ULTRASOUND-GUIDED CORE NEEDLE BIOPSY FOR BREAST CANCER

SYED QAISER HUSSAIN NAQVI, ABDUL RAZAQUE QAZI*, JAN MUHAMMAD MEMON*, ROSHAN ALI SOLANGI*, ANWAR ALI AKHUND, TABINDA TAQI
Department of Pathology, Nawabshah Medical College, Nawabshah
Department of Surgery, Nawabshah Medical College, Nawabshah*

ABSTRACT
Objective: To evaluate the efficacy of ultrasound-guided core needle biopsy (US-CNB) as a preoperative diagnostic modality for breast cancer.
Design & Duration: A prospective cross-sectional study from January 2004 to June 2007.
Setting: Departments of Pathology and Surgery (Unit III), Nawabshah Medical College, Nawabshah.
Patients: Females with solid and/or intermediate breast lesions visualized on ultrasonography.
Methodology: Apart from clinical work-up, all the above mentioned patients underwent ultrasound-guided core needle biopsy and excisional biopsy of their breast lesions. The histopathological diagnosis on ultrasound-guided core needle biopsy was then compared with the findings of the excisional biopsy.
Results: Out of the total 93 cases, 47(50.5%) had benign lesions on ultrasound; US-CNB showed 24 as fibroadenomata, four with chronic non-specific mastitis, five chronic suppurative mastitis, one tuberculosis, four fat necrosis, two lactational adenoma and seven cases with benign ductal hyperplasia without atypia. Nine (9.7%) cases showed suspicious abnormality on ultrasound; US-CNB revealed five cases with atypical ductal hyperplasia, one ductal carcinoma in situ and three invasive ductal carcinoma. Thirty seven (39.8%) cases were highly suggestive of malignancy on ultrasound; US-CNB showed 34 as invasive ductal carcinoma, two invasive lobular and one medullary carcinoma. Excisional biopsy confirmed the diagnosis of ultrasound-guided core needle biopsy in all cases except four; one case of chronic suppurative mastititis was diagnosed as that of tuberculosis and three cases of atypical ductal hyperplasia as invasive ductal carcinoma. Hence there was no false positive case, but four (4.3%) false negative cases. The sensitivity of the US-CNB was thus 100% and specificity 91.1%.
Conclusion: Ultrasound guided core needle biopsy is a satisfactory procedure for the histopathological diagnosis of breast lesions. Any unsatisfactory, suspicious or atypical change on US-CNB should be followed by an open biopsy.

KEYWORDS: Ultrasound Breast, Core Needle Biopsy, Carcinoma Breast

INTRODUCTION

A breast biopsy specimen must be handled and processed in such a way, so as to optimize the chances of arriving at an accurate diagnosis and providing useful information for treating the patient.1,2 The diagnosis of breast cancer is not an medical emergency; most cancers have been present for many years prior to detection. The survival time, even for advanced cancer, is usually measured in years.3 The histopathological diagnosis of breast cancer is mandatory before conducting surgery, although mammography and/or ultrasonography can provide a reasonably accurate diagnosis.4 Stereotactic procedures have refined the localization of breast lesions to a great degree. Large core needle biopsies have correctly identified from 85 to 90% of carcinomas.5

Percutaneous core needle biopsy (CNB) has become a standard practice for the pathologic evaluation of clinically occult breast lesions. This minimally invasive method of diagnosis provides the basis for further surgical treatment and planning, besides identifying non-malignant lesions where management is less clear.6-8

Correspondence:
Dr. Syed Qaiser Hussain Naqvi, Assistant Professor,
Dept. of Pathology, Nawabshah Medical College.
Phones: 0244-364774, 0300-3210687.
E-mail: qaisernaqvi@hotmail.com
Many studies have shown that needle biopsy prevents unwanted surgical procedures in patients with benign lesions\(^9,10\), allows better treatment planning and a higher likelihood of -ve margins for those with cancer\(^1-13\), and lower costs.\(^14\) Some of the smaller lesions may be totally removed by this procedure.\(^15\) Although a core biopsy is of significant value in accurately identifying and diagnosing the lesion, it reflects a sampling of a generally larger lesion.\(^16\)

The diagnosis of any breast lump cannot be relied on a single modality as none of the currently available tests is sufficiently sensitive and specific to make a definitive diagnosis.\(^17\) Hence it is important to have a multidisciplinary (triple) assessment, based on clinical, imaging (mammography/ultrasonography) and histocytological (fine needle aspiration cytology/core biopsy) examination.\(^18,19\) When the findings of all these three methods are similar, the cumulative level of diagnostic accuracy exceeds 99%.\(^17\) Keeping all the above facts in view, we conducted ultrasound-guided core needle biopsy to evaluate its usefulness as a preoperative diagnostic modality for breast cancer.

