Aegean Journal of Obstetrics and Gynecology

Original Article

Factors effecting inadequate sampling in endometrial biopsy with pipelle

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ABSTRACT

Objective: In this study, it was aimed to investigate the factors that may affect the pathological diagnosis in pipelle endometrial biopsies.

Material and Methods: Four hundred and twenty endometrial biopsies performed by the same specialist using pipelle were analyzed retrospectively in our outpatient clinic for eleven months. Endometrial samples which were made for diagnosis of ectopic pregnancy and patients who have history of cancer or needed anesthesia for the procedure were excluded from the study. Group 1 was created from 65 patients whose endometrial biopsy were resulted as insufficient endometrial biopsy and Group 2 was created with 173 patients who had sufficient material as a result of biopsy. The effect of demographic information, ultrasound data (presence and localization of leiomyoma, endometrial thickness) and biopsy indications were investigated.

Results: The average age of patients in Group 1 was found to be statistically significantly higher than Group 2, of 238 patients who were investigated retrospectively ($p<0,001$). Endometrial thickness in Group 1 was statistically lower than Group 2 ($p<0,001$). Endometrial biopsy indications were frequently observed as postmenopausal bleeding for Group 1 and abnormal uterine bleeding for Group 2.

Conclusion: According to our opinion that it will be more appropriate to perform dilatation / curettage biopsy, instead of biopsy with pipelle if a need for endometrial sampling is required in older ages especially for the postmenopausal patient group.

Keywords: Dilatation and curettage, Uterine Hemorrhage, Endometrium, Menstrual Cycle

ARTICLE INFO

Doi: 10.46328/aejog.v2i1.31

Article history:

Received: 10 April 2020

Revision received 13 April March 2020

Accepted 15 April 2020

Introduction

Endometrial cancer is one of the most common female cancer in developed countries [1]. The key point for disease free survival of patients with endometrial cancer is early diagnosis [1]. Endometrial sampling is the gold standard method for the determination of endometrial pathologies.

Pipelle is a flexible compact cannula designed for endometrial sampling with a thickness of 3.1 mm, which can create negative-pressure easily. Endometrial biopsy with pipelle is an affordable, patient-compatible and highly acceptable method which does not require anesthesia [2]. For endometrial sampling with pipelle, there are studies reporting high sensitivity and specificity, but also some of the studies reporting that the insufficient material ratios are between 8-33% [3–6]. Hence, in pathologies where the endometrium is affected globally, pipelle biopsies are expected to be more reliable. [7]. Therewithal, depending on the characteristics of patients, it has been shown that endometrial biopsies with pipelle may have inadequate pathology results [8].

In this study, it is aimed to investigate the factors that may have an effect on insufficient pathologic material at pipelle endometrial biopsies.

Material and Methods

Four hundred twenty endometrial biopsies performed by the same specialist using pipelle, were analyzed retrospectively in our outpatient surgery service between January and November, 2017. Patients, whose data can be accessed through the hospital database and who did not develop any complications during endometrial biopsy, were included to the study. Endometrial samples which were made for diagnosis of ectopic pregnancy or any other pregnancy excluded from the study. Also, patients who have a known history of cancer or needed anesthesia for the procedure were excluded from the study either. The study was continued with 238 patients who matched the inclusion criterias and these patients were divided into two groups. In Group 1, there were 65 patients who were detected insufficient material as a result of endometrial biopsy which made with pipelle and in Group 2, there were 173 patients who had sufficient material as a result of biopsy.

Gynecological examinations are performed in our clinic to the patients by specialist gynecologists or senior assistants who accompanied by specialist gynecologists. If endometrial sampling is needed ultrasonography and detailed gynecological examination was made at the same time.

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Endometrial sampling which was performed with pipelle cannula is performed without anesthesia in the outpatient surgery service in our clinic for patients who do not have any contraindications for endometrial sampling and not have a known risk of cardiovascular disease.

Demographic datas such as age, body mass index (BMI), gravida, parity, and delivery method of the patients were scanned and recorded over the hospital database. The ultrasonography results before the procedure of the patients were scanned retrospectively, and endometrium thicknesses, leiomyoma nodules if any and locations were recorded.

Indications for endometrial sampling were recorded from the patients last examination records.

Patients who cannot have menstruation without additional pathology for at least one year were considered as menopausal group. Patients with symptoms such as irregular menstrual cycles, hot flashes and have hormonal changes in blood samples that have taken were considered as perimenopausal group. Patients with no menstrual irregularities and no vasomotor symptoms were considered in the premenopausal group.

All biopsy samples that taken routinely in our clinic are placed in formaldehyde (%10) and sent to the pathology laboratory for pathological examination. Pathological examinations are evaluated by pathologists who are specialized in gynecopathology. The material sizes of the samples were evaluated by pathologist and the samples which are insufficient for evaluation reported as insufficient material.

