FINE NEEDLE ASPIRATION CYTOLOGY IN THE DIAGNOSIS AND CLASSIFICATION of RECURRENT and METASTATIC GYNAECOLOGICAL MALIGNANCIES

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ABSTRACT

Fine needle aspiration biopsy was performed on twenty cases of suspected gynaecological malignancy. The indications were two fold, firstly to confirm persistent or recurrent malignancy following treatment and secondly for the primary diagnosis of hepatic metastases. All the twenty cases were correctly diagnosed as malignant. There was good correlation between fine needle aspiration cytology (FNAC) diagnoses and histological diagnoses for squamous cell carcinoma of the cervix and mucinous and papillary serous adenocareinoma of the ovary. Endometrioid carcinoma of the ovary is problematic and often misdiagnosed as serous carcinomas. As with histology, poorly differentiated carcinomas cannot be classified nor can their primary sites be determined on aspiration cytology. No complications occurred as a result of the aspiration procedure. The simplicity of this technique, markedly reduced costs and hospitalization time, a reduced risk of trauma associated with diagnostic procedures, almost universal acceptability to patients and high accuracy are all convincing reasons for its wider application as a diagnostic tool in gynaecologic oncology.

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INTRODUCTION

Fine needle aspiration has been shown to be highly accurate in diagnosing malignant disease of various parts of the body, especially in lymph nodes, breast and prostate, as extensively discussed by "Soderstrom[1], Zajicek[2] and Franzen[3]. Its application to gynaecologic practice initially has been confined to the diagnosis and classification of ovarian tumours.[4,5,6] It has since been used for the primary diagnosis of pelvic masses and for the detection of persistent or recurrent gynaecologic malignancies following irradiation or chemotherapy with much success.[7,8,9,10,11] Sevin et al[7] reported a reliability of 96.4% in distinguishing between benign and malignant disease. Moriarty et al[11], using strict criteria to assess the adequacy of their smears (two groups of appropriate cells on two separate slides), obtained a predictive value for a positive result of 98% and a predictive value for a negative result of 84%.

This report describes our experience with 20 cases of gynaecologic malignancy. In each instance, the cytological confirmation of malignancy by FNAC obviated further costly surgery and prolonged investigation and helped plan further management. It enabled chemotherapy to be commenced immediately or palliative measures to be instituted where appropriate, thereby relieving patient anxiety.

Today, few if any will dispute the use of FNAC to confirm recurrent gynaecologic malignancies but its role in the primary diagnosis of ovarian carcinomas remains controversial mainly because of the possibility of transabdominal tumour spread, the difficulty in diagnosing "borderline" lesions as well as the difficulty of typing ovarian malignancies.

MATERIALS AND METHOD

FNA Material was obtained from 20 consecutive cases of gynaecological malignancy at the Queen Elizabeth Hospital from Adelaide, Australia, from 1982 to 1986.

The material was aspirated from intra-abdominal masses (10), liver (4), skin nodules (3), lymph nodes (2) and vaginal nodule (1). The superficial masses were aspirated without local anaesthesia. Lignocaine 1% was used to anaesthesized the peritoneum for aspiration of the intra-abdominal masses and liver.

The material was obtained using 23 or 21 gauge needles and a 10ml syringe attached to a Cameco AB syringe holder using the technique by Zajiek.[2] Four cases (cases 6, 14, 18, 20) were performed in the Radiology Department under CAT or ultrasound using a 10cm lumbar puncture needle. Case 15 required using the Franzen instrument[3] for aspiration of the vaginal vault nodules.

The aspirated material was checked for adequacy using the Diff-Quik staining technique (Diff-Quik Stain, Harleco, Gibbstown, New Jersey). The material obtained was smeared onto glass slides and air-dried for May-Grunwald-Giemsa staining and fixed in 95% alcohol for Papanicolaou staining.

Clinical

Age: The patients ranged from 47 to 77 years with a mean of 59.9 years.