**PATIENTS & METHODS**

This study was conducted on 93 female patients who had ultrasonographically proven breast lumps, in the Departments of Pathology and Surgery (Unit III) of the Nawabshah Medical College and Hospital, Nawabshah during January 2004 to June 2007. Their ages ranged between 15-76 years; mean age being 46.2 years. Clinical work-up, including investigations, was carried out in all the cases. Ultrasound-guided core needle biopsy was performed in all these cases, the indication being solid and/or intermediate breast lesions; cases with cystic lesions were excluded from the study.

The procedure was performed under local anesthesia. After cleansing the site, the skin over the lump was incised with a small disposable scalpel for about 2-3 mm to accommodate the tip of the needle. The needle was then inserted under ultrasound guidance and specimen obtained; a single manoeuvre was sufficient in all cases. The specimen were next placed in 10% formalin, embedded in paraffin, cut into 4\(\mu\)m sections, stained with the haematoxylin and eosin stains, observed under microscope, and histopathological diagnosis made. The results were tabulated and finally compared with the findings of excisional biopsy specimen in all the cases.

**RESULTS**

Out of the total 93 patients, ultrasonography revealed benign lesions in 47(50.5%) and suspicious lesions in nine (9.7%) cases, while 37(39.8%) cases were diagnosed as highly suggestive of malignancy. The histopathological findings of these lesions on ultrasound-guided core needle biopsy and excisional biopsy are shown in Table I. Excisional biopsy confirmed the diagnosis of

| Table I. Comparison of Histopathology on Core Needle Biopsy and Excisional Biopsy (n-93) |
|---------------------------------------------|--------------------------------|-----------------|-----------------|
| Ultrasound Diagnosis | Histopathology | Ultrasound Guided Core Needle Biopsy | Excisional Biopsy | False -ve |
|---------------------------------------------|--------------------------------|-----------------|-----------------|
| Benign Lesion | Fibroadenoma | 24 | 24 | -- |
| 47 (50.5%) | Chronic Mastitis | 04 | 04 | -- |
| | Ch. Suppur. Mastitis | 05 | 04 | 01 |
| | Tuberculosis | 01 | 02 | -- |
| | Fat Necrosis | 04 | 04 | -- |
| | Lactational Adenoma | 02 | 02 | -- |
| | Ductal Hyperplasia | 07 | 07 | -- |
| Suspicious Lesion | Atypical " " | 05 | 02 | 03 |
| 9 (9.7%) | Ductal Ca. In-situ | 01 | 01 | -- |
| | Invasive Ductal Ca. | 03 | 06 | -- |
| Highly Suggestive of Malignancy 37 (39.8%) | Invasive Ductal Ca. | 34 | 34 | -- |
| | Invasive Lobular Ca. | 02 | 02 | -- |
| | Medullary Ca. | 01 | 01 | -- |
ultrasound-guided core needle biopsy in all cases except four; one case of chronic suppurative mastitis was diagnosed as that of tuberculosis and three cases of atypical ductal hyperplasia as invasive ductal carcinoma. Hence there was no false positive case, but four (4.3%) false negative cases. The sensitivity of the US-CNB was thus 100% and the specificity 91.1%. The procedure of ultrasound-guided core needle biopsy was completed within 4-6 mins. without any serious complication, only three cases developed small haematoma which resolved spontaneously.

**DISCUSSION**

The advantages of US-CNB include its simplicity, low cost, low morbidity, and the rapidity of obtaining an accurate diagnosis. The US-CNB has the advantage that it can be done as an outdoor procedure, can be processed with routine histopathological techniques, can differentiate between in-situ and invasive disease and can exclude the possibility of false positive results in benign lesions. It is also helpful in the tumour grading, and various immunohistochemical analysis before surgery. The US-CNB is not helpful in the case of cystic lesions.

Fine needle aspiration, core biopsy and placement of localization wires introduce a disruptive element into the breast that does tear the tissue and result in the dislodgement of cells into the mammary stroma. This in the case of an in-situ carcinoma can cause diagnostic difficulty because it can mimic microinvasive or true invasive cancer cells. The crushing artefact may impede the accurate assessment of changes. Another rare complication of core-needle biopsy is the formation of a pseudoaneurysm.

In the current study 4(4.3%) false-ve cases were diagnosed on US-CNB, but none false +ve. The accuracy in lesions which were highly suggestive of malignancy was 100%. The sensitivity for cancer was 100%, and specificity 91.1%, which is in agreement with other studies in different parts of the world.

**CONCLUSION**

The data in the current study shows that US-CNB is a useful procedure for histopathological diagnosis of breast lesions and any unsatisfactory, suboptimal, suspicious or atypical change on US-CNB should be followed by an open biopsy.

**REFERENCES**


