

Utility of vaginal cytology in gynecological disorders

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Abstract

Context : Aim : The present study was aimed at evaluating the utility of vaginal cytology in various gynecological disorders **Materials and methods :** In this diagnostic accuracy study, 55 prospectively registered women with various gynecological disorders were evaluated clinically and subjected to vaginal cytology and endometrial histology. Vaginal cytology was taken with the help of back of the plain forceps. The slides were stained by Leishman stain and rapid Papanicolaou stain.

Results : Back of the plain forceps used in this study gave satisfactory results. Pap stain provided good colour differentiation in various stages of cell maturation. For various gynecological disorders, correlation of vaginal cytology with endometrial histology was only 66.66 %. **Conclusion :** Vaginal cytology was not of much use in diagnosing various gynecological disorders and it did not complement or replace the endometrial histology.

Introduction : Ambulatory health care is the demand of the day and gynecologist have started responding to this trend by providing cost effective care without significantly compromising the quality of the care. This is reflected in widespread use of cervical and vaginal cytology. It's use in hormonal assessment is most effective and remarkable^[1] It is certainly less expensive than actual hormonal estimation.

In the last 50 years, vaginal cytology has gained popularity as an additional and sometimes independent diagnostic aid(2- 3)Vaginal cytology is an office procedure, simple to perform and cost effective. It will be worthwhile to study it's role and merits in various gynecological disorders.^[2,3]

Materials and methods : The work represents a prospective study in the department of obstetrics and

gynecology at a general hospital attached to a medical college, during the period of march 1999 to march 2001.

In this study, 55 patients with various gynecological disorders, subjected for endometrial curettage or hysterectomy were enrolled. After clinical, pervaginal and perspeculum examination, vaginal cytology was obtained before the patient was anaesthetized for the operation. Vaginal smears were taken from lateral vaginal wall with the handle of the plain forceps by scraping, before cleaning the vagina. The material obtained was spread on the slides and smears prepared by sliding the flat surfaces of two slides against each other with light pressure.

The slides were stained by leishman's stain and rapid PAP stain.

Samples obtained by D and C and hysterectomy were collected in 10 % formalin and subjected to paraffin sectioning.

Smears were examined for adequacy,

Background - for inflammatory cells, bacilli, trichomonas, candida, mucus and blood.

Cells – Superficial cells, intermediate cells, parabasal cells. Whether the cells are in clumps or scattered singly. M.I was calculated and cytological diagnosis was recorded.

The data thus collected was analysed to find out the diagnostic correlation between cytological procedure and histology. Utility of each procedure was found out and compared with each other.

Observations : The method of collecting vaginal cytology samples with flat surface of handle of plain forceps was found to be satisfactory in 87.27 % cases. The smears collected with this method showed adequate material in 48 out of 55 cases. Of the 7 inadequate smears, in 3 cases the samples were inadequate and unsatisfactory for reporting as they showed only blood, because the patients were actively bleeding at the time of sample collection^[4].

Smears made by sliding the flat surfaces of the two slides against each other were found to be satisfactory in uniformly distributing the cells on the slide.

PAP stain was found to be satisfactory as it gave good colour differentiation of the cellular elements and demonstrated the nuclear details well. Leishman stain was found to be satisfactory in demonstrating cytoplasmic details. The background of the smear ie. Inflammatory cells, RBCs and vaginal flora was better demonstrated by Leishman stain. Thus the Leishman stain and PAP stain were complementary to each other.

As far as the simplicity and the time required for the staining is concerned, Rapid PAP stain was comparable and even better to leishman, as the staining procedure required only 4 minutes.

A count of 100 cells was found to be adequate for reporting. The background of blood, inflammatory cells and mucus helped in classifying the case as progesterational phase. The thick smears were not encountered in vaginal cytology.

