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Fine needle aspiration cytology, with immediate reporting, in the outpatient diagnosis of breast disease

THOMAS C B DEHN MS FRCS
Clinical Lecturer in Surgery
JANE CLARKE FRCS
Research Registrar
J MICHAEL DIXON MD FRCS FRCSEd
Registrar in Surgery
Departments of Surgery and Pathology, John Radcliffe Hospital, Oxford

THE LATE VINCENCO CRUCIOLI MD MRCPath*
Consultant Pathologist
MICHAEL J GREENALL ChM FRCS
Consultant Surgeon
THE LATE EMANOEL C G LEE MCh FRCS*
Consultant Surgeon

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Summary

One hundred and fifty one new patients attending a breast clinic over a 6 month period underwent fine needle aspiration cytology (FNAC), with immediate reporting of the smears in the clinic. Thirty nine smears (25.8%) were classified as unequivocally malignant, 10 (6.6%) as being suspicious of malignancy, 61 (40.3%) as benign and 41 (27.1%) were acellular. There were no false negative cytological diagnoses of breast cancer. Immediate reporting of results enabled the diagnosis to be discussed with the patient at the first attendance and allowed improved surgical management of both benign as well as malignant breast disease.

Introduction

Few centres in this country have adopted fine needle aspiration cytology (FNAC) for diagnosis of breast disease, largely because of doubts about whether this technique can achieve results comparable with closed biopsy methods *(1)* and because of concern over false positive diagnoses *(1,2)*. Those institutions that have routinely used FNAC have achieved high levels of diagnostic accuracy *(3–7)* but have not had the benefit of the immediate availability of the results in the outpatient clinic.

Only one UK centre has published a study of breast FNAC with immediate reporting *(8)*. The aim of the present study was to assess the impact of FNAC, reported in the clinic, on the management of patients with breast disease.

Patients and methods

Over a 6 month period, from May–November 1985, 151 patients (mean age 46.1, range 20–90 yrs) underwent FNAC with immediate reporting in the outpatient clinic. Breast lesions were assessed clinically as being definitely benign (B), suspicious of malignancy (S) or definitely malignant (M).

Indications for aspiration These were:

1 A solid discrete breast mass
2 The presence of a residual mass following breast cyst aspiration
3 Prominent breast nodularity.

Simple breast cysts were excluded from this study.

Technique of FNAC All but 5 aspirates were undertaken by one of 4 members of the surgical team. The technique used has been reported previously *(6)*. Smears were prepared and stained by the Diff-Quick method in a laboratory within the breast clinic, thus allowing immediate reporting. All smears were examined in the clinic by one pathologist (VC) who had no knowledge of the clinical assessment. Aspirates were graded as acellular, benign, suspicious of malignancy or unequivocally malignant. Residual material was placed in transport medium for preparation of further smears the following day, thus allowing a supplementary report to be issued if this differed from the outpatient cytological assessment.

Indications for biopsy Biopsies were undertaken:

1 In clinically benign lesions with suspicious cytology
2 In clinically suspicious lesions with acellular or suspicious cytology
3 In clinically malignant lesions with benign or suspicious cytology
4 Because of patient demand.

Infirm or very elderly patients with clinically malignant tumours and malignant cytology were not routinely biopsied but were treated with Tamoxifen. All patients who were not biopsied were seen on two further occasions for clinical review and were discharged only on resolution of symptoms.

Results

Of 151 breast FNAC smears, 39 (25.8%) were classified as unequivocally malignant, 10 (6.6%) as suspicious of malignancy, 61 (40.3%) as definitely benign and 41 (27.1%) were acellular.

*Mr E C G Lee died suddenly in January 1986, during the preparation of this manuscript. Dr V Crucioli died unexpectedly in August 1987.

