

The Comparison of Two Endometrial Biopsy Techniques in Detection of Endometrial Pathologies

İki Endometrial Biyopsi Tekniğinin Karşılaştırılması

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ÖZET

AMAÇ: Bu çalışmanın amacı, endometriyal patolojilerin tanısında histeroskopik endometriyal biyopsi (H/S) ve prob kürtajının (P/C) tanısal performansını karşılaştırmaktır.

GEREÇ VE YÖNTEM: Çalışmamız Aralık 2010-Temmuz 2011 tarihleri arasında üçüncü basamak doğum ve jinekoloji kliniğinde yapıldı. Prospektif çalışmamızda, değerlendirmeler için kliniğimize başvuran 83 hastaya H/S ve P/C biyopsilerinin histopatolojik sonuçları Endometriyum incelendi ve kombine prosedürle (H/S ve P/C) karşılaştırıldı.

BULGULAR: Histopatolojik sonuçlar; endometriyal polipler (% 48), endometriyal hiperplazi (%13,2), submüköz miyoma (%4,8), endometriyal kanser (%4,8) ve normal endometriyal doku (%28,9) idi. Endometriyal polip, submüköz miyom, endometriyal hiperplazi ve endometriyal kanser için H/S biyopsisi ile biyopsi ve biyopsi ile biyopsi duyarlılık değerleri %97,5 vs. %54,6 % 100 vs. %25, %75 olarak bulundu. Sırasıyla %100 ve %63,6 ve %100.

SONUÇ: H/S, endometriyal polip ve submüköz miyoma gibi fokal lezyonların tanısında P/C'den daha üstündür. Endometriyal hiperplazi ve endometriyal kanser gibi yaygın lezyonların teşhisi için hiçbir müdahalenin diğerinden istatistiksel olarak üstün olmadığını saptadık.

Anahtar Kelimeler: endometriyal patoloji, histeroskopi, prob kürtajı

ABSTRACT

OBJECTIVE: The purpose of this study is to compare the diagnostic performance of hysteroscopic endometrial biopsy (H/S) and probe curettage (P/C) in the diagnosis of endometrial pathologies.

MATERIALS AND METHODS: Our study was conducted at a tertiary obstetrics and gynecology clinic between December 2010 and July 2011. In our prospective study, histopathological results of both biopsies with H/S and P/C applied to 83 patients admitted to our clinic for evaluation of endometrium, were examined and compared with combine procedure (H/S and P/C).

RESULTS: Histopathological results were as follows: endometrial polyps (48%), endometrial hyperplasia (13.2%), submucous myoma (4.8%), endometrial cancer (4.8%), and normal endometrial tissue (28.9%). Sensitivity values of biopsy with H/S versus biopsy with P/C for the endometrial polyp, submucous myoma, endometrial hyperplasia and endometrial cancer were found as 97.5% vs. %54,6, 100% vs.%25, 75% vs. %100 and 63.6% vs. %100, respectively.

CONCLUSION: H/S was apparently superior to P/C in diagnosis of focal lesions such as endometrial polyps and submucous myoma. We determined none of the interventions to be statistically superior to the other in diagnosis of diffuse lesions such as endometrial hyperplasia and endometrial cancer.

Key Words: endometrial pathology, hysteroscopy, probe curettage

Introduction

Endometrium, the inner lining of the uterus, is a layer undergoing several histological and physiological changes at the reproductive age depending on the menstrual cycle

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periods (1). Such changes in the endometrium are based on hormonal effects. However, several neoplastic and/or non-neoplastic pathologies may occur in the inner lining of the uterus due to many factors apart from these normal changes (2). Due to the effects of these pathologies some symptoms like abnormal uterine bleeding, oligo/polymenorrhoea, menorrhagia, metrorrhagia, premenopausal or post-menopausal bleeding may occur (3). Under such circumstances, various diagnostic methods are required not only to distinguish endometrial pathologies from dysfunctional endometrial changes but also to determine the exact endometrial pathology beneath the clinical presentation. Transvaginal ultrasound (TVUSG), saline-infused sonography (SIS), probe curettage (P/C), hysterosalpingography (HSG) and hysteroscopy (H/S) are the frequently used diagnostic methods for the assessment of endometrial pathologies (4). Although many diagnostic methods are listed here, only utility of endometrial biopsy methods like H/S and P/C have a potential to reach pathological diagnosis.

