SENSITIVITY OF FINE NEEDLE ASPIRATION VS. CORE BIOPSY IN THE DIAGNOSIS OF PALPABLE AND CLINICAL SUSPICIOUS BREAST LESIONS

FARZANA MEMON, SAJIDA QURESHI, MUHAMMAD ZUBAIR, SUMAIRA BALOCH, M. SAEED QURAISHY
Department of Surgery, Unit IV, Dow University of Health Sciences & Civil Hospital, Karachi

ABSTRACT
Objective: *To evaluate the sensitivity of Core Biopsy (CB) in comparison to Fine Needle Aspiration Cytology (FNAC) for preoperative diagnosis of clinically palpable suspicious breast lesion.*
Study Design: *Prospective comparative study.*
Setting & Duration: *Surgical Unit-IV, Civil Hospital Karachi from January 2006 to December 2008.*
Methodology: *Fifty two female patients with palpable suspicious Breast lesion at Breast Clinic of Surgical Unit-IV underwent triple assessment including clinical, radiological and tissue diagnosis by performing FNAC and CB without image guidance.*
Results: *Fifty two patients with suspicious palpable breast lesion subjected to both FNAC and CB. FNAC confirmed carcinoma (C5) in 14 patients (26.9%) while suspicious for malignancy (C4) were reported in 21 patients (40.40%) atypia C3 in 7 patients (13.5%) and in one patient sample was inadequate (1.9%). Nine patients were reported benign that later turned out to be false negative (17.3%). Absolute sensitivity for FNAC was 26.9% while complete sensitivity was 80.71%. On core biopsy invasive carcinoma B5b was diagnosed in 38 patients (73.1%), B5a non invasive carcinoma in 6 patients (11.50%), suspicious for malignancy B4 in 7 patients (13.5%), benign but uncertain B3 in 1 patient (1.9%). Absolute sensitivity for core biopsy was 84.62% while complete sensitivity was 100%.*
Conclusion: *Core Biopsy is more sensitive than FNAC in preoperative diagnosis of palpable breast lesions. It also provides the information about tumor grade, tumor type, receptor status and helps in planning the Neoadjuvant treatment for advanced carcinoma of the breast.*

KEY WORDS: *Palpable Breast Lesion, Fine Needle Aspiration Cytology (FNAC), Core Biopsy (CB), Breast Cancer, Absolute Sensitivity Complete Sensitivity*

INTRODUCTION

Breast lump is the commonest symptom presenting at Breast Clinics. Triple assessment comprises of clinical examination, Breast Imaging (ultrasound and/or mammography), tissue diagnosis by FNAC (Fine Needle Aspiration Cytology) or CB (Core Biopsy) for preoperative diagnosis of Breast Cancer.

Correspondence:
Dr. Farzana Memon, Asst. Prof. of Surgery,
Unit IV, Dow University of Health Sciences &
Civil Hospital, Karachi.
Phones: 0333-2122139.
E-mail: farzana_dr@hotmail.com

Fine Needle Aspiration Cytology (FNAC) was initially used in triple assessment of Breast lesions in NHB Screening program in the UK. Core Biopsy (CB) was introduced in the assessment process of screened detected lesions in late 1990.[1] The use of FNAC is in decline and a number of screening units have abandoned it altogether.[2] In some series FNAC has been reported to have a false negative rate as low as 1.4%.[3] However there are other series where there have been diagnostic difficulties in interpretation of cytological preparation. Therefore a cytological diagnosis may not be possible for as many as 30% patients who undergo such examination.[4] Other disadvantages of FNAC includes that it does not allow distinction between in situ and invasive carcinoma[5] and grade of the tumor can not be assessed to plan the definitive treatment for early and advanced carcinoma of the breast. Core Biopsy of breast lesion provides histological diagnosis, grade of the

tumor, tumor type and receptor status. It provides all reliable information to guide the surgeon and oncologist for modern therapeutic strategy and the eventual use of Neoadjuvant Therapy.[6] The objective of our study was to compare the results of FNAC vs. Core Biopsy in terms of absolute and complete sensitivity done clinically for palpable suspicious breast lesions without image guidance. Reporting categories for FNAC and Core biopsy used in National Health Service Breast Screening Programme guideline[1] are:

METHODOLOGY

All patients presenting with suspicious Palpable Breast Lump in Breast Clinic of Surgical Unit IV of Civil Hospital Karachi between January 2006 to December 2008. All patients under went triple assessment including clinical examination, imagining (ultrasound/ mammography) and tissue diagnosis by Fine Needle Aspiration Cytology (FNAC) and core biopsy. FNAC and core biopsy were done by consultant surgeon in out patient setting in Breast Clinic, after patients approval and consent.

FNAC was performed without anesthesia after aseptic measure with 21 gauge needle fitted to 10ml syringe minimum of 2 smears were prepared on slides, fixed with absolute alcohol and sent for cytological assessment.

