

FINE NEEDLE ASPIRATION IN BREAST LUMPS

by

ROBERT KERNOHAN, HUME LOGAN, JACOB WILLIS

The Breast Clinic, The Ulster Hospital, Dundonald, Belfast

and

Cytopathology Department, Royal Victoria Hospital, Belfast

THE clinical differentiation between benign and malignant breast lumps is fraught with danger. A small proportion of cases present with classical clinical findings but in the majority of cases it is essential to have a cytological or histological diagnosis before surgery is undertaken.

Fine needle aspiration (FNA) of solid tumours has been practised since 1930,¹ and has been used throughout the world. Its usefulness remains controversial, opinions ranging from total rejection to enthusiastic acceptance. In order to evaluate the technique we carried out 135 consecutive FNA and the results of this series are now presented.

MATERIALS AND METHODS

One hundred and thirty two women attending with breast lumps were subjected to FNA. Some had simultaneous Trucut needle biopsies (TCN) carried out and some went on to have excision biopsy or mastectomy. It was found that lumps smaller than 0.5 cm in diameter were unsuitable for aspiration due to difficulty in accurately locating the lump with the aspirating needle.

ASPIRATING TECHNIQUE

Although various devices have been designed to enable the syringe to be held single handed^{2, 3, 4} we have found the "braced thumb method" as described by Webb^{5, 6} to be satisfactory. The lump to be aspirated is steadied between the thumb and forefinger of the left hand while a 20 ml syringe with a No. 18 guage (green) needle is held in the right hand. The needle is introduced into the lesion while a strong negative suction is applied by withdrawing the plunger and bracing the thumb against the body of the syringe. Suction is then released, the needle moved to a different part of the lump and the procedure repeated. With fibrous lumps or those which have been previously aspirated, constant suction is obligatory. It is essential that suction is released before withdrawal, otherwise cells will be sucked into the body of the syringe and therefore lost. Local pressure is applied to the aspiration site to prevent bleeding.

The needle is then removed from the syringe and the plunger withdrawn to fill the syringe with air. After re-connecting the needle, the aspirated material is expressed on to a freshly polished glass slide and a smear made in the same manner as a blood smear. The prepared slides are fixed immediately in a solution of equal parts of 95 per cent ethyl alcohol and ether and subsequently stained by the Papanicolaou technique. All smears were examined and reported by one cytopathologist.

One hundred and thirty five FNA were performed on solid tumours in 132 patients. When the presence of malignant cells was demonstrated an excision or TCN biopsy was undertaken to confirm the diagnosis, before proceeding to mastectomy. In FNA where no malignant cells were seen, excision biopsies were carried out in the first 50 patients. Thereafter, depending on the degree of clinical suspicion, either excision biopsy was undertaken, or the patient was followed up for six months to establish that the lump was benign. In a number of cases TCN biopsies were taken simultaneously with FNA and will form the basis of a further report.

RESULTS

The results are detailed in Table I. Of a total of 135 FNA 102 (75.6 percent) were satisfactory and 33 unsatisfactory. In the 102 satisfactory aspirations 68 were reported as being benign. Forty of these had biopsies which were also benign (two lipomata, 25 with fibroadenosis and 13 fibroadenomata) and the remaining 28 were followed up and to date have shown no evidence of malignancy. Of the 33 aspirates considered to be malignant only one proved to be histologically benign, therefore there was only one false positive result. With regard to the 33 unsatisfactory reports, 23 of these had insufficient cells for a diagnosis, four consisted of red blood cells only, one contained no breast tissue, one showed active epithelial proliferation but was judged to be unreliable because the patient was pregnant and four were unsuitable due to cell artefact. Only two of these 33 patients with unsatisfactory FNA were ultimately shown to have carcinomas. This supports the view^{3, 4, 7} that unsatisfactory aspirations are more common in benign lesions. We did not repeat unsatisfactory aspirations but it is recognised^{4, 6} that satisfactory aspiration can often be obtained by repeating the procedure.

TABLE I
FNA diagnosis compared with final diagnosis

<i>FNA Diagnosis</i>		<i>Final Diagnosis</i>	
		<i>Benign</i>	<i>Malignant</i>
Unsatisfactory or failed aspirations	33	31	2
Benign	68	68	—
Suspicious	1	1	—
Malignant	33	1	32
TOTAL	135	101	34

DISCUSSION

Cancer of the breast still carries the highest mortality from malignant disease in women and the incidence is still rising.⁸ Prognosis is still thought to be improved by early diagnosis⁹ and therefore any method which contributes to this deserves due consideration. Recently more attention has been paid to the psychological complications which arise from breast disease. A non traumatic, simple, cheap and reliable method of making a definite diagnosis is important as many surgeons now

like to discuss the methods of treatment with the patient before carrying out a mastectomy or other major procedure. An excisional biopsy has three main disadvantages: (1) it requires a general anaesthetic; (2) the incision may affect the choice of the incision for definitive surgery; (3) many surgeons do not feel that frozen section examination of the biopsy should be followed by immediate definitive surgery. In the majority of cases FNA provides a rapid, relatively painless and safe procedure for diagnosis. Franzen and Zajicek³ performed over 3000 aspirations of breasts with no significant complications other than an occasional haematoma which resolved quickly and caused little discomfort. It has been suggested that dissemination of tumour along the track of the needle might occur, but experience does not confirm this fear.⁵ In an extensive series³ there was no tumour seeding along the needle tract and intensive investigations carried out by Robbins and colleagues¹⁰ registered the survival times of 1463 patients with mammary carcinoma submitted to radical surgery. They compared their survival rates in patients who had had FNA with those who did not, and they found that the two groups did not differ in their ten year survival rates.

