Fine Needle Aspiration Cytology Of Palpable Breast Lumps In Patients Attending In Pathology Department Of MGM Medical College, Jamshedpur From April 17- April 2018.

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I. Introduction

All breast lesions are not malignant, and all the benign lesions do not progress to cancer; however the accuracy of diagnosis can be increased by a combination of preoperative tests (like physical examination, mammography, fine-needle aspiration cytology, and core needle biopsy). These modalities are more accurate, reliable, and acceptable when compared with a single adopted diagnostic procedure despite of having their own technical limitations.

“As fine-needle aspiration (FNA) has become a critical component in the investigation of palpable breast masses; false-negative diagnoses have become a major concern, prompting re-evaluation of the definition of specimen adequacy. Although cytopathologists agree that a number of parameters relate to the adequacy of an FNA specimen, there is no consensus on the role of epithelial cell quantitation in the determination of an adequate FNA. To better understand the significance of epithelial cellularity, false-negative FNA samples from palpable breast lesions were reviewed”

It is considered a successful and less complicated procedure with excellent results; however the main factors influencing success should be considered before its procedure to increase its accuracy and these are “the aspirator, the small size of many cancers, and the occult nature of the lesions seen only on mammography.

Fine-needle aspiration cytology (FNAC) is widely used in India as a reliable, rapid, cost-effective, complication free, and an accurate diagnostic modality for the evaluation or management of breast lumps. A study was conducted to see the usefulness of fine-needle aspiration (FNA) in screening of palpable breast masses at the Department of Pathology, MGM Medical College, Jamshedpur (Jharkhand).

II. Material and Method

Total 360 cases of FNAC breast in 1 year duration, April 17 - April 2018 were done. Proper consent form and proper history was included in Performa.

A written consent was taken before performing the FNAC with 10 ml disposable syringe and 22 gauge needle. The slide was prepared and was fixed in 95 % methanol. Papanicoloou and Hematoxylin and Eosin (H & E) were done.

III. Result

Total number of 360 cases of Fine Needle Aspiration Cytology of Palpable Breast Lumps were reported at Pathology Department of MGM Medical College between April 17 – April 18. Most of the cases were between 16 yrs to 62 yrs, with a mean age group of 36 years. The results observed were as follows.

1) Among the type of lesion fibro adenoma showed the highest above about 75 % of incidence (270 cases)
2) Duct carcinoma breast in 8 % ( 30 cases),
3) Fibro cystic diseases of breast 9 % ( 33 cases)
4) Breast abscess 4 % ( 15 cases)

Rest 12 cases of were insignificant comprising of Lipoma Cyste or fluid aspirate.

Highest number of fibroadenoma was the age group of 20- 34 yrs of age.

Maximum carcinoma were between 40- 48 yrs of age.

Inflammatory reason was maximum seen in 25- 32 yrs

Fine-needle aspiration cytology is widely used in the diagnosis of breast cancer because it is an excellent, safe, and cost-effective diagnostic procedure. One can get on site immediate report with minimal cost
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using inexpensive equipments and a simple technique. The most significant advantage of FNAC is the high
degree of accuracy, rapid results, and a less invasive procedure than a tissue biopsy. FNAC of the breast can
reduce the number of open breast biopsies.

The frequency of inadequate cases are variable is different studies ranging from 0 to 57.2% depending
on various factors. The main causes for inadequate smears may be due to either lack of technical experience in
performing FNA, preparation, and fixation of smears. FNA of ill-defined masses like or lesions with
hyalinization and deeply located lumps may also be contributed to the inconclusive diagnosis.

Many inflammatory breast lesions create confusion as these are presented as a palpable mass.
“Mammographic, sonographic, and magnetic resonance imaging findings may not always distinguish some of
the benign lesions like duct ectasia, fat necrosis from a malignant lesion.” Fine-needle aspiration (FNA) is a
well-accepted diagnostic modality and procedure for the diagnosis of inflammatory swellings of breasts. We are
using this technique in such lesions, and results are variably accepted by our consultants and clinicians with
varying degrees of acceptance rates, accuracy, and results. Fine-needle aspiration is the most accurate diagnostic
modality for these lesions and cell blocks accentuate the reliability of the diagnosis in these benign
inflammatory and curable lesions without requirement of excision biopsy or other second-line investigations. In
this study, these were reported as benign inflammatory diseases and their histopathologies was followed and
were further categorized into different lesions. Cell blocks were prepared after making the required smears and
were processed for histopathology.

