

FINE NEEDLE ASPIRATION CYTOLOGY IN OVARIAN MASSES

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SUMMARY

FNAB was performed on 30 patients presenting with pelvic masses and the cytologic diagnosis was compared with the histopathologic diagnosis on biopsy. Out of 30 cases, 1 was inflammatory, 15 were benign, 12 were malignant and in 2 the smears were inadequate for reporting. The sensitivity of the method for detection of malignancy and the specificity were 100%. The accuracy rate for typing of lesion was 75.8%. No complications whatsoever were seen.

INTRODUCTION

The ovary is the third most common site of primary malignant neoplasm in the female genital tract. In addition, it is also commonly involved in a variety of non-neoplastic cysts, benign neoplasms as well as metastatic tumors. Clinical interpretation of palpable enlargement of the ovary is often difficult. Because of the high frequency of minor ovarian enlargements due to non-neoplastic conditions, exploratory laparotomy is not always desirable, especially in young women. Fine needle aspiration can provide material for cytologic diagnosis without much discomfort to the patient and is a good preliminary diagnostic procedure as a

replacement for the classic but more traumatic surgical biopsy.

MATERIAL AND METHODS

This prospective study was carried out on 30 cases of ovarian masses admitted to the gynaecologic wards of Dayanand Medical College and Hospital, Ludhiana.

A preliminary examination and review of the case was done and aspiration carried out via the trans-vaginal or trans-abdominal route. Transabdominal route was used for masses that were palpable per abdomen. The procedure was carried out using fine needles (gauge 20-23) and the Cameco pistol handle developed by Franzen and Zajicek. The aspirate was expressed on a slide and spread in the form of a normal

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Accepted for Publication on 06.10.1993.

smear. In fluids, a centrifuged sediment was used for cytology. The smear were fixed and stained with Giemsa stain. H & E stain was done wherever extra slides were available.

All the cases were subjected to histopathology and the results compared.

OBSERVATIONS

A wide age range was encountered in our series, the youngest being 16 years and the oldest 63 years of age. There was mixture of both multiparous and nulliparous patients.

The commonest presentation was a lump in the abdomen with a clinical diagnosis of ovarian tumour.

Cytological findings

The cytological smears were graded as follows :-

- a) Positive Cytology - Referred to those cases, in which a diagnosis could be made on the basis of aspiration cytology. It included all the inflammatory, benign and malignant lesions.
- b) Negative Cytology - Referred to those cases, in which a diagnosis could not be made on the basis of aspiration cytology,

because of either inadequate samples, absence of cells in the aspirate or technical error.

Results obtained by aspiration cytology were correlated with the histopathological diagnosis and findings summarised in Table - I.

In 2 cases, the yield was inadequate for the diagnosis. One proved to be hyperthecosis on histopathological examination and the second a follicular cyst.

Sensitivity and Specificity : The sensitivity and specificity of aspiration cytology was found to be 100% as calculated using the formula by Schultenover (1984). Such a high degree of sensitivity and specificity can be explained on the basis that there were no borderline cases on histopathological examination which could cause problem in cytological diagnosis. Two cases in which the material was inadequate were excluded from the calculations because these were neither false positive nor false negative.

Typing of the lesions : Typing of the lesions on the basis of aspiration cytology was attempted in all the 30 cases using criteria by Nadji and Bernd (1989), Zajicek (1979), Ganjei and Nadji (1984), Ramzy (1979) and the accuracy rate was 75.8%. The results are summarised

Table I

Cytological and Histological correlation

Cytological Diagnosis	Histological Diagnosis			Total
	Inflammatory	Benign	Malignant	
Inadequate	0	2	0	2
Inflammatory	1	0	0	1
Benign	0	15	0	15
Malignant	0	0	12	12
Total	1	17	12	30

Table II

Typing of lesions with percentage accuracy

S. No.	Lesion	Histo pathology	Aspiration Cytology	Percentage accuracy
1.	Papillary serous cyst adenocarcinoma	11	6	54.5
2.	Mucinous cystadenocarcinoma	1	3	100.0
3.	Serous cystadenoma	1	1	100.0
4.	Mucinous cystadenoma	4	4	100.00
5.	Follicular cyst	5	4	80.0
6.	Lutein cyst	2	2	100.0
7.	Simple cyst	2	0	0.0
8.	Brenners tumor	1	1	100.0
9.	Oophoritis	1	1	100.0
10.	Dermoid cyst	1	1	100.0
11.	Hyperthecosis	1	0	0.0
				75.8

in Table - II.

