrial pathology in postmenopausal bleeding in women and is most remarkably endometrial carcinoma. Moreover, it is essential to confirm that patients are adequately comforted post normal tests, that symptomatic benign tumor is recognized and that the process of examination is both efficient and acceptable **(15)**

Hysteroscopy is the most suitable tool to evaluate uterine cavity lesions in postmenopausal women with sonographically thickened endometrium. It permits a direct visualization of the endometrium, with the possibility of taking biopsy from uterine tissues for the purpose of improving and confirming from the diagnosis . The most important benefit of hysteroscopy is to "see and treat" **(16).**

The aim of this study was to anticipate the possible endometrial pathology by hysteroscopy which will be assessed and confirmed by pathological examination of the curettage in postmenopausal bleeding. Patients and methods: This is a cross section observational study applied upon women with postmenopausal bleeding who attended to gynecology department, Alzahra'a University Hospital, between September 2011 and August 2012. Forty women were included in the study complaining of postmenopausal bleeding.

All patients in the study were submitted to: Complete history, thorough general, abdominal and pelvic examination, Laboratory investigations, ultrasound examination, Hystroscopic examination and Curettage. Statistical analysis: presentation and analysis of the present study was conducted, using the mean, standard deviation, analysis of variance (ANOVA) tests by SPSS V17.

Results: The age ranged from 47-78 years with a mean of 55.356.608 SD. The age of menopause ranged from 41 to 58 years with a mean of 49.45±4.206 SD while the age elapsed since menopause ranged from 1 to 20 years with a mean of 6305±3.935 SD. The size of the uterus and both ovaries measured by to US were insignificant with the hystroscopic and the histopathological findings. In this study the most frequent suggested hysteroscopic pathologies in 40 patients with postmenopausal bleeding and thickened endometrium were most often represented by endometrial polyps (50%) 20 case. Histological examination, after removal of these polyps, proved the presence of an endometrial polyp in 17 cases (85% for suspected cases with hysteroscopy). 2 cases diagnosed by histopathology to be leiomyomatous polyp. One case diagnosed as simple endometrial hyperplasia without atypia. The sensitivity of hysteroscopy for endometrial polyp compared the histopathology was 95%. In cases with endometrial hyperplasia, there were 16 (40%) cases suggested by hysteroscopy as endometrial hyperplasia 14 case were confirmed by histopathology one case was diagnosed as adenomatous hyperplasia without atypia and another one as endometrial polyp. The sensitivity to hysteroscopy of endometrial hyperplasia compared the histopathology was 88.23% specificity 95.65% PPV 93.75% and NPV 91.66%. Endometrial hyperplasia was suggested in 16 (40%) of cases with sensitivity 88.23% and specificity 95.65% PPV 93.75% and NPP 91.66%.Atrophic and normal endometrium were suggested in 2 cases (5%) of cases.

Conclusions

The combination of ultrasonography, hysteroscopy and endometrial biopsy should be applied as complementary diagnostic tools. This combined approach was shown to be more accurate in diagnosing any uterine lesion these combined investigations did not miss any endometrial abnormality, the results of this investigation demonstrated that hysteroscopy is a safe and consistent diagnostic technique for assessing endometrial disordered . Diagnostic hysteroscopy is recommended to be accompanied with endometrial

biopsy in women admitted with postmenopausal bleeding and endometrial double-layer (5 mm or more) measured by transvaginal ultrasound even if no abnormalities were observed by hysteroscopy.

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