There were 85 (20%) cases of benign inflammatory lesions, and the majority of these were of acute and
chronic mastitis. “Granulomatous mastitis is a rare chronic inflammatory breast lesion that mimics carcinoma
clinically and radiologically.” There were 2 (2.3%) cases of tuberculosis; definitive diagnosis of the
tuberculosis mastitis was based on identification of typical histological features under microscopy and detection
of tubercle bacilli on Ziehl-Neelsen stain. There were 8 (9%) patients of duct ectasia whose histological
diagnosis was based on observing dilatation of major ducts which contained eosinophilic granular secretions and
foamy histiocytes both within the duct epithelium and in the lumen. Two cases of fat necrosis were also reported
on histopathology, characterized by “anucleated fat cells surrounded by histiocytic giant cells and foamy
macrophages”. Our findings are consistent with Nemenqani et al. that primary tuberculous mastitis is very rare in
India.

FNAC has some pitfalls in the diagnosis of Fibrocystic disease (FCD), adenosis, epithelial hyperplasia
with or without atypia, apocrine metaplasia, radial scar, and papilloma. “Fibroadenoma and these benign lesions
are more common in our setup. Various types of adenosis have also been described, of which sclerosing
adenosis and microglandular adenosis merit detailed description and most of these lesions mimic malignant
lesions.”

In this study, 338 FNA aspirations were correlated with histopathology to evaluate the diagnostic
sensitivity, specificity, and accuracy of this diagnostic modality. Among these lesions 171 (40%) were benign
proliferative lesions. In our center, we further categorized these lesions into three main groups; namely
fibroadenoma, fibrocystic disease, and benign proliferative diseases. The spindle cell lesions were diagnosed as
benign Phyllodes on cytology reports. These results were confirmed by histopathology from the cell blocks and
trucut biopsies. In our study, no malignancy was seen while few discrepancies were seen in making final
categories like out of 70 FNAC diagnosed FA, there were 60, 6,3, and 1 FA, FCD (When there were mixture of
cysts, fibrosis, and proliferating ductal epithelium), FAN (overgrowth of both fibrous stroma, and of epithelial
elements, i.e., ducts and lobules, in differing proportions), and benign Phyllodes on histopathology. From 90
FCD, there were 70 FCD on histopathology while other were 10, 5, 3, 1, and 1 cases of FA, FAN, florid
epithelial hyperplasia (FEH), atypical epithelial hyperplasia (AEH), and benign Phyllodes, respectively.

In our experience, FNAC results are more reliable regarding malignant lesions; however the category of
“Suspicious for Malignant Lesions” needs histopathological evaluation before performing surgical measures.
Self-assessment, mammography, and trucut biopsy may help in the accuracy of these lesions.

It is widely accepted that FNA is a less traumatic and easy technique than core needle biopsy because
we repeated the FNAC in case of inadequate smears without any delay, difficulty, trauma, and getting highly
accurate results. This statement is not applicable for open biopsy as it is a time consuming and cumbersome
technique which requires fixation, processings, staining and so forth. It is also expensive procedure costing Rs
700 (9.5 USD) as compared to Rs 200 (2.5 USD) for each FNA while it is also expensive in advanced countries.
In a study Rubin et al. has mentioned a saving of 1000S with this cost effective procedures [4]. In our study the
accuracy of FNA aspiration was increased by repeating the process within 24 hours and was found to be
significant (). There were many reasons for inadequate smears like size, type of lesions, experience of the
technical staff, and cooperation of patients in our study.

We have a proper and permanent FNAC modality room, onsite service, technical trained staff, expert
consultants, and a large number of postgraduate students available for FNA service. We provide 90% free
services; however, our charges are 1.2 USD for the affording cases. We have direct interaction with the
clinicians, patients, and our laboratory technical staff. In our study, no false negative cases were reported when compared with histopathology.

Only four cases were observed as being false positives (1.7%). False positives were interpreted as “suspicious for malignancy” that were later on reported as benign proliferative lesions on histopathology. All benign and malignant reported aspirates showed 100% accuracy. In this study the sensitivity was 100%, and the specificity was only 98% because of false positives when compared with the histological reports.

There is a wide range of false results regarding the credibility of FNAC. The rate of false negatives, false positives varied from 0% to 10% in various studies. Our results are consistent with our previous study and other studies in India and other areas. “The overall results in our previous study for sensitivity, specificity, accuracy, PPV, and NPV were 97%, 100%, 97%, 100%, and 87%, respectively”. The reasons for such a large range of variable results are multifactorial and the main factors being the small number of cases of FNA published, lack of onsite service, and coordination between surgeons, radiologists and pathologists.

IV. Conclusion

The cytological examination of breast lesions prior to surgical treatment serves as a rapid, economical, and valuable diagnostic tool. Adhering to the principle of “Triple test,” and acquisition of technical, observational, and interpretative skills will further enhance the diagnostic accuracy of proliferative conditions with atypia or suspicious lesions of breast

Bibliography