Statistics

All continuous variables were tested with normality tests according to the number of variables. Parametric variables are shown as mean±standard deviation and tested by Independent t-test; Mann-Whitney U-test was used for non-parametric variables and results are shown as median (min, max). Chi-square test was used for categorical variables as appropriate to the number of variables. P <0,05 was considered significant. SPSS 22.0 (SPSS Inc., Chicago, Illinois) program was used in the statistical analysis.

Results

A total of 420 patients who underwent endometrial biopsy with pipelle were analyzed retrospectively and 238 patients met the criteria to be included in the study. The study continued with Group 1, 65 patients with insufficient material as a result of endometrial pathology, and Group 2, 173 patients with sufficient material.

Demographic data's of patients included the study were compared in Table 1. It was detected that gravida, parity, BMI (kg/m2) and delivery patterns of patients did not have any effect on insufficient material in the endometrial biopsy performed with pipelle. The average age in Group 1 was detected statistically higher than Group 2 (p<0,001). It was determined that most of the patients in the first group were in the postmenopausal period, and most of the patients in the second group were in the premenopausal period (p <0,001).

The data such as endometrial thickness, presence and localization of leiomyomas determined by ultrasound (USG) before biopsy of the patients were summarized in Table 2. Endometrial thickness in Group 1 was statistically lower than Group 2 (p<0,001). It was determined that patients in Group 1 had a higher rate of intramural leiomyomas, but patients in Group 2 had a higher rate of submucous leiomyomas. However, a significant relationship was not found between the presence or the localization of leiomyoma and the result of insufficient material in the endometrial biopsy taken with pipelle. Endometrial biopsy indications were frequently observed as postmenopausal bleeding (n: 26, 40%) for Group 1 and abnormal uterine bleeding (n: 124, 71,7%) for Group 2 (p<0.001).

Table 1. Demographic data of the patients

	Group 1 (n,65)	Group 2 (n,173)	P value
Age (year) (median,min-max)	49 (31-88)	45 (29-67)	<0,001
Gravida (median,min-max)	3 (0-9)	3 (0-11)	0,602
Parity (median,min-max)	2 (0-8)	2 (0-9)	0,901
BMI (kg/m^2) (median±SD)	28,2±5,4	27,1±4,3	0,143
Birth Type (n,%)			0,415
Vaginal	21 (32,3%)	43 (28,5%)	
C-section	44 (67,7%)	120 (71,5%)	
Menopausal Status (n,%)			<0,001
Premenopause	24 (36,9%)	115 (66,5%)	
Perimenopause	10 (15,4%)	31 (17,9%)	
Postmenopause	31 (47,7%)	27 (15,6%)	

BMI: Body mass index

Discussion

Endometrial biopsy with pipelle is the first preferred method for endometrial sampling, because it is fast, easy to apply, cost-effective and highly tolerable by patients [2]. There are studies which suggesting that as a result of usage of pipelle in endometrial biopsy, an increase rates of insufficient material for pathological examination [3–6]. The pathology results of patients who are performed endometrial biopsy with pipelle were compared and reasons for occurrence of inadequate material for pathology were investigated.

Table 2. Comparison of ultrasonography results and endometrial sampling indications of patients included in the study

	Group 1 (n,65)	Group 2 (n,173)	P value
Endometrial Thickness (mm) (median,min-max)	5 (1-20)	10 (2-26)	<0,001
Uterine Leiomyomas (n,%)			0,375
Submucosal	5 (7,7%)	23 (13,3%)	
Intramural	12 (18,5%)	22 (12,7%)	
Subserosal	0	2 (1,2%)	
Biopsy Indications (n,%)			<0,001
Postmenopausal hemorrhage	26 (40%)	18 (10,4%)	
Abnormal uterine hemorrhage	17 (26,2%)	124(71,7%)	
Others	22(33,8%)	31 (17,9%)	

In our study, no significant correlation was found between obstetric histories of patients and detection of insufficient material in endometrial samples in accordance with the literature [4,8]. Similarly, no significant correlation was found between patients' BMIs and inadequate pathology. However, it has been suggested that there may be insufficient endometrial biopsies performed with pipelle especially in the patient of obese group [9]. We assume that, this difference with the literature and our results is because of the number of obese patients who included our study were not high enough to found a difference. A significant difference was detected between the ages of the patients and adequate pathological results of the patients ($p<0.001$). There are many studies in the literature that support our results [10–12]. It was shown in our study that endometrial samplings which were made by using pipelle with indications of postmenopausal bleeding from patients in the postmenopausal period as a result of increased patient age resulted in a high rate of inadequate sampling. This result could be caused by the decrease in patient tolerance due to the harder and closed cervix in the postmenopausal period, less endometrium tissue and increased difficulty of the procedure. In almost all studies conducted similar to our study plan, it was shown that insufficient pathology rates increased in the postmenopausal period [1,8,11,12]. It was determined that the low endometrial thickness detected in the USG performed before the biopsy may be the reason for the insufficient biopsy result at biopsy to be performed with pipelle. For these reasons, nowadays, by many authors, it is suggested that it would be more appropriate to have endometrial biopsy by using dilatation curettage instead of pipelle, especially for elderly patients who have the inadequate endometrium for sampling [4]. No significant correlation was found between the presence of leiomyoma and the results of pipelle biopsy, in our study. Because the retrospective nature of the study, the included patients were restricted, for example there was no comment for obesity. However, performing the examination and biopsy procedures of all the patients by a single specialist also increased the power of the study by providing homogenization.