Table 1 : Diagnosis on vaginal cytology with clinical condition

Clinical diagnosis with number of cases					
Morphologic diagnosis	infertility	DUB	Pregnancy	Post menopausal bleeding	Total
Estrogenic phase	4	11	-	-	15
Progestogenic phase	11	13	1	2	27
atrophic	-	-	-	2	2
vaginitis	-	3	-	-	3
malignancy	-	-	-	1	1
total	15	27	1	5	48

Table 2 : Correlation between vaginal cytology and endometrial histology

Diagnosis on endometrial histology with number of cases							
Diagnosis on vaginal cytology with number of cases	Proliferative	secretory	Atypical hyperplasia	Cystoglandular hyperplasia	pregnancy	Atrophic	Malignancy
Estrogenic 15	11	-	2	2	-	-	-
Progestogenic 27	9	14	-	3	1	-	-
Atrophic 2	-	-	-	-	-	2	-
Malignancy 1	-	-	-	-	-	-	1
Vaginitis with progesterinal phase 3	1	2	-	-	-	-	-
Total 48	21	16	2	5	1	2	1

There was 70.83 % correlation (34 out of 48 cases) between vaginal cytology and endometrial histology. It was 100 % for estrogenic phase, atrophic endometrium and malignancy. 51.8 % (14 out of 27 cases) diagnosed as progesterinal phase on vaginal cytology, correlated with secretory endometrial histology. 13 non correlated cases , 9 had proliferative histology, 3 were cystoglandular hyperplasia and one was the case of pregnancy.

Hormonal evaluation on vaginal cytology of vaginitis cases correlated with endometrial histology in 66.6 % cases. The cases of vaginitis were evaluated for phase inspite of the fact that they are unsuitable for the same.

Table 3

Hormonal evaluation on vaginal cytology and endometrial histology

In cases of infertility and DUB

GROUP	Hormonal diagnosis			
	Ovulatory		Unovulatory	
	Vaginal cytology	Histology	Vaginal cytology	Histology
Infertility	10	8	5	7
DUB	22	9	4	17

It was seen that the ovulation was overdiagnosed with vaginal cytology when compared with endometrial histology in 15 cases. Hormonal evaluation correlated with vaginal cytology in 26 out of 41 cases. (63.41 %)

Discussion : The earliest encounters with diagnostic cytology were with gynecological cytology.^[4] Vaginal cytology still remains the most cost effective way of hormonal evaluation. It enjoys specificity of localization by demonstrating actual changes in the target organ. It can be carried out in a barely equipped laboratory setup and thus has advantage over actual hormone estimation.

The instruments routinely used for taking vaginal cytology include sterile swab and Ayre's spatula ^[5,6,7]

Back of plain forceps used in the present study gave satisfactory results. PAP stain provided good colour differentiation in various stages of cell maturation. Drying artefacts posed some problems in evaluating eosinophilic index. Experience is shared by others ^[8,9,5,10] It made us rely on the karyopyknotic index for classifying such smears. But it was maturation index with which we were most comfortable in doing hormonal evaluation. Inflammatory background seen in progesterinal phase was best brought out by Leishman stain. Unfortunately there are hardly any studies in literature, which have used Leishman stain.

The correlation of diagnosis of vaginal cytology with that of endometrial histology occurred in 66.66 % cases. The misdiagnosis seen in rest of the cases was due to wrongly diagnosed cases as progesterinal phase, which actually had proliferative histology, belonging to midcycle phase. Similar experience is noted by Koss who explains it on the basis of quicker and advanced response of sensitive vaginal epithelium to hormones ^[11]

Furthermore it is well known that findings of vaginal cytology in estrogenic phase are quite specific but it is not true in progesterinal phase.

Since the vagina responds to very low level of hormones, it could reflect progesteron amount, which was inadequate for the production of endometrial

change. This is particularly in the early post ovulatory phase, when the vagina responds more rapidly than the endometrium. This makes the vaginal cytology more accurate for the hormonal estimation^[12]

In the present study, cases of vaginitis were also evaluated hormonally, this can also explain the fallacy in the progestinal phase.

According to Korta, there should be no comparison between endometrial biopsy and vaginal cytology when one of them is involved in a local pathological process and the other being normal in appearance^[13]

In the presence of infection, hormone estimation should not be carried out. Infections may affect the degree of cornification, irrespective of the hormonal balance. Infections destroy the surface epithelium and basal cells appear in the vaginal smears, which could be misinterpreted.

A presumptive diagnosis of ovulation with not much success was made in the present study by taking a single premenstrual smear and was confirmed by endometrial biopsy.

In the present study, vaginal cytology and endometrial biopsy were used to evaluate the hormonal and endometrial status in different gynecological conditions. Though vaginal cytology was done along with the endometrial histology to increase the diagnostic accuracy, it did not exhibit any complementary role.

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