

DIAGNOSTIC EFFICACY OF ENDOMETRIAL ASPIRATION CYTOLOGY WITH HISTOPATHOLOGICAL CORRELATION

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Abstract

Background: To assess the diagnostic accuracy of endometrial aspiration technique and to compare the cyto-morphology of aspirated smears with histopathology

Methods: Endometrial aspiration was performed using Karman's cannula in 100 cases who presented with abnormal uterine bleed, infertility and postmenopausal bleed. The endometrial specimens obtained by D&C were processed and evaluated histologically. The endometrial aspirated smears were reviewed for cytomorphological findings and were correlated with histopathological findings for diagnostic accuracy.

Results: Aspiration cytology is more specific for diagnosing malignant lesions (100%) while it is more sensitive for the benign conditions (85.06%) as compared to borderline lesions (complex and atypical hyperplasia), cytology also has higher NPV, PPV and Accuracy for malignant conditions as compared to the benign conditions

Conclusion: Endometrial aspiration technique with Karman's cannula is simple, safe, cost effective and well tolerated outpatient procedure.

Keywords: Endometrial aspiration cytology, Cyclic endometrium, Dilatation and Curettage, Endometrial malignancy, Karman's cannula.

Introduction

Endometrial aspiration cytology is an effective method for ensuring endometrial normalcy, cytohormonal evaluation of the endocrine status and for diagnosing malignant and premalignant states. However direct cytological sampling and examination of the endometrium is not generally practiced, which is surprising as the endometrium is exceedingly easy to sample.¹

Aspiration cytology is a safe, simple and reliable technique without any complication and can be used as a safe outpatient procedure with minimum discomfort to the patient.² Hysteroscopy directed endometrial biopsy of suspicious lesions is the gold standard investigation but is invasive, needs specialized equipment and is operator dependent.³ It also involves the cost of hospitalization and operation theaters, bed shortages and risk of anesthesia and operative complications which can be avoided by aspiration cytology.⁴

Material & Methods

The present study was conducted in the department of pathology JLN Medical College, Ajmer. The study included 100 cases in the reproductive, menopausal and postmenopausal age groups, who presented with complaints of abnormal uterine bleeding, infertility and postmenopausal bleeding. Thorough clinical history, general brief systemic and local examination was done for each

case. Consent of the patient was obtained before the diagnostic procedures.

Data Analysis

Data was recorded as per Performa. The data analysis was computer based; SPSS-22 was used for analysis. For categoric variables chi-square test was used. For continuous variables independent samples's *t*-test was used. *p*-value <0.05 was considered as significant.

Results

Among 100 patients examined, age of the patients ranged from 21-73 year with the mean age being 43.62 years. Majority of patients presented with menstrual abnormalities like menorrhagia (40.00%) followed by polymenorrhoea (20.00%), oligomenorrhoea, menometrorrhagia, postmenopausal bleeding and blood mixed discharge. While 20.00% of them presented with primary or secondary infertility.

Correlation of cytology with histopathological findings was evaluated by applying the screening tests of sensitivity (Sn), Specificity (Sp), Positive predictive value (PPV), Negative predictive value (NPV) and Accuracy.

In our study overall sensitivity was 84.54%, Specificity was 98.89%, PPV of 95.79%, NPV 99.26%, and Accuracy was 98.61%. Statistical values for atypical hyperplasia and

endometrial carcinoma may not reflect the true values because of less number of cases. Apart from them Aspiration cytology was most sensitive in detecting

proliferative phase (100%) and most specific (100%) for secretory phase and mixed reaction in our study

Table 1: Statistical Evaluation of Cytology Diagnosis in the Present Study

Cytology diagnosis	Total no of cases	Histopathologically confirmed cases		Sn (%)	SP (%)	PPV (%)	NPV (%)	Accuracy (%)
		Consistent	Inconsistent					
Proliferative phase	43	39	04	100	91.48	90.69	100	95.35
Secretory phase	15	15	00	93.75	100	100	98.59	98.85
Menstrual phase	13	12	01	100	98.64	92.30	100	98.83
Mixed reaction	02	02	00	66.66	100	100	98.80	98.84
Acute endometritis	1	1	0	100	100	100	100	100
Chronic nonspecific endometritis	3	3	0	75	100	100	98.79	98.83
Simple hyperplasia	4	3	01	60	98.78	75	97.59	96.55
Complex hyperplasia	1	1	00	50	100	100	98.82	98.83
Atypical hyperplasia	1	1	00	100	100	100	100	100
Carcinoma	3	3	0	100	100	100	100	100