There should be some kind of superiority between these diagnostic methods in terms of assumed or proposed diagnosis based on symptomatology of the patients or clinical presentation. We aimed to demonstrate whether there was superiority existing between the diagnostic methods based on clinical diagnosis. For this purpose, we have implemented hysteroscopic endometrial biopsy and dilatation curettage for evaluation of endometrial pathologies and compared these two methods in terms of diagnostic performances of obtaining accurate pathological diagnosis. In this sense, the accuracy rates and efficiencies of these diagnostic methods were compared and analyzed for each individual histopathological diagnosis of the obtained tissues.

Materials and methods

This study was conducted at a tertiary hospital obstetrics and gynecology clinic between December 2010 and July 2011. This study included a total of 83 patients at various ages (28-77 years of age) and various life periods (reproductive, premenopausal and post-menopausal periods) from a cohort of women applied to the out-patient clinic for evaluation of endometrium. The entire patients underwent detailed anamnesis. Any use of intrauterine devices and oral contraceptives, past gynecological

operations and procedures were recorded. All patients were subjected to systematic physical examination as well as gynecological examination.

Hysteroscopy procedure was performed under general anesthesia at the conditions of operating room with an office hysteroscope. Patients were placed in gynecologic lithotomy position at the operating table. Cervical ostium could be seen by distention of vagina by fluid with the help of the hysteroscope inserted into the vagina. The procedure was deemed sufficient if the endocervical canal, the whole cavity and both tubal ostia could be clearly monitored; and such facts have thus been included in this study. Hysteroscopy was preferably performed during the follicular phase of the cycle for those patients at reproductive and premenopausal periods. Hegar uterine dilators were used for the cases requiring dilatation. This process was performed with the 5 mm rigid hysteroscope (Karl Storz, Tuttlingen, Germany), and 1.5% glycine solution was used for uterine distention. Biopsy was taken from the doubtful regions.

During the same session, following the speculum examination, the patients were applied cervicovaginal antiseptics. Curettage was performed with 4 mm aspiration cannula after the cervix was held with tenaculum and uterus is retained in steady position. The taken samples were kept in a formaldehyde solution of 10% and sent to the pathology laboratory. The entire samples were assessed and reported by the same pathologist. While hyperplasia, myoma, polyp and cancer results were considered pathological, the secretory endometrium, proliferative endometrium, menstrual endometrium, endometrial atrophy and non-neoplastic endometrium results were considered normal.

Statistics

Combine use of H/S and P/C (combine procedure) was considered as "gold standard" for detection of endometrial pathologies. The histopathologic findings of combine procedure were compared with histopathologic findings which were obtained from H/S and P/C, separately. Microsoft Excel and SPSS 15.0 Statistical Software were used for the analysis of the data collected as a result of this prospective study. Sensitivity, specificity, positive predictive values (PPV), negative predictive values (NPV) were calculated separately. Chi-square and Fisher's exact tests

were used for the comparison of the dependent variables. $p < 0.05$ values were considered significant for the results.

Results

The distribution of the indications of the patients included into the study on the suspicion of endometrial pathology is described as 19 with postmenopausal bleeding, 18 with postmenopausal increased echo thickness, 14 submucosal myoma, 16 with endometrial polyps, 6 with endometrial echo irregularities, 5 with intrauterine fluid accumulation, 5 with other endometrial pathologies (positive endometrial cells in cervical screening, hypomenorrhea, low ovarian reserve, etc.)

The histopathological diagnoses obtained by considering the entire diagnostic methods of biopsy with H/S, P/C, and combine procedure are shown in Table 1. Based on the results of our study, biopsy with H/S was found statistically significant superior to P/C for the detection of endometrial polyps and submucous myomas ($p=0.045$ and $p=0.048$, respectively). P/C was apparently superior in detection of endometrial hyperplasia and cases of cancer; yet such this superiority is not statistically significant ($p=0.318$ and $p=0.99$, respectively).