Primary tumour: Seventeen cases had a previous biopsy proven malignancy. All but one had a pirmary in the female genital tract (ovary 10, endometrium 3, cervix 3). The exception (case 17) had a previously resected rectosigmoid carcinoma, now presenting with metastatic vaginal vault modules.

The remaining three cases were advanced ovarian malignancy diagnosed on clinical grounds.

Recurrent/Metastatic tumour: The recurrent or metastatic gynaecological malignancies most frequently presented as intra-abdominal masses (11 out of 19 cases). They also metastasized to the lymph nodes, liver and skin

Results

Accuracy of diagnosing malignancy: Aspiration cytology confirmed the presence of malignancy in all the 20 cases. There was no false negative cases.

Accuracy in typing malignancy: An initial diagnosis was made on the aspirated material alone [Table 2]. Subsequently this was compared with the histological sections obtained at previous operations in 17 cases.

The cytological diagnosis of metastatic squamous cell carcinoma was straightforward.

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RESULTS

Table 1.

Case No.	Age yrs	Primary Tumour		Recurrent/Metastatic tumour	
		Site	Histological diagnosis	Site	FNANC diagnosis
1.	59	Cervix	Squamous cell carcinoma	L supraclavicular node	Metastatic squamous cell carcinoma
2.	47	Cervix	Squamous cell carcinoma	Periumbilical skin nodules	Metastatic squamous cell carcinoma
3.	51	Cervix	Squamous cell carcinoma	Intra-abdominal mass	Metastatic squamous cell carcinoma
4.	77	Endometrium	Endometrial carcinoma, grade III	R inguinal node	Poorly differentiated adenocarcinoma
5.	66	Endometrium	Endometrial carcinoma, grade III	Intra-abdominal mass	Poorly differentiated adenocarcinoma
6.	51	Endometrium	Endometrical carcinoma, grade III	Intra-abdominal mass	Poorly differentiated adenocarcinoma
7.	70	Ovary	Mucinous cystadenocarcinoma	Intra-abdominal mass	Mucinous cystadenocarcinoma
8.	45	Ovary	Mucinous cystadenocarcinoma	Intra-abdominal mass	Mucinous adenocarcinoma
9.	59	Ovary	Papillary serous cystadenocarcinoma	Intra-abdominal mass	Papillary serous adenocarcinoma
10.	59	Ovary	Papillary serous cystadenocarcinoma	Intra-abdominal mass	Papillary serous adenocarcinoma
11.	51	Ovary	Papillary serous cystadenocarcinoma	Intra-abdominal mass	Papillary serous adenocarcinoma
12.	65	Ovary	Papillary serous cystadenocarcinoma	Intra-abdominal mass	Papillary serous adenocarcinoma
13.	59	Ovary	Papillary serous cystadenocarcinoma	Intra-abdominal mass	Papillary serous adenocarcinoma
14.	52	Ovary	Clear cell carcinoma	Liver	Metastatic clear cell carcinoma
15.	72	Ovary	Malignant mixed Mullerian tumour	Abdominal wall nodule	Carcinosarcoma
16.	56	Ovary	Poorly differentiated endometrioid carcinoma	Intra-abdominal mass	Poorly differentiated adenocarcinoma
17.	65	Rectosigmoid	Moderately differentiated adenocarcinoma	Vaginal vault nodules	Metastatic adenocarcinoma
18.	74	? Ovary	Nil	Liver	Metastatic adenocarcinoma
19.	62	? Ovary	Nil	Liver	Metastatic adenocarcinoma
20.	61	? Ovary	Nil	Liver	Metastatic adenocarcinoma