DISCUSSION

Unlike other gynaecologic tumors, which are accessible to inspection and biopsy, ovarian neoplasms are located within the pelvis or abdomen and are reachable only by laparoscopy or exploratory laparotomy. Also, these tumors rarely produce signs or symptoms at an early stage. Thus the wider use of an effective and easy diagnostic method would help in detecting early ovarian lesions. Because of its simplicity, fine needle aspiration cytology may be used as an alternative to surgical procedures. However, the following points about the fine needle aspiration cytology of ovarian tumors need to be discussed.

Unsatisfactory and False Negative Results

In the present series there were 2 cases

of unsatisfactory yield but no false negative report. Various causes for false negative results as reported in other series are, because of sampling problem and malignant cells not being picked up (Sevin 1979), faulty sampling technique (Ganji and Nadji, 1984), obstruction of the needle with dense fibrous tissue (Nadji and Bernd, 1989), specimen not being representative (Kjellgren et al 1971), adenocarcinoma of borderline malignancy diagnosed as benign adenoma on aspiration biopsy (Sarodey and Deshpande, 1988).

False End Results

There must be no false positive diagnosis of cancer if cytology is to be a reliable method of diagnosing carcinoma. This demands considerable restriction and use of stringent criteria for diagnosis of cancer.

There are occasional reports of false positive in the literature. In a study by

Moriarty (1986), there were 3 false positive reports and all these were because of superficial FNA biopsies. Sarodey and Deshpande (1988) reported only one false positive case. A lesion diagnosed as malignant teratoma on cytology proved to be tuberculosis on histopathology. Kjellgren and Angstrom (1979) reported a false positive rate of 4.3%. On histology, 2 of these were cystomas and one was an ovarian fibroma.

In our study, there was no false positive report. The differentiation between benign and malignant neoplasms was easy because of the prominent morphological features of malignancy in the nuclei and the marked cellularity of specimens aspirated from malignant neoplasms. This can be explained on the basis that the present study had a limited number of only selected cases and did not cover the entire spectrum of ovarian tumors. There was no borderline case which can pose a diagnostic problem. All malignant cases were in an advanced stage again posing no diagnostic difficulty.

Accuracy, Sensitivity and Specificity

Sensitivity, specificity and overall accuracy is 100% in our series. In the literature also high accuracy rates have been reported. 95% Kjellgren et al 1971), 93-95 percent (Augstrom et al 1972), 96.4 percent (Sevin 1979), 85-90 percent (Ganjei and Nadji 1984), 96.4 percent (Nadji and Bernd 1989).

The high rate of accuracy as pointed out earlier may be explained due to the fact, the series had a small number of cases, malignant cases were in advanced stage and variety of ovarian neoplasms was limited. Moreover, in our study, the clinical history, complete physical, radiological and sonographic findings were available. Fine needle aspiration was done by the Cytopathologist with the help of gynecologist. All these factors contribute to the high rate of accuracy (Kjellgren and Angstrom 1979, Nadji and Bernd 1989).

Complications

We had no complications whatsoever in our small series. Some clinicians prohibit the use of FNAC of cystic ovarian tumors because of spill of tumor cells into peritoneal cavity (Nadji and Bernd 1989).

Kjellgren and Angstrom (1979) in a study on 151 cases also encountered no complications, nor was there any indication of tumor spread following fine needle aspiration.

Ramzy (1979) in a study of 77 cases also reported no complications.

Practical Application

The most important application of aspiration cytology of ovarian masses is in the investigation of young patients in whom preservation of ovarian function is desirable, especially in view of the fact that malignant neoplasms are unlikely in that age group (Ramzy and Delaney et al, 1979). Patients with non-neoplastic pelvic masses, such as endometriosis and inflammatory technique because the cost and risk of major surgery can be avoided (Ganjei and Nadji, 1984).

It can be used to investigate the contralateral ovary during laparotomy, if one ovary is neoplastic and resection is planned. In adopting this approach, the surgeon may feel comfortable leaving the other ovary in a young patient, thereby not destroying her ovarian functions unnecessarily (Ramzy and Delaney, 1979).

Another important application of FNAC in ovarian tumors is in those patients who have to be treated with radiation or chemotherapy. This is because the risk, time delay and cost of surgery can be avoided and the patient treated immediately (Nadji and Bernd 1989).

For patients on chemotherapy protocols, serial fine needle aspiration cytology is being used to monitor the cellular response to treatment (Ramzy 19790).

In addition to cytomorphologic evaluation the aspirated material can be used for supple

mentary and therapeutic procedures, such as cytochemistry, immuno-cytochemistry, electron microscopy and anti-tumor susceptibility tests (Ganji and Nadji 1984).

Fine needle aspiration cytology, however, should be read with caution for ovarian cancers in post-menopausal women. A negative cytologic report does not exclude malignancy with certainty since the specimen cannot always be considered representative. Also some parts of an ovarian tumor may be benign while other areas may be frankly malignant (Kjellgren et al 1971; Angstrom et al 1972; Ramzy 1979).

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