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Diagnostic value of touch imprint cytology of trucut biopsy specimen of breast lumps in women of age 15-75 years presenting to a tertiary care centre

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ABSTRACT A hospital based descriptive study to find the diagnostic value of touch imprint cytology oftrucut biopsy specimen of breast lumps in women of age 15-75 years presenting with a breast lump to Trivandrum Medical College, a tertiary care referral hospital.Touch imprint cytology was taken from trucut biopsy specimen of 60 females as a part of the study. 6 slides were discarded as the cellularity of the prepared slides was inadequate and or the tru-cut biopsy result was inconclusive. Of the 54 slides of adequate cellularity analysed, TIC correctly reported 42/46 malignancies (36 were reported as malignancy and 6 as suspicious for malignancy) and 7/8 benign lesions. Those reports coming as suspicious for malignancy/malignancy were taken as positive and the rest coming as benign as negative. Compared with trucut biopsy result, the touch imprint cytology showed a sensitivity of 91%, specificity of 88%, Positive predictive value of 98%, negative predictive value of 64% and an overall accuracy of 91%. TIC of trucutbiopsy specimens of the breast is a valid option for providing diagnosis without delay for a histological procedure, assuming good quality of specimen.

KEYWORDS : - Touch imprint cytology; Breast cancer diagnosis; Trucut biopsy; Core needle biopsy.

Introduction

Carcinoma breast is the 2nd most common malignancy in women in the world[1] & is the most common malignancy in women in India with 1, 44,937 new cases being reported in the year 2014. The most common presentation of carcinoma breast is a new onset lump in the breast[3]. Although an accurate history and clinical examination are important steps in the diagnosis of diseases of the breast, there are a number of investigations which can aid or are necessary for a definite diagnosis. The standard recommendation for diagnosis of a breast lump is by a combination of clinical examination, radiological imaging and tissue sampling, the so called 'triple assessment'. Properly done, triple assessment has a positive predictive value exceeding 99.9 %.

Tissue sampling is mostly by means of a FNAC or a trucut biopsy. Trucut biopsy is able to give histological diagnosis and results correlate almost 100% with final histopathology report, with further information about tumour type, grade, lympho vascular invasion, and receptors status. It also permits the eventual use of preoperative adjuvant therapy. However, a trucut biopsy report takes approximately 2 weeks in our institution which can be agonising for the patient and relatives with the fear of malignancy looming large in their minds. My study aims to assess the feasibility of an imprint smear of the trucut biopsy specimen in diagnosing breast lumps accurately which combines the time advantage of cytology and accuracy of trucut biopsy enabling the institution of treatment without delay.

Touch imprint cytology of core needle biopsy specimens: a Useful method for immediate reporting of symptomatic breast lesions a study byKlevesath MB, Godwin RJ, Bannon R, Munthall L, this study was to determine the diagnostic value and accuracy of touch imprint cytology (TIC) of core needle biopsy (CNB) specimens in predicting the final benign or malignant histology in patients presenting with symptomatic breast lesions. The result revealed that TIC accurately predicted the final histology in 96.7% of cases, with a sensitivity of 96.2% and a specificity of 100%.

A new onset lump in the breast is the commonest clinical presentation of carcinoma breast and the diagnosis of the same is based on the so called 'Triple Assessment' which is a combination of clinical examination, breast imaging and tissue diagnosis. There is an increasing shift in the choice of tissue diagnosis from a FNAC to a tru-cut biopsy. A trucut biopsy enables the study of tissue architecture, receptor status (ER/PR) etc.

TIC of the trucut biopsy specimen is a novel technique which aids in the rapid diagnosis of breast lumps from the trucut biopsy specimen by cytological analysis. It does not add any morbidity to the patient as it does not require any additional procedure on the patient, at the same time preserving the core tissue for histopathological examination and ER/PR/Her2 neu receptor status assessment at a minimal cost.

Materials and methods

A Hospital based descriptive study was conducted at Department of General Surgery, Government Medical College Hospital, Thiruvananthapuram for a period of one year. Women in the age group 15-75 years presenting with a breast lump and undergoing trucut biopsy for the same in the department of general surgery during the study period.Women in the age group 15-75 years presenting with a breast lump and undergoing trucut biopsy for the same in the department of general surgery during the study period who gives consent to be part of the study. Patients who do not give consent will be excluded. Inconclusive trucut biopsy or TIC results will be excluded from the study.All consecutive patients satisfying the eligibility criteria will be enrolled in the sample. The sample size was 60.Collected data was entered in MS Excel and analysed in SPSS ver. 20 to find the sensitivity, specificity, positive predictive value, negative predictive value and the accuracy.

