J. of Obst. & Gyn. of India Vol. 51, No. 3 : May/June 2001 Pg 140-142

Early Diagnosis of Endometrial Carcinoma by Uterine Aspiration Cytology

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Summary

A total of 120 cases who presented with abnormal uterine bleeding in the peri and postmenopausal age group at J.N. Medical College, Aligarh were subjected to endometrial aspiration cytology obtained by means of canula aspiration and the results were compared to histopathology done on specimens obtained at the same sitting by curettage. The aim was to detect cases of endometrial carcinoma at the earliest.

The cytological smears were unsatisfactory in 7.5% cases. There was 100% correlation with histopathology in cases of carcinoma, 91.3% correlation in cases of hyperplasia and almost 100% correlation in other conditions.

Introduction

Abnormal uterine bleeding is the most common clinical presentation of gynaecological disorders in peri and postmenopausal age group. An increasing incidence of endometrial cancer during the past two decades has stimulated the gynaecologist to diagnose this tumour in its earliest stages, so that the treatment can be initiated. Although cervical scrape smear and vaginal pool cytology are helpful diagnostic tools, they are not without limitations. An early diagnosis by uterine aspiration cytology whereby endometrial specimens were collected by means of a canula aspiration technique described by Cary (1943) has been attempted in the present study and results have been correlated with the histopathological findings.

Material and Methods

The present study was conducted in the departments of Obstetrics & Gynaecology and Pathology at J N Medical College, AMU, Aligarh in which 120 cases of peri and post menopausal age group who presented with abnormal uterine bleeding were studied. A detailed history was taken and clinical examination was done and endometrial cytology specimen was obtained by inserting a no. 4 aspiration biopsy canula through the os and suction created by a 20 cc plastic syringe. The material obtained was transferred on a glass slide, fixed in alcohol and stained by papanicolou method. Fractional curettage was done in the same sitting, to correlate the cytological findings with histopathology.

Results

Clinically, menorrhagia was the most common symptom in the 35-40 years age group seen in 22 out of 37 cases (59.4%) (Table I).

Cytological examination of smears showed unsatisfactory results in 13 cases (7.5%) which was due to presence of blood or endocervical cells only in 11 cases and due to the fact that the smear was thick and thus the morphology could not be interpreted in 2 cases. Thus, the cytological details could be studied in 107 cases. Of these, hyperplasia was diagnosed in 21 cases (19.62%) and endometrial carcinoma in 7 cases (6.54%) and there was 91.3% and 100% correlation with histopathology in these two groups.

There was almost 100% correlation of aspiration cytology and histopathology in other conditions also as shown in Table II.

The distinguishing morphologic features of proliferative endometrium, secretory endometrium, plasma cells of endometritis and atypical hyperplasia are shown Fig. 1. Fig. 2 shows smears of endometrial carcinoma showing loose cells with hyperchromatic nuclei and increased nuclear cytoplasmic ratio, smear of cancer cervix, tadpole cells in cancer cervix and ciliated endocervical cells.

Table 1: Distribution of Menstrual Abnormalities according to Age Group

	Age in Years						
Complaints	**35-40**	**41-45**	**46-50**	**51-55**	**56-60**	**>60**	**Total**
Menorrhagia	22	10	2	2	1	0	37
Polymenorrhoea	12	7	3	2	0	0	24
Polymenorrhagia	12	4	2	1	1	0	20
Metrorrhagia	2	2	1	1	0	2	8
Continuous Bleeding p/v	3	2	3	0	0	0	8
Contact bleeding	2	3	1	0	1	0	7
Blood stained	0	1	1	1	2	2	7
Post Menopausal Bleeding	0	0	1	1	4	3	9
Total:	53	29	14	8	9	7	120

Table II: Correlation Between Cytological and Histopathological Diagnosis

		Cytological diagnosis						
Histopathological Diagnosis	**No of cases**	**Proli**	**Sec.**	**Atr.**	**Chr. Endo.**	**Hyp.**	**CA**	**Correlation**
Proliferative	56	53	1	1	-	1	-	94.91%
Secretory	12	-	12	-	-	-	-	100%
Atrophic	1	-	-	1	-	-	-	100%
Chronic endometritis	1	-	-	-	1	-	-	100%
Hyperplasia	23	2	-	-	-	21	-	91.3%
Carcinoma:								
Endometrial	7	-	-	-	-	-	7	100%
Leimyosarcoma	1	-	-	-	-	-	1	100%
Cervix	3	-	-	-	-	-	3	100%
Total	107	55	13	2	1	22	11	