A high number of unsatisfactory specimens is a common problem with FNA. In the present series satisfactory aspirations were obtained in 102 (75.6 percent) out of 135 FNA. It has been suggested that this could be improved by the cytopathologist examining the specimen while the patient is still at the clinic and if the specimen is unsatisfactory then it can be repeated immediately.⁴ This would be ideal but is not usually feasible. There was one false positive in our series but no false negative results were reported. The results from other series are reviewed in Table II. It can be seen that the incidence of false negative cytology results range from nil in our series to 18 percent in the series by Fentiman et al.¹¹ We feel that even in the light of our results, a negative cytology report can only be taken as a guide to the diagnosis of benign breast disease. It is our policy that any discrete lump which arouses clinical suspicion on the part of the surgeon or worry on the part of the patient should be removed even if the cytology report is negative. The incidence of false positives is much lower, being nil in five of the reports, 0.6 percent in Webb's series⁶ and 0.7 percent in our own series (one case). However, we also had one specimen labelled as "suspicious" but the clinical findings in the 26 year old patient suggested a diagnosis of fibroadenosis and this was confirmed on excisional biopsy.

TABLE II
Comparison of results of FNA of solid breast lumps in various series

<i>Author</i>	<i>No. of FNA</i>	<i>False Positive percent</i>	<i>False Negative percent</i>
Webb A. John ⁶	168	0.6	0.6
Meirion-Thomas J. ⁷	189	Nil	4
Fentiman Ian S. ¹¹	151	Nil	18
Rimsten A. ¹³	984	Nil	4
Gardeki T. I. M. ¹²	I 233	Nil	7.9
	II 211	Nil	Nil
Duguid H. L. ⁴	294	Nil	3.3
Present Series	135	0.7	Nil

Several authors^{3, 4, 12, 13} have graded their FNA cytology findings in terms of benign, atypical, suspicious and definitely malignant. In the present series the cytopathologist felt the specimens should be graded as either benign or malignant as this would be more beneficial to patient management but unfortunately it was necessary to label one specimen as suspicious.

In conclusion we have found that a high degree of accuracy in diagnosis of breast lumps can be achieved with FNA and in the present series there were no complications. Confidence in the technique has increased and provided that it is employed in conjunction with clinical judgement it is a cheap and virtually painless method of making a reliable diagnosis in the majority of cases. A diagnosis of carcinoma of the breast allows discussion of the treatment with the patient before major surgery. It also makes excisional biopsy with frozen section unnecessary and permits definitive surgery to be planned without compromising the position of the incision. Again, excisional biopsy has on occasion left us without tissue on which to perform oestrogen receptor analysis, a procedure which is now considered important not only for establishing prognosis but also for planning further treatment. We would therefore advocate that this technique plays an increasing role in the diagnosis and management of patients presenting with lumps in the breast.

SUMMARY

The technique of fine needle aspiration (FNA) of solid breast lumps is described. One hundred and thirty five FNA were performed in 132 women and 75.6 percent of these provided satisfactory slides for examination. There were no false negative results and one false positive. FNA was found to be of value in the diagnosis of benign and malignant breast lumps, enabling better counselling and planning of definitive surgery.

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REFERENCES

- 1 Stewart FW. The diagnosis of tumours by aspiration. *Am J Path* 1933; **18**: 801-805.
- 2 Franzen S, Giertz G, Zajicek J. Cytological diagnosis of prostatic tumours by transrectal aspiration biopsy. *Br J Urol* 1960; **32**: 193-196.
- 3 Franzen S, Zajicek J. Aspiration biopsy in diagnosis of palpable lesions of the breast. *Acta Radiol* 1968; **7**: 241-262.
- 4 Duguid HLD, Wood RAB, Irving AD, Preece PE, Cushchieri A. Needle aspiration of the breast with immediate reporting of material. *Br Med J* 1979; **2**: 185-187.
- 5 Webb AJ. A cytological study of mammary disease. *Ann Roy Coll Surg Engl* 1975; **56**: 181-191.
- 6 Webb AJ. The diagnostic cytology of breast carcinoma. *Br J Surg* 1970; **57**: 259-264.
- 7 Meirion-Thomas J, Fitzharris BM, Redding WH, et al. Clinical examination zeromammography and fine needle aspiration cytology in diagnosis of breast tumours. *Br Med J* 1978; **2**: 1139-1141.
- 8 Office of population censuses and surveys Eng and Wales 1978; DH1: 6.
- 9 British Breast Group. *Br Med J* 1975; **3**: 357-358.
- 10 Robbins GF, Brothers JH, Eberhart WF, Quan S. Is aspiration biopsy of breast cancer dangerous to the patient? *Cancer* 1954; **7**: 774-778.
- 11 Fentiman IS, Millis R, Hayward L. Value of needle biopsy in outpatient diagnosis of breast cancer. *Arch Surg* 1980; **115**: 652-653.
- 12 Gardecki TIM, Hogbin BM, Melchner DH, Smith RS. Aspiration cytology in the preoperative management of breast cancer. *Lancet* 1980; **3**: 790-792.
- 13 Rimsten A, Stenkvis B, Johanson H, Lindgren A. The diagnostic accuracy of palpation and fine needle biopsy and an evaluation of their combined use in the diagnosis of breast lesions. *Ann Surg* 1975; **182**: 1-8.