Role of Hysteroscopy in Evaluation of Postmenopausal Bleeding Hysteroscopy in Menopause

Postmenopozal Kanamanın Değerlendirilmesinde Histeroskopinin Yeri

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ABSTRACT Objective: As a possible sign of endometrial cancer postmenopausal bleeding should be evaluated carefully. Dilatation and curettage (D&C) is still gold standard for assessment of postmenopausal bleeding. The development of hysteroscopy has provided a minimally invasive approach for endometrial assessment. We aimed to correlate hysteroscopic impressions and pathological findings in postmenopausal bleeding in this study. **Material and Methods:** This is a retrospective cross-sectional study. This study involves case records of one hundred thirteen women with postmenopausal bleeding. One hundred thirteen women with postmenopausal bleeding who underwent hysteroscopy with diagnostic D&C between January 2012 and January 2013 at Bursa Zübeyde Hanım Maternity Hospital, Department of Obstetrics and Gynecology. Sensitivity, specificity, positive (PPV) and negative (NPV) predictive values of hysteroscopy were calculated. D&C was set as the 'gold standard'. **Results:** For the assessment of postmenopausal bleeding hysteroscopy has high sensitivity and specificity for endometrial space occupying lesions (polyp 100%, 93%; fibroid 100%, 91.8%). However for endometrial hyperplasia, hysteroscopy has low sensitivity (75%). **Conclusion:** Hysteroscopy is a good diagnostic method especially for detecting intrauterine space-occupying (polyp, fibroid) lesions, but moderate for endometrial hyperplasia. Hysteroscopic view combined with hysteroscopy guided endometrial biopsy could be a gold standard for endometrial assessment in postmenopausal bleeding.

Key Words: Hysteroscopy; menopause; dilatation and curettage; polyps; leiomyoma; endometrial hyperplasia

ÖZET Amaç: Postmenopozal kanama endometriyum kanserinin olası bir işareti olması nedenli dikkatli bir şekilde değerlendirilmelidir. Dilatasyon ve Küretaj postmenopozal kanamanın değerlendirilmesinde hâlâ altın standart tanı yöntemidir. Gelişen teknolojiyle birlikte histeroskopi, endometriyal kavitenin değerlendirilmesinde minimal invaziv bir yaklaşım olarak öne çıkmaktadır. **Gereç ve Yöntemler:** Bu retrospektif, kesitsel bir çalışmadır. Bu çalışmaya postmenopozal kanaması olan yüz on üç kadın dâhil edilmiştir. Bursa Zübeyde Hanım Doğumevi, Kadın Hastalıkları ve Doğum Polikliniğine, Ocak 2012-Ocak 2013 tarihleri arasında postmenopozal kanama nedenli başvuran yüz on üç hastaya histeroskopik gözlemin ardından Dilatasyon ve Küretaj işlemi uygulanmıştır. Dilatasyon ve Küretaj altın standart alınarak, histeroskopinin sensitivite, spesifite, pozitif prediktif değer ve negatif prediktif değerleri hesaplandı. **Bulgular:** Postmenopozal kanamanın değerlendirilmesinde histeroskopi, intrauterin yer kaplayan lezyonlar için yüksek sensitivite ve spesifiteye sahiptir (polip %100, %93; submüköz miyom %100, %91,8). Buna karşın endometrial hiperplazide histeroskopi düşük sensitiviteye sahiptir (%75). **Sonuç:** Histeroskopi özellikle intrauterin yer kaplayan lezyonların (polip, submüköz miyom) tanısında iyi bir tanı yöntemiyken aynı başarıyı endometriyal hiperplazide gösterememektedir. Postmenopozal kanamanın değerlendirilmesinde histeroskopik gözlem ve histeroskopi eşliğinde görerek biyopsi altın standart yöntem olacak gibi görünmektedir.

Anahtar Kelimeler: Histeroskopi; menopoz; dilatasyon ve küretaj; polipler; leiomiyom; endometriyal hiperplazi

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Abnormal uterine bleeding is the most common problem which brings women to the gynecologist during the postmenopausal period.[1] Atrophic endometrium, endometrial polyps, uterine fibroids and endometrial hyperplasia are the most common reasons of postmenopausal bleeding.[2] Postmenopausal bleeding could be the first sign of endometrial carcinoma so this symptom always must be carefully investigated.[3] Evaluation of postmenopausal bleeding is controversial.[4,5] D&C is still considered to be the gold standard method for evaluation of postmenopausal bleeding.[6] Because it is an invasive procedure, requires sedation and also associated with some morbidity as a blind procedure. It often leads to false negative rates between 2% to 10% and it keeps suspicions alive and needs more procedures to explain the reason of postmenopausal bleeding.[7,8] By the development of equipment and techniques for hysterescopy; need for diagnostic D&C has largely decreased.

Hysteroscopy is a well-tolerated, minimal invasive, accurate, and sensitive outpatient procedure, and a high predictive value in the assessment of postmenopausal bleeding.[9] Hysteroscopy allows direct visualization and histeroscopy guided biopsy of focal or diffuse lesions of the endometrium.