Correspondence to: T C B Dehn, Nuffield Department of Surgery, John Radcliffe Hospital, Headington, Oxford OX3 9DU

TABLE I *Illustrates the FNAC gradings, biopsies and lesions found to be histologically malignant in 77 patients with clinical benign breast lesions*

FNAC grading	*n*	*Biopsy rate*	*Malignant histology*
Acellular	28	2	0
Benign	45	4	0
Suspicious	4*	3	1

* 1 patient refused biopsy and follow-up

CLINICALLY BENIGN LESIONS (Table I)

Seventy seven patients had clinically benign lesions. Six biopsies were undertaken because of patient demand and 3 because of suspicious cytology: in 1 of the latter patients a breast cancer was diagnosed following biopsy. None of the remaining patients had evidence of malignancy on clinical follow-up or mammography.

TABLE II *Illustrates the FNAC gradings, biopsies and lesions found to be histologically malignant in 33 patients with clinically suspicious breast lesions*

FNAC grading	*n*	*Biopsy rate*	*Malignant histology*
Acellular	7	7	1
Benign	13	7	1
Suspicious	5	5	4
Malignant	8	6	6

CLINICALLY SUSPICIOUS LESIONS (Table II)

Thirty three patients had clinically suspicious lesions. Twenty five biopsies were undertaken in this group. Of the 7 patients with acellular aspirates one was found to have a malignant tumour on biopsy (this patient had suspicious mammograms). Seven patients with benign cytology underwent biopsy and one was found to have an intraduct apocrine carcinoma: this was the only false negative case in this series. Six patients with benign cytology did not undergo biopsy. All these 6 patients had lesions which appeared to be benign on mammography (including 2 calcified fibroadenomata) and none has shown any evidence of malignancy on follow-up over 6 months.

All 5 patients with suspicious cytology underwent biopsy: 4 had histologically malignant lesions. Six of the 8 patients with malignant cytology underwent biopsy and malignancy was confirmed in all 6 patients on paraffin sections. The remaining 2 patients with malignant cytology were treated with Tamoxifen since their infirmity precluded biopsy.

CLINICALLY MALIGNANT LESIONS (Table III)

Forty one patients had clinically malignant lesions. All 6 patients with acellular aspirates underwent biopsy and all were shown to have malignant tumours. There were no malignant tumours amongst the 3 patients with benign cytology and in the one patient with suspicious cytology malignancy was confirmed on biopsy. Twenty patients with malignant cytology had this diagnosis confirmed on biopsy. Eleven patients in this group did not undergo biopsy on account of their advanced age (>80 years) or infirmity.

TABLE III *Illustrates the FNAC gradings, biopsies and histologically malignant lesions in 41 patients with clinically malignant breast lesions*

FNAC grading	*n*	*Biopsy rate*	*Malignant histology*
Acellular	6	6	6
Benign	3	3	0
Suspicious	1	1	1
Malignant	31	20	20

Table IV illustrates the rate of biopsy and malignancy compared to the cytological gradings. Seven of the 15 biopsies from patients with acellular aspirates were malignant: one of the 14 biopsies from 61 patients with benign cytology was malignant. Malignancy was confirmed histologically in 6 out of 9 cases with suspicious cytology and in all 26 cases with malignant cytology. Of the 41 acellular smears 34 (82%) were from benign lesions and 7 (17%) from malignant lesions.

TABLE IV *Illustrates the biopsies and histologically malignant lesions compared to the FNAC gradings in 151 patients*

FNAC grading	*n*	*Biopsy rate*	*Malignant histology*
Acellular	41	15	7
Benign	61	14	1
Suspicious	10*	9	6
Malignant	39	26	26

* 1 patient refused biopsy and follow-up

SUPPLEMENTARY REPORTS

In only one patient in this study was a supplementary report issued following further examination of the FNAC smears. This report was changed from benign to suspicious cytology. The patient refused to undergo either further follow-up or excisional biopsy.

Discussion

In common with other centres employing FNAC *(5–7)* we have experienced a learning curve in the predominantly operator-dependent technique of aspiration *(9)*. In the present study the rate of acellular smears compares favourably to the initial experiences reported by both the groups from Edinburgh *(6)* and Southampton *(7)*, both overall (27%) and when analysed according to whether the lesion was benign (35%) or malignant (13.2%).

