

COMPARISON BETWEEN FINE NEEDLE ASPIRATION CYTOLOGY AND TRU-CUT BIOPSY IN THE DIAGNOSIS OF BREAST CANCER

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ABSTRACT

Objective To compare the results of fine needle aspiration cytology (FNAC) and tru-cut biopsy in detecting breast cancer in suspicious breast lumps in outpatient setting. Furthermore, to evaluate the diagnostic usefulness of further histopathological details obtained with tru-cut biopsy, and its effect on preoperative planning of surgical treatment.

Patients and Methods A total of 175 women who presented to consultant breast surgeon from July 2006 to December 2007 with clinically suspicious breast lump at breast clinic in KHMC were included in this prospective study. After detailed history and physical examination, both FNAC and tru-cut biopsy were performed in an outpatient setting. surgery was done for patients diagnosed to have breast cancer. $P < 0.05$ was considered statistically significant.

Results The sensitivity of FNAC was 90%, specificity near 100%, while sensitivity of tru-cut biopsy was 97%, and specificity 100%. The findings of this study showed that tru-cut biopsy is superior to FNAC in confirming breast cancer in suspicious lumps, and it is able to give definite histology of the lesion, with low cost and low complication rate as only 2% developed minimal bruising.

Conclusions Tru-cut biopsy is more accurate than FNAC. Tru-cut biopsy was able to give histological diagnosis and results correlated 100% with final histopathology report, with further information about tumor type, grade, lymph vascular invasion, and receptors status. It also permitted the eventual use of preoperative adjuvant therapy.

Key words Breast cancer, Breast lumps, Fine needle aspiration cytology, Tru-cut biopsy.

INTRODUCTION:

Breast lump is the most common presenting symptom to breast clinic. The sensitivity and specificity of fine needle aspiration cytology (FNAC) and tru-cut biopsy as a diagnostic

tool of breast cancer is actually a controversial subject of discussion. Both procedures are used as screening test in the handling of suspicious lesions of breast cancer. Despite the wide use of fine-needle aspiration cytology for palpable breast masses, it has not achieved improvement in the pre-surgical decision-making and management process by both the surgeon and the oncologist.¹

The development in patient education and screening programs have permitted a marked increase in the number

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of tumors detected, thereby increasing the use of FNAC procedure.² However many surgeons are reluctant to accept FNAC reports as basis for definitive diagnosis.³ FNAC reports still have percentage of uncertainty, also lack important information about the histopathological type, grade, receptors, and intrinsic behavior of the tumor. All of these information are of great importance for correct preoperative evaluation by both surgeon and oncologist.⁴ The tru-cut biopsy of palpable breast lesions based on histological study of tissue specimens can provide all the reliable information to guide the surgeon and the oncologist for ideal modern therapeutic strategy in surgical decision making.⁵ It permits the eventual use of neoadjuvant therapy.⁴ This study was undertaken to compare the results of FNAC and tru-cut biopsy in detection of breast lesion pathology.

PATIENTS AND METHODS:

A total of 175 women who presented to consultant breast surgeon from July 2006 to December 2007 with clinically suspicious breast lump at breast clinic in KHMC were included in this study. Triple assessment approach: clinical, radiological and histopathological done on these patients. After detailed history, physical examination, and mammography, both FNAC and tru-cut biopsy were performed in an outpatient setting. FNAC was performed by the histopathologist while tru-cut biopsy was performed by experienced consultant breast surgeon.

The core biopsy was performed by using a Tru-cut gun with an 18-gauge needle. After manual localization and immobilization of the lesion, under complete aseptic technique a 2% lignocaine infiltrating anesthetic was administered, and the skin incision performed. A biopsy specimen was obtained by means of four successive insertions with different angulations of the needle into the core of the lesion. The quantity and quality of the material obtained was judged after immediate immersion of the specimen in fixative, and then specimen was sent to histopathology department.

After evaluation of results by a team composed of a consultant breast surgeon, oncologist, radiologist, and a pathologist, patients diagnosed to have breast cancer were presented with the advantages and disadvantages of each treatment and subsequently decided on the definite therapeutic treatment. Surgical procedures utilized were modified radical mastectomy and wide local excision. Neoadjuvant chemotherapy was used for down staging of locally advanced inoperable tumors. The FNAC and tru-cut biopsy reports were compared with the final histopathology report obtained after surgery.