Pro. - Proliferative
Sec. - Secretory
Atr. - Atrophic
Chr. Endo. - Chronic endometritis
Hyp. - Hyperplasia
CA - Carcinoma

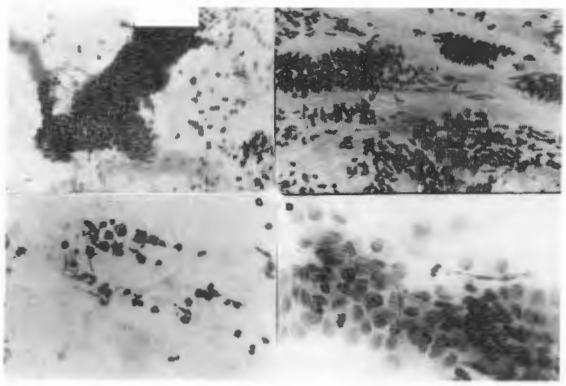

Fig. 1 Cytological smears showing endometrial cells in A) Proliferative phase B) Secretory phase C) Endometritis showing plasma cells D) Atypical hyperplasia

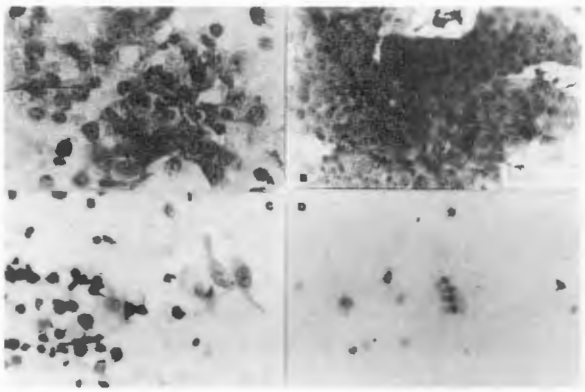

Fig.2 Cytological smears showing A) Endometrial carcinoma with loose cells and hyperchromatic nuclei B) Cancer cervix C) Tadpole cells in cancer cervix D) Ciliated endocervical cells

Discussion

Endometrial aspiration cytology is now preferred over vaginal and cervical smear cytology for the diagnosis of endometrial cancer and hyperplasia, since the morphology of the endometrial cells may change as a result of alteration of pH, inflammation of cervix and vagina and dilution of the cytologic material by other secretions of the pool. Sometimes, it is even difficult to differentiate the endometrial cells from endocervical cells in the smear. Further, in a properly stained and preserved endometrial aspiration smear, there is enough opportunity for comparison of the well differentiated but abnormal cells of early cancer and cells of normal endometrium that are always present, thus forming an important parameter for comparison.

An adequate smear should contain numerous clusters of endometrial cells. In the present study, the failure rate to obtain an adequate smear was 10.8%. Other authors have reported similar failure rates e.g. Torres et al (1969) – 10.82% and Sharma & Laghate (1992) – 10%.

The main problem in establishing the diagnosis of endometrial smears was experienced in deciding between the smears of the cases of endometrial hyperplasia and those of the proliferative endometrium. The cases of hyperplasia with atypia were easily diagnosed. However, the differentiating feature was the cohesiveness of the cells, which is not as well maintained as in normal endometrium, in cases of endometrial abnormalities bordering on cancer and in endometrial carcinoma in situ and the nuclear changes. Prominent nucleoli was the most important single trait of cancer cells, quite prominent red stained as compared to inconspicuous nuclei seen in benign endometrial cells. At times, differentiation of atypical endometrial hyperplasia from early forms of endometrial carcinoma is even more different, not only on cytology, but also on histopathological examination.

The diagnostic accuracy rate was 100% in cases of malignancy, which was similar to the observation of the other authors like Ambiye et al (1981), Chakravarty et al (1986) and Sharma & Laghate (1992). Bhandari et al (1991) have reported the accuracy rate of endometrial aspiration cytology in the diagnosis of endometrial carcinoma as 93.75%. Rao et al (1985) performed a correlative study of endometrial histopathological findings with vaginal, cervical and endometrial cytology with a 73% correlation. Agarwal et al (1986) in a similar study demonstrated a 100% correlation in malignancy and 50% in adenomatous hyperplasia. Bhandari et al (1991) also found a 93.75% correlation between cytology and histopathology in cases of carcinoma.

Thus, endometrial aspiration smear examination is quite beneficial for the detection of early malignancy of the endometrium. However, one should be cautious in obtaining detailed history from the patient before doing endometrial aspiration smear examination, as patients receiving contraceptive hormones may show single large endometrial or endocervical cells rendering the diagnosis very difficult.

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