The aim of our study was to determine the diagnostic accuracy of hysteroscopic impression in women with postmenopausal bleeding.

MATERIAL AND METHODS

This is a retrospective cross-sectional study involving case records of 141 women who referred for postmenopausal bleeding to Bursa Zübeyde Hanım Maternity Hospital, Department of Obstetrics and Gynecology outpatient clinic between January 2012 and January 2013. The patients first underwent a standard outpatient evaluation. Menopause was defined as spontaneous cessation of menses for more than one year.[10] Twenty-eight of these patients were excluded because of hormonal replacement therapy (n:4), cervical pathology (n:7), active pelvic infection (n:2), known uterine cancer (n:1) or tamoxifen usage (n:14). Patients were evaluated for several parameters: age, gravidity, body mass index (BMI), hysteroscopic findings and procedures, complications and histopathological diagnosis. Study approved by local ethics committee.

All office hysteroscopies were performed by the most experienced operators with the vaginoscopic technique. Office hysteroscopy using a continuous flow Storz 3-mm telescope with a 30^0 fore-oblique lens (Karl Storz GmbH, Tuttlingen, Germany) was performed without tenaculum, speculum and antiseptic solution. Moreover, no sedation or local anesthetics were used. Illumination was provided by a high intensity xenon cold-light source. The patient was placed in the lithotomy position, a gynecologic exploration was performed to assess size and position of the uterus as well as the characteristics of the cervix. The uterine cavity was distended with a 0.9% saline solution (HysteRo-Purator, WISAP, Munich, Germany pressure at a flow rate of 30-45 ml/min with intraluminal pressure between 50-100 mmHg).

The endometrial surface was inspected systematically, and the tubal ostia were identified. The hysteroscope was then pulled back towards the internal uterine orifice to obtain a panoramic view of the whole cavity. The endocervical canal was inspected during withdrawal of the hysteroscope. Findings of hysteroscopy were evaluated according to the following table (Table 1).

D&C was performed at the end of hysteroscopy. Histologic diagnosis was given by an associate pathologist who was blinded to the hysteroscopic findings, as atrophy, endometrial polyp, adenomyoma, endometrial hyperplasia or endometrial carcinoma.

Data was processed by Statistics Programme for Social Scientists for Windows 16.0. Histologic diagnoses were compared to the hysteroscopic findings by using 2-way Contingency Table Analysis, Yates's correction for continuity test and the sensitivity, specificity positive predictive value, and negative predictive value were calculated.

RESULTS

113 women with postmenopausal bleeding were evaluated in this study. Mean age was 55±7.2 years

TABLE 1: Hysteroscopic appearance of endometrium.

Hysteroscopic view	Hysteroscopic Diagnose
Smooth surfaced and covered with endometrium	Normal cavity
Pedicle mass covered with endometrium	Endometrial polyp
Pedicle bright mass un-covered with endometrium	Submucosal fibroid
Thickened endometrium with irregular surface	Endometrial hyperplasia
Thickened endometrium with endometrial necrosis	Endometrial carcinoma

and they were in postmenopausal period for 6±2.5 years. Mean BMI was 29.7±5.1 kg/m^2. The characteristics of the study group were listed in Table 2. No complication occurred in the hysteroscopy or D&C group.

Hysteroscopic procedures were performed first. Hysteroscopic findings were; normal uterine cavity, endometrial polyp, endometrial hyperplasia and submucosal fibroid in patients of 58 (51.3%), 31 (27.4%), 12 (10.6%) and 12 (10.7%) respectively.

After the hysteroscopy, D&C performed to all patients. Findings of D&C were atrophy, endometrial polyp, adenomyoma, endometrial hyperplasia, endometrial carcinoma in patients of 73 (64.6%), 25 (22.1%), 3 (2.6%), 11 (9.7%) and 1 (1%) respectively.

Most common abnormal finding in D&C and hysteroscopy was endometrial polyp (22.1% and 27.4% respectively). Three patients who were assumed to have a normal cavity by hysteroscopy had endometrial hyperplasia diagnosis with D&C (1 simple endometrial hyperplasia, 2 complex endometrial hyperplasia) (Table 3). According to these findings sensitivity of hysteroscopy in diagnose of endometrial hyperplasia was low (75%).

TABLE 2: Demographic characteristics (n:113).

Age(years)	55±7.2
Gravidity	4±2
Years after menopause	6±2.5
Body Mass Index (kg/m^2)	29.7±5.1
Endometrial Thickness (mm)	5.1±3.8
Hypertension-n(%)	30 (26%)
Diabetes-n(%)	48 (42%)

Twelve women diagnosed endometrial hyperplasia among hysteroscopic impression and 5 of them had simple endometrial hyperplasia, 3 of them had complex endometrial hyperplasia and 1 of them had endometrial carcinoma among histopathological diagnosis. Hysteroscopy diagnosed all intrauterine masses (31 endometrial polyp, 12 submucosal fibroid) but D&C couldn't diagnose 15 of these women (atrophy in 15 patients). For the specific pathologies PPV, NPV, sensitivity and specificity values were presented in Table 4.