Table 2 shows that according to the present study aspiration cytology is more specific for diagnosing malignant lesions (100%) while it is more sensitive for the benign conditions (85.06%) as compared to borderline lesions (complex and atypical hyperplasia), cytology also has higher NPV, PPV and Accuracy for malignant conditions as compared to the benign conditions.

Table 2: Statistical Evaluation of Cytology Diagnosis for Benign and Malignant Lesions in the Present Study

Cytology diagnosis	Sensitivity %	Specificity %	PPV %	NPV %	ACCURACY %
Benign	85.06%	98.41%	93.98%	99.11%	98.18%
Malignant	100%	100%	100%	100%	100%

Discussion

Traditionally the standard method of assessing the endometrium has always been dilation of the cervix and curettage of the uterine cavity under general anesthesia. It accounts for a large proportion of hospital bed use and operating room time. The cost is significant and also carries the complication of anesthesia. Therefore, alternative procedures of endometrial sampling like endometrial brush, Endocyte, Endo-pap sampler, membrane filtration method, endometrial Gravlee-jet washers, Isaacs's endometrial cell sampler, Mi-Mark Helix, lippies loop method and disposable plastic cannula were adopted. For a cytological technique to be accepted as a useful tool for endometrial screening it must first be proven to be an inexpensive, simple (can be used by any gynecologist) and painless sampling method that is able to obtain representative endometrial cells. Secondly, it must be shown that accurate interpretation of samples is possible.⁵

With this in mind, uterine aspiration cytology, an ambulatory procedure for endometrial sampling was studied. Often endometrial lesions are focal in distribution. A single strip biopsy may miss the lesion, but by application of this technique, more representative samples of endometrium can be obtained. Studies have revealed

that, at times even when curettage findings have been normal, endometrial aspiration cytology has been found to be useful for diagnosing endometrial pathology.⁶ Outpatient sampling of the Endometrium could complement conventional curettage and assist in patient management.

Endometrial aspiration cytology was performed using 4mm Karman's cannula in our study and we found it to be acceptable as an outpatient procedure with only mild to moderate discomfort in most of the patients. Complications like hemorrhage, infection or perforation following the procedure were also absent.

When sample adequacy of Karman's cannula was compared with other similar devices, results are on a par. Liza et al used the insemination cannula for intrauterine aspiration, with sensitivity of 81.6% and specificity of 83.3%⁷ Malik et al used insemination cannula of 0.5mm diameter for aspiration sampling reported successful sampling of 96%.⁸ In 2010 Upadhyaya I. and Malla D.S. used pediatric feeding tube for sampling and reported successful sampling of 95.29%.⁹ Also in 2014 Samina Ashraf and Farhat Jabeen using Karman's cannula reported an adequacy rate of 93.4%.¹⁰

Conclusion

Endometrial aspiration is a well-tolerated, safe, simple outpatient procedure. It is a cheap and efficient diagnostic technique for reporting endometrium of patients of all ages. It is an efficient technique for screening postmenopausal patients in diagnosing uterine as well as extra-uterine metastatic malignancies. The Karman's cannula used in this study is inexpensive and alternate endometrial sampling method. This study suggests that endometrial aspiration cytology gives good correlation with histopathology, having high sensitivity and specificity.

While not completely replacing the conventional D&C, endometrial aspiration still has few advantages.

- Having short turnaround time can be used in well-established institutions to decrease the diagnostic time.
- Adequacy of material is high.
- It has got high accuracy in phasing the endometrium & assessing the cyto- hormonal status.
- It can also detect endometrial pathologies like endometrial hyperplasia, atrophy, atypia, and malignancy.

Therefore, at the end of this study, we propose that endometrial aspiration cytology can be used as a screening procedure for the early detection of various endometrial diseases, thereby leading to a better prognostic outcome.

The interpretation of endometrial cytology requires experience but we believe that it is sufficiently reliable to justify further development.

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