RESULTS :

Out of a total of 175 patients who presented with suspicious breast lump, 72 patients had carcinoma of the breast. The patients' ranged in age from 30 years to 73 years. The mean size of the breast lump was 3.8 cm in diameter with a range

of 1.5 cm to 12 cm. FNAC confirmed the diagnosis of breast carcinoma in 65 patients, the remaining 7 patients required further confirmation. There were no false positive results, with sensitivity 90% and specificity 100%.

Tru-cut biopsy confirmed the diagnosis of breast carcinoma in 70 patients, the remaining two patients required excisional biopsy for confirmation. There were no false positive results, with sensitivity 97% and specificity 100%. It also gave the definitive histological type and grade which correlated with the final histopathology report in 69 out of the 70 patients. Other important information, including multicentricity and the immunohistochemistry of the tumor which enabled us to use neoadjuvant therapy for down-staging of advanced tumors. There were no remarkable complications apart from minimal bruising in 2% of patients.

DISCUSSION:

Various studies have been done to determine the efficacy and usefulness of both FNAC and tru-cut biopsy; and the results vary. FNAC has been found to have a sensitivity ranging from 84% to 97.5% and a specificity of more than 99% to 100%. Tru-cut biopsy was reported to have a sensitivity of around 90% and a specificity 100%. However, various authors have differing opinions on which method is better and there is no consensus in their recommendations.⁶ Masood¹ and Smith⁷ used surgical biopsy to confirm cytologically negative and suspicious cases and directly operate only on those cases with positive cytologic diagnosis. On the contrary, Ciatto⁸ required histological confirmation for suspicious and positive aspirations and did not treat either negative cases or eventual false negatives.

The ideal approach for women with suspicious breast lump is the triple assessment approach including clinical, cytology, and mammography,⁹ but this assessment is not sufficient for decision of treatment,¹⁰ because FNAC reports still have percentage of uncertainty, also lack important information about the histopathological type, grade, receptors, and intrinsic behavior of the tumor. All of these information are of great importance for correct preoperative evaluation by both surgeon and oncologist.⁴

The sensitivity of the mammographic examination was very poor. Mammography was judged reliable in 50% of lesions larger than 2 cm, while for smaller lesions (up to 1 cm), the percentage of positive result decreased to 35%. This is probably due both to the diverse skill of the radiologist and to the heterogeneity of mammographic instruments. Many studies confirmed the usefulness of a systematic use of core biopsy for diagnosis of breast cancer, even when good quality clinical, radiological, and histological examinations together are undertaken.¹¹

The tru-cut biopsy of palpable breast lesions based on histological study of tissue specimens can provide all the reliable information. Core biopsy permits a preoperative

knowledge of the histological type and prognostic parameters (receptor status, proliferative activity, ploidy, and expression of oncogenes and antioncogenes such as c-erbB-2 and p53), so tru-cut biopsy will guide the surgeon and the oncologist for ideal modern therapeutic strategy in surgical decision making.^{5,10} It also permits the eventual use of neoadjuvant therapy.⁴ The sensitivity, specificity, and diagnostic efficacy obtained in our study by tru-cut biopsy were comparable to those obtained with FNAC and to those reported in literature. The high efficacy of core biopsy obtained in our study of palpable lesions, in addition to its simplicity and safety, might also offer a new management strategy for patients with nonpalpable lesions with the use of ultrasound-guided core biopsy. With ultrasound-guided techniques,¹² it can be considered a safe alternative both to lumpectomy and intraoperative biopsy, which should be avoided in nonpalpable lesions. The core biopsy was well tolerated by patients, easy to perform, relatively inexpensive and suitable for use in outpatient clinics.¹⁰

CONCLUSIONS

Tru-cut biopsy is more accurate than FNAC. Tru-cut biopsy was able to give histological diagnosis and results correlated 100% with final histopathology report, with further information about tumor type, grade, lymph vascular invasion, and receptors status. It also permits the eventual use of preoperative adjuvant therapy.

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