In the present study, acellular smears were obtained from 6 of the 41 patients with clinically malignant breast masses. Three of these cases occurred within the first month of the introduction of FNAC and are considered to be attributable to the inexperience of the individual aspirators. In 2 cases the breast cancers were small, scirrhous tumours, a tumour from which it is recognised that a cellular aspirate may be difficult to obtain *(8,10)*. In one further patient repeated aspirates were too heavily blood-stained to enable a cytological diagnosis to be made.

It is well established that acellular aspirates are more frequently found in benign than in malignant breast lesions *(3,5,7,8)*. Gardecki *et al. (5)* reported a 44% incidence of unsatisfactory smears obtained from areas of breast nodularity. Areas of fibrocystic disease may contain few parenchymal cells *(7)* and, therefore, in cases of prominent breast nodularity, we now reserve FNAC in this group of patients either aged over 40 years or in whom there is clinical suspicion of malignancy. In view of the high occurrence of acellular aspirates from patients with breast nodularity, we now reserve FNAC in this group of patients either aged over 40 years or in whom there is clinical suspicion of malignancy. In contrast, benign discrete lesions are associated with a low rate of acellular smears *(8)* and, in our experience, knowledge of the

cytological characteristics of such lesions has resulted in a marked reduction in the number of excisional biopsies undertaken for benign breast lesions *(11)*.

An argument against the use of FNAC, without confirmatory histology, in the diagnosis of breast cancer is that a false positive report may result in a needless mastectomy *(1)*. In our series there were no false positive reports and only one false negative report, the latter being a case of cytological misinterpretation. In order to avoid false positive reports adherence to stringent cytological criteria is required to make a diagnosis of malignancy. This, in turn, will increase the proportion of reports classified as suspicious, a category that some have avoided *(1)*. We attempted to reduce this cytological category to a minimum (6.6%), but we believe that this category cannot be discarded if false positive reports are to be avoided. All patients with suspicious cytology should undergo a breast biopsy. The fact that 6 of our 9 patients with aspirates so graded were found to have histologically malignant lesions confirms the usefullness of this category.

Despite the increasing use of FNAC in breast clinics in this country only one centre has reported its experience with the immediate availability of results *(8)*. Delayed reporting may allow more time for the cytologist to study the smears but does not permit either a repeat aspiration to be undertaken or discussion of the definitive treatment with the patient at the initial clinic visit. The accuracy of immediate reporting of FNAC smears, in our hands, is confirmed by the fact that not only was only one report amended on inspection of further material but also the false positive and false negative reports for malignant disease were 0% and 2.5% respectively.

As a result of this study we believe that the management has improved of our patients with breast disease. Firstly, and in common with other UK centres which have employed FNAC *(6,7)*, we have largely abandoned the use of both Trucut® and frozen section biopsies for the diagnosis of breast cancer. Secondly, the immediate reporting of FNAC smears has enabled the diagnosis to be made, at the initial clinic visit, of both malignant and benign breast conditions. This enables immediate discussion of the treatment options to be undertaken with patients diagnosed as suffering from breast cancer. In addition, it may allay the anxiety of patients with benign conditions whom, previously, may have had to await until the histological result was available following excisional biopsy. Finally, FNAC has allowed us to reduce dramatically the number of biopsies performed in benign breast disease *(11)*. It should be remembered, however, that there are occasional false negative reports with breast cytology and accordingly, use of FNAC does not obviate the surgeon of his responsibility to undertake a biopsy should clinical doubt persist.

FNAC has proved reliable and cost-effective *(6–8)*. Moreover, the additional facility of immediate reporting of FNAC smears has not resulted in any reduction of the accuracy and reliability of this technique and has, we believe, effected a substantial improvement in our management of patients with breast disease. We therefore advocate the adoption of FNAC with immediate reporting to those managing breast clinics.

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