Table 2.
CORRELATION BETWEEN FNA CYTOLOGICAL AND HISTOLOGICAL CLASSIFICATION

Case No.	FNA Classification	Previous Histological Classification
1.	Squamous cell carcinoma	Squamous cell carcinoma
2.	Squamous cell carcinoma	Squamous cell carcinoma
3.	Squamous cell carcinoma	Squamous cell carcinoma
4.	Poorly differentiated adenocarcinoma	Endometrical carcinoma grade III
5.	Poorly differentiated adenocarcinoma	Endometrical carcinoma grade III
6.	Poorly differentiated adenocarcinoma	Endometrical carcinoma grade III
7.	Mucinous adenocarcinoma	Mucinous cystadenocarcinoma
8.	Mucinous adenocarcinoma	Mucinous cystadenocarcinoma
9.	Papillary serous adenocarcinoma	Papillary serous cystadenocarcinoma
10.	Papillary serous adenocarcinoma	Papillary serous cystadenocarcinoma
11.	Papillary serous adenocarcinoma	Papillary serous cystadenocarcinoma
12.	Papillary serous adenocarcinoma	Papillary serous cystadenocarcinoma
13.	Papillary serous adenocarcinoma	Papillary serous cystadenocarcinoma
14.	Clear cell carcinoma	Clear cell carcinoma
15.	Carcinosarcoma	Malignant mixed Mullerian tumour
16.	Poorly differentiated adenocarcinoma	Poorly differentiated endometrioid
17.	Metastatic Adenocarcinoma	Nil
18.	Metastatic Adenocarcinoma	Nil
19.	Metastatic Adenocarcinoma	Nil
20.	Metastatic Adenocarcinoma	Nil

For ovarian carcinomas, the mucinous, papillary serous and clear cell carcinomas were correctly typed. Definitive histological typing became increasingly difficult as the tumour become less differentiated, such that poorly differentiated carcinomas could not be further classified[12]. Endometrioid carcinoma proved to be particularly problematic and were incorrectly classified as poorly differentiated.

Aspiration of the liver confirmed metastatic adenocarcinoma in all three instances but it was not possible to pinpoint the exact primary site of the tumour although the morphological appearances were compatible with an ovarian primary.

DISCUSSION

In South Australia, invasive carcinoma of the endometrium, cervix and ovary combined accounted for 13.1% of all malignancies in women, second only to breast carcinoma (25.3) in 1985. It was responsible for 12.6% of all deaths due to malignancy in women, again second only to breast carcinoma (20.8%).

About 75% of all patients with ovarian cancer are diagnosed and treated only after metastases have occurred. In view of the magnitude of the problem there is an urgent need for a quick, inexpensive and reliable method of obtaining a tissue diagnosis, firstly for a primary diagnosis in the presence of clinical metastases and secondly to monitor recurrences or relapses after treatment. In this respect, FNAC has been used with much success.

The overall accuracy of differentiating benign from malignant ovarian tumours is good, ranging from 90% to 95%.[4,6,7,9] Sevine et al[7] demonstrated the high accuracy in predicting the histologic picture of various lesions. Of their 48 aspiration containing malignant cells, their FNAC diagnosis was different from the histological diagnosis in only 1 case. Kuellgren et al[5,6,9] and others found good cytological-histological correlation in their attempt at classifying ovarian cancers on aspirates.

We confirm previous experience that serous and mucinous cystadenocarcinomas, which are the most frequent types of ovarian cancers, can usually be correctly classified cytologically [Table 2]. Endometrioid carcinomas often proved difficult to identify and were often classified as serous carcinomas. This same problem is experienced in histological classification.

In this study, all 20 cases of suspected malignancy were correctly diagnosed on FNAC. The indications were twofold, firstly to confirm the clinical diagnosis of persistent or recurrent disease after treatment (17 cases) and secondly, for the primary diagnosis of metastatic liver disease (3 cases). Confirmation of malignancy enabled the patients to be treated without delay and without the trauma of exploratory surgery which is not without significant mortality and morbidity, especially in those previously treated with radiation or chemotherapy.

Previously the diagnosis of pelvic malignancy has necessitated hospitalization with prolonged investigations culminating in exploratory surgery. The simplicity and safety of FNAC, combined with a high degree of accuracy, merit wider application of this technique as a reliable diagnostic tool in gynaecologic oncology.

Apart from its invaluable contribution to direct patient management, the method can be applied to research studies of various kinds,[14,15,16] including cytomorphometry, receptor status of tumour cells using immunoperoxidase technique and in the case of ovarian tumours, the testing of cellular sensitivity to cytotoxic drugs in cell cultures in vitro.

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