Technical details:

The area around the intended trucut biopsy site and the needle track were anaesthetised with 0.5% lignocaine with adrenaline and the area painted with povidone iodine. 14 gauge tru-cut needleswere introduced into the lump after making a small stab incision on the skin and the tru-cut gun fired. The tissue core obtained in the needle was pressed on to a glass slide and transferred immediately to a fixative solution containing isopropyl alcohol and later to cytopathology lab for analysis. The tru-cut biopsy specimen was transferred to formalin solution and send for routine histopathological examination.

Results

a. Sample characteristics

The mean age of the sample population studied was 60 years and the maximum number of malignancies was found in the 65-75 year age group. 9 of the study subjects were pre-menopausal and the rest (45) were post-menopausal. 20 % of the study population was found to be hypertensive while 22% was found to be diabetic. Among the 51 subjects with malignancy, 47 do not give any history of OCP use and only 4 subjects gave the history of OCP use. The average number of children in both the benign as well as the malignancy group was 2.

b. Trucut biopsy results

Table 1: Frequency and percentage distribution of cases according to trucut biopsy results

Results	No. of cases	Percentage
Benign	8	15
Malignant	46	85

Table 1 shows that, among the 54 trucut biopsy specimen analysed, an overwhelming 46 (85%)were reported as malignancy and the rest 8 (15%) as benign.

c. Touch imprint cytology vstrucut biopsy correlation

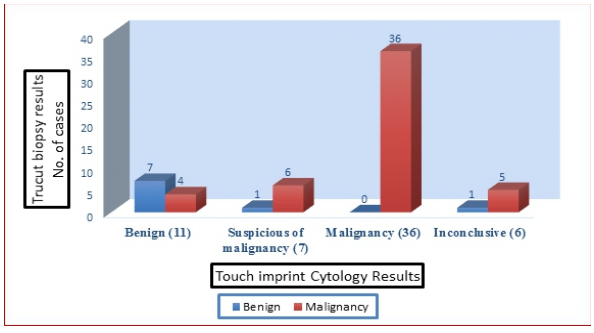

Figure 1: Correlation of TIC versus trucut biopsy

Of the 11 slides reported as benign by TIC, 7 turned out to be benign and 4 as malignant according to trucut biopsy. Of the 7 slides reported as suspicious by TIC, 1 turned out to be benign an 6 were reported as malignant by trucut biopsy. All the 36 cases reported as malignancy by TIC were reported as malignancy by trucut biopsy. The 6 slides whose TIC were inconclusive were excluded from the study.

For statistical analysis, those TIC reports which were reported either as suspicious for malignancy or malignancy was considered as positive and the rest considered negative. TIC correctly predicted the final trucut biopsy HPR in 42 of the 46 malignancies (91%)but falsely reported 4 malignancies as benign (9%). It also falsely reported 1 benign slide as malignancy. Touch imprint cytology of the trucut biopsy specimen when compared with the trucut biopsy report showed a sensitivity of 91.3 %, a specificity of 87.5 %, a positive predictive value of 97.6 %, a negative predictive value of 73.5 % and an overall accuracy of90.7 %.

Discussion

Carcinoma breast is the second most common malignancy affecting women in India and is the leading cause of cancer related death. It has been proved by various studies that early diagnosis of carcinoma breast favourably affects the prognosis. Among the cases studied, a very high percentage turned out to be malignant, which is possibly due to our institution being a tertiary referral hospital which predominantly receives patients who are already diagnosed as carcinoma breast by FNAC from the periphery. Also many cases are referred as locally advanced malignancy requiring neoadjuvant chemo/Radiotherapy.

Touch imprint cytology if the trucut biopsy specimen as a diagnostic investigation in breast lumps has shown a sensitivity of 91.3 %, a specificity of 87.5 %, a positive predictive value of 97.6 %, a negative predictive value of 73.5 % and an overall accuracy of90.7 %.

Touch imprint cytology of the trucut biopsy specimen is a fast and reliable method for the early diagnosis of carcinoma breast in the setting of a tertiary care hospital setting. Touch imprint cytology of trucut biopsy specimen of breast lumps is a reliable and quick method for the diagnosis of breast lumps. This is especially significant in the setting where the patients undergo trucutbiopsy as the primary modality for tissue diagnosis in suspected carcinoma breast cases which may need neoadjuvant chemo/radiotherapy as per clinical stage.

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