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DIAGNOSTIC UTILITY OF CORE NEEDLE BIOPSY VERSUS FINE NEEDLE ASPIRATION CYTOLOGY IN SMALL BREAST LUMPS PERFORMED BY MEDICAL OFFICERS

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INTRODUCTION

The breast is an accessory organ of the female reproductive system. Its main function is to produce and secrete milk for breastfeeding of the young (World Health Organization 2009). It also plays a role in human sexuality. Notwithstanding, the breast is host to several diseases ranging from infections to benign fibroadenosis and breast cancers. Common breast symptoms for which women seek healthcare advice are palpable breast lumps, mastalgia and nipple discharge[1]. Breast cancer is the most common cancer among women in Malaysia (34.1% of all cancers) and 7593 women had breast cancer in 2018[2]. Hence breast lumps must be diagnosed accurately and quickly to facilitate treatment. Triple assessment in a breast lump is a hospital-based assessment wherein the final step is the attainment of a pathological diagnosis. This provides an accurate diagnosis in the shortest time to allow for definitive management of breast lesions[3]. Breast biopsies are often performed by junior doctors in busy government-owned surgical clinics. In most instances, the palpable lumps are biopsied without the usage of ultrasound. This posed an additional challenge when dealing with small lesions. We assessed the diagnostic utility of freehand CNB (core needle biopsy) vs FNAC (fine needle aspiration cytology) in diagnosing and excluding malignancy in small breast lumps performed by junior doctors.

MATERIALS AND METHODS

This retrospective cross-sectional study included patients who had either undergone a CNB or FNAC from January 2015 until December 2022, at Hospital Ampang, Malaysia. The lump must be palpable with the largest dimension of 2.5cm upon radiological assessment. The diagnostic utility i.e. sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy for CNB and FNAC was calculated, taking the histopathological (HPE) examination of the surgical specimen as the final diagnosis (or in non-operative cases, at least 2 years of follow-up to determine nature of the breast lesion. All the analysis was conducted using SPSS version 29.0 and with a 95% confidence interval.
 This research was done taking into account procedures performed only by medical officers. This specific group of doctors are registered medical practitioners working within a specialty unit (in this case, the Department of General Surgery and the Department of Pathology). They do not (yet) possess a specialist degree. However, they are trained and privileged to perform the procedures.

RESULTS

	CNB (95% CI)	FNAC (95% CI)
Sensitivity	91.7 (73 to 99)	88.9 (51.8 to 99.7)
Specificity	100 (88 to 100)	97.5 (91.2 to 99.7)
PPV	100 (84.6 to 100)	80.0 (50 to 94.1)
NPV	93.6 (79.3 to 98.2)	98.7 (92.5 to 99.8)
Diagnostic accuracy	96.2 (87 to 99.5)	96.6 (90.5 to 99.3)

Table 1: Diagnostic Utility Indices (values in percentages)
CI: confidence interval, PPV: positive predictive value, NPV: negative predictive value

A total of 170 patients were included in the study, with the CNB group consisted of 56 patients and 114 in the FNAC group. As the study was focused on small palpable breast lumps, the lump size encountered ranged from a minimum size of 0.3 cm to a maximum of 2.5 cm with an average size of 1.66 cm (SD 0.59). Sample yield was insufficient or unsatisfactory in 25 out of 114 FNACs. Only 3 core needle biopsies yielded non-diagnostic material. The inadequacy rate is 21.9% for the FNAC arm as opposed to 5.4% for CNB. There were no reported complications in the FNAC group while 1 patient (complication rate of 1.8%) developed an infection after a core needle biopsy procedure.

DISCUSSION

CNB exhibited a higher sensitivity, specificity, positive predictive value and diagnostic accuracy than FNAC when performed by junior doctors. Additionally, CNB has a lower inadequacy rate, thereby reducing the time to diagnosis and treatment of breast lesions. Various studies have been done comparing and contrasting between FNAC and CNB. However, there is a paucity of studies which standardized the procedures performed to a single operator or a cohort of doctors. Regardless, the results of our research is comparable to these studies. Perhaps we could attribute this to the relative simplicity of performing these minimally invasive procedures and short learning curve required to master this skill. So long as the lump is palpable, the operator is able to fix the lump between the fingers to determine the area for puncture. In the setting of Malaysian public hospitals, there is a ready pool of medical officers who can perform CNB in the out-patient surgical clinic. Thus, the waiting time to diagnosis can be reduced, thereby allowing for a more wholesome treatment of breast lumps. By "rationing" or careful selection of patients for an image-guide biopsy, one can hope that those patients with non-palpable, deep-seated lumps will not have to wait long for a biopsy under them.

CONCLUSION

CNB is a useful diagnostic tool even when performed freehand by junior doctors for small breast lumps, provided that the breast lump is clinically palpable. The authors believe that this will lead to a quicker and more accurate diagnosis of malignant breast lumps, thereby improving the clinical outcome of breast cancer treatment

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