DISCUSSION

Postmenopausal bleeding is a common problem and remains an important reason for referral in general gynecological practice. Endometrial eval-

TABLE 3: Hysteroscopic findings and D&C results of patient group.

D&C	Atrophy	Endometrial Polyp	Adenomyoma	Endometrial Hyperplasia	Endometrial Carcinoma
Hysteroscopy	(n:73)	(n:25)	(n:3)	(n:11)	(n:1)
Normal Cavity (n:58)	55%	-	-	3%	
Endometrial Hyperplasia (n:12)	3%	-	-	8%	1%
Endometrial Polyp (n:31)	6%	25%	-	-	
Submucosal Fibroid (n:12)	9%	-	3%	-	

TABLE 4: Diagnostic accuracy of hysteroscopy in postmenopausal bleeding.

D&C	Sensitivity (%)	Specificity (%)	PPD (%)	NPD (%)
Benign	75.3	92.5	94.8	67.3
Endometrial Hyperplasia	75	97	75	97
Endometrial Polyp	100	93	80	100
Submucosal Fibroid	100	91.8	66.7	100

uation among postmenopausal women is a topic of ongoing debate in the literature.[11,12] The development of equipment and techniques for office-based endometrial biopsy has generally replaced the need for diagnostic dilation and curettage. The results of our study reinforces the opinion that hysteroscopy is a sensitive and specific tool in diagnosing intrauterine space occupying lessions. However, we found a lower sensitivity (75%) of hysteroscopy in identifying hyperplasia.

Hysteroscopy is a safe, highly sensitive diagnostic procedure and minimal invasive method for evaluation of patients with postmenopausal bleeding. Complications from hysteroscopy are rare, but some are potentially life threatening. Jansen et al. reported complication rate was 0.28% for hysteroscopic procedures but no complication occurred in our study.[13]

Direct visualization of uterine cavity by the hysteroscope allows detecting all endometrial polyps and submucous fibroids. We found that sensitivity and specificity for endometrial polyp and submucous fibroid are 100%-93% and 100%-91.8% respectively. Similar results have been reported by Gan et al. They showed hysteroscopy has high sensitivity and specificity for endometrial polyps and submucosal fibroids but moderate for endometrial hyperplasia.[14] In a large study of 1286 women, endometrial cancer was missed in 10 women (34.5 percent) using hysteroscopy alone.[15] However we found lower sensitivity for endometrial hyperplasia (75%). Several studies exhibited low sensitivity for hyperplasia ranging between 40.4% and 70%.[7,16-18] Conversely; Loverro et al. have found that sensitivity and specificity of hysteroscopy were 98% and 95% respectively for endometrial hyperplasia.[19] A review by Clark et al. summarizes that hysteroscopy has only moderate accuracy for detecting endometrial hyperplasia.[11] Sensitivity and specificity of hysteroscopy in endometrial hyperplasia increase with experience.

The primary goal in the diagnostic evaluation of postmenopausal bleeding is to exclude malignancy. Endometrial hyperplasia is characterized by a proliferation of endometrial glands of irregular size and shape. Endometrial hyperplasia have risk of progression to endometrial carcinoma. While we used D&C as the 'gold standard', multiple studies reported a low sensitivity (30.2-46%) and high false negative rate. When we use blind D&C as the gold standard to detect endometrial pathologies; in 10-25% of patients, D&C miss an existing endometrial pathology.[6,20-21] Similarly in our study, D&C couldn't diagnose 15 of the intrauterine masses. Furthermore; we found that 3 of patients (12%) were considered as normal cavity findings by hysteroscopy but pathologic diagnoses of these patients were endometrial hyperplasia. Similar to this outcome, Gan et al. found that hysteroscopy missed four premalignant lesions detected by D&C.[14] Consequencely hysteroscopy was superior in detecting intrauterine masses like polyps and submucosal fibroids, but has moderate value for hyperplasia or endometrial carcinoma. Hysteroscopically directed endometrial sampling detects abnormalities much better than blind D&C.[22-24]

Pop-Trajković-Dinić et al. showed 100% sensitivity and 81% specificity for hysteroscopy in postmenopausal bleeding.[25] Despite high sensitivity of hysteroscopy in diagnosing space occupying lesions, PPV was reduced due to a high false negative rate of D&C in diagnosing benign structural lesions as suggested by a study.[12] Our results suggest high sensitivity and specificity overall assessment of postmenopausal bleeding (90.9%, 69.1%).

Retrospective design and small sample size are main limitations of our study. Secondly, the same surgeons performed both the hysteroscopy and D&C, thus improving the accuracy of D&C. Measurement of sensitivity and specificity of hys-

teroscopy for each pathology strengthen our study.

CONCLUSION

D&C is the still gold standard method for the evaluation endometrial cavity in postmenopausal bleeding. Hysteroscopy is a superior technique for investigating postmenopausal bleeding, with high sensitivity and specificity for intracavitary lesions. It provides direct visualization of the uterine cavity and helps to prevent missing unsuspected intrauterine masses (polyps, fibroids). However hysteroscopy has limited diagnostic accuracy for endometrial hyperplasia. We need more studies to present diagnostic efficacy of hysteroscopy in postmenopausal bleeding.

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