Table 1. The comparison of histopathological findings of biopsy with H/S and biopsy directed with P/C

Histopathological findings	Combine (H/S and P/C) n (%)	H/S n (%)	P/C n (%)	p
Normal histology	24 (28.9)	30 (36.3)	45 (54.1)	0.019
Endometrial polyp	40 (48.0)	39 (46.9)	22 (26.5)	0.045
Endometrial hyperplasia	11 (13.2)	7 (8.4)	11 (13.2)	0.318
Submucous fibroid	4 (4.8)	4 (4.8)	1 (1.2)	0.048
Endometrial cancer	4 (4.8)	3 (3.6)	4 (4.8)	0.699

H/S: hysteroscopy, P/C: probe curettage

Considering the effectiveness of biopsy with H/S in detection of endometrial pathologies, sensitivity was found as 90.1%; while specificity was 100%, NPV 78.5%, PPV 100%, and accuracy rate is presented as 92.7%. The same diagnostic performance criteria values for displaying effectiveness of P/C in the detection of endometrial pathologies were found 67.2%, 34.9%, 52.3%, 100% and 75.9% for sensitivity, specificity, NPV, PPV and accuracy rates, respectively.

The sensitivity, specificity, PPV, NPV and accuracy rate in the detection of various endometrial pathologies like endometrial polyp, submucous myoma, endometrial

hyperplasia and endometrium cancer are shown in Table 2 for biopsy with H/S, and in Table 3 for P/C.

Table 2: Diagnostic accuracy tests of biopsy with hysteroscopy

Finding	Sensitivity %	Specificity %	PPV %	NPV %	Accuracy Rate %
Polyp	97.5	100	100	97.7	98.7
Fibroid	100	100	100	100	100
Cancer	75.0	100	100	98.7	98.7
Hyperplasia	63.6	100	100	94.7	95.1

PPV: positive predictive values, NPV: negative predictive values.

Table 3. Diagnostic accuracy tests of probe curettage

Pathology	Sensitivity %	Specificity %	PPV %	NPV %	Accuracy Rate %
Polyp	56.4	100	100	72.1	79.5
Fibroid	25	100	100	96.3	96.3
Cancer	100	100	100	100	100
Hyperplasia	100	100	100	100	95.1

Discussion

Endometrial pathologies are one of the most frequently encountered problems in gynecology practice. Abnormal uterine bleeding (AUB) is reported by gynecologists as the most common complaint beside vaginal infections (5). Such pathologies are most commonly observed as abnormal uterine bleeding in clinical practice. Considering the perimenopausal and postmenopausal age groups, 69% of the complaints requiring a gynecological application for admission to clinics, correspond to AUB (6). Endometrial carcinoma corresponds to 3-14.2% of the reported reasons of AUB observed particularly in the postmenopausal age. Hence, this fact entails a meticulous study of these bleedings (7,8). The incidence of anatomic reasons of AUB may vary in medical literature. In the study conducted by Motashaw et al. to show the role of hysteroscopy in management of women with AUB whose ages range from 22 to 82; normal endometrial cavity was reported as 33.5%; while endometrial polyp was reported as; submucous myoma; endometrial hyperplasia; endometrial hyperplasia; atrophic endometrium and adenocarcinoma as 21.5%, 11.3%, 22.9%, 1.6%, 5.6% and 1.3%, respectively (6). Given the histopathological diagnoses of the 83 patients included in our study, endometrial polyp ranks the first with an incidence of 48%. Endometrial polyp was followed by endometrial hyperplasia, submucous myoma and endometrial cancer by 13.4%, 4.8% and 4.8%, respectively. We have encountered normal endometrial histology in 28.9% of our patients.