Core Biopsy was performed with trucut needle of 14 gauge and 100mm in size. After aseptic measures a 2% Lignocaine local anesthetic infiltrated over the lump small 2-3mm incision made with disposable scalpel to accommodate the tip of the trucut needle. Biopsy Specimen was obtained by means of four successive insertions with different angulations of needle in the core of lesion. The tissue was placed in 10% formalin, sent to histopathologist the results of both procedures were tabulated and absolute completed sensivity were calculated and compared .

Data was entered into Statistical Program of Social Sciences (SPSS ver. 11).

- Absolute sensitivity (Category 5) = the number of carcinomas diagnosed as category 5 on needle biopsy and expressed as a percentage of the total number of carcinomas undergoing needle biopsy.[1]
- Complete sensitivity (Caegory3/4/5) the number of carcinomas diagnosed at Categories 3,4 or 5 on needle biopsy expressed as a percentage of the total number of carcinomas.
- False negative rate = the number of false negative (Category 2 result expressed as a percentage of the total number of carcinomas undergoing needle biopsy.

RESULTS

The total number of patients was 52. Age of the patients ranged between 24-80 with mean age of 46.12 (±12.36). The size of lesion assessed clinically ranged between 2-13.5cm with the mean size of 5.33cm (±2.88).

Out of 52 patients FNAC confirmed carcinoma (C5) in 14 patients (26.9%), suspicious for malignancy (C4) were shown in 21 patients (40.4%), atypia C3 in 7 patients (13.5%), 9 patients were reported benign that was false negative (17.3%) and in 1 patient (1.9%) sample was inadequate.

On core biopsy in 52 patients, invasive carcinoma B5b was diagnosed in 38 patients (73.1%), noninvasive carcinoma B5a in 6 patients (11.5%), suspicious of malignancy B4 in 7 patients (13.5%) while benign but uncertain B3 reported in 1 patient (1.9%). The absolute sensitivity of FNAC (C5) was 26.92% while absolute sensitivity of core biopsy was 84.62%. The complete sensitivity for FNAC noted in this study was 80.71%

Table I. Reporting Categories for FNAC and Core Biopsy according to "NHSBSP Guideline"

FNAC		Core Biopsy	
C1	Inadequate	B1	Unsatisfactory/Normal tissue only
C2	Benign	B2	Benign
C3	Atypia probably benign potential	B3	Benign but uncertain malignant
C4	Suspicious of malignancy	B4	Susupicious of malignancy
C5	Malignant	B5a	Non invasive carcinoma
		B5b	Invasive carcinoma
		B5c	Cancer of non assesable invasiveness

while for core biopsy this was 100%.

DISCUSSION

Needle Core Biopsy has become a widely used technique for evaluating palpable / radiologically detected breast lesions. This technique has revolutionized the practice of preoperative diagnosis of beast lesions in both symptomatic and screen detected lesions.[7] An atypical Core Biopsy diagnosis (B3) would still seem more valuable clinically then an atypical FNA diagnosis (C3) because B3 Lesion on Core Biopsy carry highly variable risk of malignancy on subsequent excision.[8]

FNAC is cheaper and less invasive but compared to CB it does not provide all the information necessary for decision making in the modern management of Breast Cancer. The reported problems of FNAC[9] are inadequate specimen yield, low sensitivity, relatively poor performance in certain lesions such as invasive lobular Carcinoma, false positivity and inability to differentiate invasive from non invasive disease. It does not provide an assessment of grade and hormone receptors assay which are important for planning Neoadjuvant therapy. The above problems could be dealt to some extent by expert cytopathologist but such expertise is not available in every centre treating breast cancer.[10] These reasons have led to the introduction and gradual replacement of FNAC by core biopsy.

The size of lesions in our study were comparable with sizes reported in study conducted by Prlgrim S[1] and Bdour M.[11] Studies where FNAC and Core biopsy were taken from same palpable lesions and compared are few but most have found core biopsy to be more sensitive. The sensitivity for FNAC and Core Biopsy in different studies were 67% vs. 94%[1,12], 90% vs. 95%[13] and 90% vs. 97%.[11]

The highest reported complete sensitivity of 90% for FNA and for core biopsy is 99%.[1] Waqar[14] and Qaisar[15] have found CB 100% diagnostic while FNAC 89.3% diagnostic for Breast lesions.[15] The results of core biopsy in this study showed an absolute sensitivity of 84.62% while complete sensitivity was 100%. This is very close to the results reported in literature. The preferred values for Core Biopsy suggested by NHSBSP[16] and European Union[17] are greater then 80% and 90% for absolute and complete sensitivity respectively. The absolute sensitivity for FNAC in this study was very low i.e. 26.92% in comparison to complete sensitivity i.e. 85.71% which was close to reported in literature. In this study both FNAC and Core biopsy were done without image guidance which is not always necessary for successful CB and FNAC in relatively large Palpable lesions.[1,18] Bauke K[19] has reported Core Biopsy allows a true and conclusive preoperative diagnosis after an indeterminate FNA of Breast lesion than a repeat FNA.

CONCLUSION

Core Biopsy has potential benefits and is more sensitive then FNAC to give preoperative histological diagnosis tumor grade, receptor status and permits the eventual use of Neoadjuvant therapy for breast lesion.

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