As a conclusion, it will be more appropriate to perform dilatation and curettage biopsy, instead of biopsy with pipelle if a need for endometrial sampling is required in older age patient group especially in the postmenopausal patient group. Therewithal, if the endometrial thickness is less than 5mm in patients presenting with postmenopausal bleeding and if the pathology result was determined as insufficient material despite the proper application, it may be unnecessary to re-sample from the patient. In these cases, it may be preferable to follow USG and follow-up of postmenopausal recurrent bleeding. However, in our opinion, biopsy with pipelle will be quite sufficient for eligible patients.

Declaration of interest statement

The authors report no conflict of interest.

References

[1] Morice P, Leary A, Creutzberg C, Abu-Rustum N, Darai E. Endometrial cancer. The Lancet 2016;387:1094–108. doi:10.1016/S0140-6736(15)00130-0.

[2] Kazandi M, Okmen F, Ergenoglu AM, Yeniel AO, Zeybek B, Zekioglu O, et al. Comparison of the success of histopathological diagnosis with dilatation-curettage and Pipelle endometrial sampling. Journal of Obstetrics and Gynaecology 2012;32:790–4. doi:10.3109/01443615.2012.719944.

[3] Huang GS, Gebb JS, Einstein MH, Shahabi S, Novetsky AP, Goldberg GL. Accuracy of preoperative endometrial sampling for the detection of high-grade endometrial tumors. American Journal of Obstetrics and Gynecology 2007;196:243.e1-243.e5. doi:10.1016/J.AJOG.2006.09.035.

[4] Xie B, Qian C, Yang B, Ning C, Yao X, Du Y, et al. Risk Factors for Unsuccessful Office-Based Endometrial Biopsy: A Comparative Study of Office-Based Endometrial Biopsy (Pipelle) and Diagnostic Dilation and Curettage. Journal of Minimally Invasive Gynecology 2018;25:724–9. doi:10.1016/j.jmig.2017.11.018.

[5] Clark TJ, Mann CH, Shah N, Khan KS, Song F, Gupta JK. Accuracy of outpatient endometrial biopsy in the diagnosis of endometrial cancer: a systematic quantitative review. BJOG: An International Journal of Obstetrics and Gynaecology 2002;109:313–21. doi:10.1016/S1470-0328(02)01088-1.

[6] Ben-Baruch G, Seidman DS, Schiff E, Moran O, Menczer J. Outpatient endometrial sampling with the Pipelle curette. Gynecologic and Obstetric Investigation 1994;37:260–2. doi:10.1159/000292573.

[7] Larson DM, Johnson KK, Broste SK, Krawisz BR, Kresl JJ. Comparison of D&C and office endometrial biopsy in predicting final histopathologic grade in endometrial cancer. Obstetrics and Gynecology 1995;86:38–42. doi:10.1016/0029-7844(95)00105-Z.

[8] Adambekov S, Goughnour SL, Mansuria S, Donnellan N, Elishaev E, Villanueva HJ, et al. Patient and provider factors associated with endometrial Pipelle sampling failure. Gynecologic Oncology 2017;144:324–8. doi:10.1016/j.ygyno.2016.11.041.

[9] Ewies AAA, Shaaban KAA, Merard R, Zanetto U. Endometrial biopsy in women with abnormal uterine bleeding: inadequate and unassessable categorisation is not clinically relevant. Journal of Clinical Pathology 2014;67:673–7. doi:10.1136/jclinpath-2014-202210.

[10] Farrell T, Owen P. The significance of extrachorionic membrane separation in threatened miscarriage. British Journal of Obstetrics and Gynaecology 1996;103:926–8.

[11] Ateş S, Kadınlarda P, Endometrial Y, Sonucu B, Faktörler İ. Ad- dress-for-Cor- res- pon- den- ce/Ya- z›fl-ma-Ad- re- si: Factors Associated with Insufficient Endometrial Sampling in Postmenopausal Women 2020. doi:10.4274/haseki.galenos.2019.5584.

[12] Critchley H, Warner P, Lee A, Brechin S, Guise J, Graham B. Evaluation of abnormal uterine bleeding: comparison of three outpatient procedures within cohorts defined by age and menopausal status. Health Technology Assessment 2004;8:iii–iv, 1–139. doi:10.3310/hta8340.