Recently, the number of diagnostic tests in clinical practice has steadily risen. The treatment of a disease may be

conducted in an accurate manner only by the combination of the individual characteristics and clinical examination of the patient with the laboratory tests. However, the implementation of the tests with poor efficiency may not only increase the costs, but may also cause harms to the patients, as seen in certain invasive tests. Endometrial polyps have been detected in 40 of the 83 patients included in our study. Eighteen (45%) of these cases could not be detected by dilatation and curettage. That's why we strongly propose that P/C may not alone be a definitive diagnostic method for the diagnosis of AUB. The taken samples may not be adequate and 10 to 35% of the endometrial lesions may not be truly diagnosed (9).

The comparative studies conducted on hysterectomy or hysteroscopy following curettage have shown that almost half of the pediculate abnormalities (polyp, submucous myoma) were not detected by curettage. According to certain medical literature, diagnostic insufficiency of P/C varies between 10 to 35% (10). Endometrial hyperplasia has been detected in 11 of the 83 patients included in our study. The frequent observation of hyperplasia during the premenopausal age is a direct result of hormonal dysfunction which is commonly observed during this age. However, since uterine bleeding and functional bleeding are more frequent particularly in premenopausal patients, the use of hysteroscopy may mostly lead to wrong diagnosis due to the thick and polypoid structure of secretory endometrium (11). In the study conducted by Garutti et al, the sensitivity of hysteroscopy was reported as 67.6% for the determination of hyperplasia (12). Similarly in our study, this value was found 63.6% in consistency with the literature.

Endometrial carcinoma is the most important, albeit a rare cause of AUBs. 20-25% of the entire endometrial carcinoma cases are observed during the premenopausal age. Such cases are most frequently observed during the postmenopausal age between the ages of 50-75 (13). Four patients diagnosed with endometrial carcinoma in our study were at the postmenopausal age. Three of these 4 cases were diagnosed with cancer by hysteroscopy with directed biopsy; whereas 1 of these cases was reported as complex hyperplasia. In the study conducted by Garutti et al., the sensitivity of hysteroscopy in determination of

cancer was reported as 78.9% (12). This value was 75% in our study in consistency with literature.

In the actual literature, hysteroscopy is presented as a highly sensitive method in the detection of endometrial pathologies (14). Its sensitivity is reported to vary between 85-98%. In their study on 419 postmenopausal cases, Garutti et al. have reported the sensitivity of hysteroscopy in detection of endometrial pathologies as 96.5%; while they have reported the specificity and positive predictive value as 93.6% and 92.9%, respectively (12). It was shown that hysteroscopy yields highly accurate results for the diagnosis of endometrial diseases (15,16). Compared to P/C alone, endometrial polyps and submucous myomas may be more accurately diagnosed (17-19). Several studies have shown that hysteroscopy is more valuable than curettage for the diagnosis of AUB (16).

Madan et al. found that hysteroscopy was more sensitive than P/C for the diagnosis of endometrial polyps and submucous fibroids; yet it was less sensitive for the diagnosis of endometrial hyperplasia and endometrial carcinomas (20). Svirsky et al. have compared the blind biopsy and hysteroscopy results, in detecting focal intrauterine pathologies. The sensitivity of the blind biopsy for endometrial polyp and submucous myoma was detected too low (8.4% and 1.4%, respectively) (21). Even though in our study, the sensitivity of P/C for detection of endometrial polyps and submucous myomas was found higher than Svirsky et al. as (56.4% and 25%, respectively), this level was still much more lower than hysteroscopy (97.5% and 100%, respectively).

Endometrial pathologies are one of the most commonly encountered problems in gynecology practice. H/S and P/C are among the methods used for the detection of such pathologies. None of these two methods are 100 per cent sensitive on their own. Our results demonstrated that H/S was apparently superior to P/C in the diagnosis and treatment of focal lesions like endometrial polyps and submucous myomas. Even though P/C was seemed to be superior to H/S in pathologies as endometrial hyperplasia and endometrium cancer, this superiority could not be acknowledged by statistical analyzes. In conclusion, highest diagnosis rates may be obtained when H/S and P/C are used together in the detection of endometrial pathologies.

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