



PALPABLE BREAST LUMPS: FINE NEEDLE ASPIRATION CYTOLOGY VERSUS HISTOPATHOLOGY

Dr Praveen Kumar	Assistant Professor, Department of Pathology, Rims, Ripur, CG, India- 492006
Dr Minal Wasnik	Associate Professor, Department of Pathology, Rims, Raipur, CG, India- 492006
Dr Brajendra kumar	Professor, Department of Medicine, RIMS, Raipur, CG, India-492006

ABSTRACT

Our aim was to study the correlation between diagnostic accuracy of FNAC and histopathology in palpable breast lumps. A prospective study of 50 patients was conducted at RIMS RAIPUR. All female patients were randomly selected, irrespective of their age, religion, marital status, occupation or social status. Every patient underwent a FNAC done on OPD basis by a trained pathologist from the Pathology Department in K. J. Somaiya College, Research Center and Hospital, following a thorough clinical check-up. Every patient subjected to FNAC underwent a definitive surgical procedure. All specimens so obtained were subjected to histopathology. The results thus obtained from histopathology were matched with those of FNAC and a correlation was sought based on statistical tests. Results of all patients were collected and tabulated. Statistical analysis was performed on the tabulated data and sensitivity and specificity with positive and negative predictive value were obtained. Of all 50 patients selected, only 2 were false negative for malignancy i.e., they were detected as benign lesions on FNAC but found to be malignant on histopathology. Hence, the sensitivity of the study was 96% and the specificity for malignant lesions was 100%. The positive predictive value was 100% and the negative predictive value was 95.12%. Conclusion: FNAC is a cheap, rapid, reliable and accurate test of diagnosing a palpable breast lump if done by an expert and trained pathologist. It gives a good histological correlation. It may obviate the need for another surgical biopsy prior to definitive surgery for malignancy.

KEYWORDS

INTRODUCTION:-

In a lady with breast lump, Clinical examination would be followed in most patients with a confirmatory diagnosis under the microscope. Previously, this involved invasive methods, such as an excision biopsy as an inpatient, under anaesthesia, followed by the definitive operative treatment a few days later in case the biopsy report demanded it. The final specimen so obtained would then be sent for histopathology again, for determination of other parameters. This entailed repeated admission to hospital in most cases, and more than one surgery along with its attendant social and physical inconvenience. The delay in procuring the histopathology report was also added to the woes of the patient. Needle Aspiration Cytology (FNAC) is a study of cellular material obtained by a small-gauge needle obtained by an airtight syringe. It is a study commonly used in breast, thyroid, and lymph nodes in neoplastic and non-neoplastic diseases. With help of a radiologist the effectiveness of the study can be maximized. This is a quick-to-perform, easy, out-patient and virtually painless procedure which became a standard tool for diagnosis in breast lumps. With a high percentage of true positives, nearly no false positives and virtually no complications, and no requirement of anaesthesia, it has established itself as an important patient-friendly out-patient procedure. Though critics have rightly pointed to the possibility of false negative reports in respect to malignant lesions, with improved techniques and expertise, a FNAC reported by an expert cytologist as unequivocally malignant is now considered by most a sufficient evidence to proceed to definitive surgery. Hence, this study was undertaken to see how well a preliminary FNAC in a breast lump correlated with the final histopathology report to which every excised specimen would invariably be subjected. Apart from reducing patient anxiety in many situations, it could help avoid the diagnostic excision / incisional biopsy in most patients. Patient comfort is an important consideration when they present to a hospital for treatment. With obvious advantages as mentioned, FNAC has been proved to be an important patient-friendly procedure in breast lumps. Therefore, the study aimed to determine the extent to which the FNAC report could be relied upon to proceed towards definitive excisional surgery without resorting to any other diagnostic procedure. For the conclusion that FNAC is indeed reliable, a good positive correlation is essential to be demonstrated between the FNAC and

the final histopathology report. To try and to arrive at a conclusion regarding the reliability of FNAC has been the essence of this study.

AIMS AND OBJECTIVES:-

In breast carcinoma the most common presentation is a breast lump, and worldwide, the most accepted protocol followed for diagnosis of breast lumps, is "Triple Assessment", which includes clinical assessment, radiological imaging and pathological diagnosis. Since FNAC forms the most important aspect of cytopathology as a part of triple assessment, it is expected to be an efficient technique which can be relied upon in terms of avoiding further diagnostic surgery before proceeding with the final excisional procedure. To evaluate the correlation between accuracy of FNAC and histopathology in palpable breast lumps is the primary aim of our study. The aims and objectives of our study therefore were: To subject all patients in our study, presenting with a palpable breast lump in this general hospital, to Fine-Needle Aspiration Cytology on an outpatient basis. To admit the patient for the required definitive excisional surgery and send the specimen for histopathology in all patients. To compare the FNAC report with the final histopathology report of the excised specimen in all patients. To derive conclusions about the correlation, including sensitivity, specificity, positive and negative predictive values, regarding the diagnostic accuracy of FNAC as compared to the final histopathology.

MATERIALS AND METHOD:-

The materials used in our prospective type of study were as follows: Fifty female patients attending the surgical outpatient department of our hospital were selected keeping in mind the criteria mentioned below. A. Inclusion Criteria:

- Age between 10 and 70 years
 - Palpable breast lump of variable duration
- B. Exclusion Criteria:
- Patient not willing (written informed consent taken)
 - Frank malignant mass with skin infiltration.
- EQUIPMENT:-** Needles: Fine-gauge number 23 single-use disposable needles were used in the study in all patients as a strict protocol. Syringes: Regular 10 cc single-use disposable plastic Becton Dickenson syringes were used for aspirating the material from the breast lumps.

1. Slides: Two to three dry clean slides were used for preparing the smears. All slides were labelled with a glass pencil and air-dried.
2. Fixatives: As routine, all smears were fixed with 95% alcohol.
3. Stains: All the slides were stained with eosin and hematoxyline stain. Special stains if required were used in those particular cases.

RESULTS:-

Of all 50 patients selected, only 2 were false negative for malignancy i.e., they were detected as benign lesions on FNAC but found to be malignant on histopathology. Hence, the sensitivity of the study was 96% and the specificity for malignant lesions was 100%. The positive predictive value was 100% and the negative predictive value was 95.12% Conclusion: FNAC is a cheap, rapid, reliable and accurate test of diagnosing a palpable breast lump if done by an expert and trained pathologist. It gives a good histological correlation. It may obviate the need for another surgical biopsy prior to definitive surgery for malignancy. The commonest pathology found in our patients was fibroadenoma in 29 patients. This was followed by fibrocystic disease in 4 patients and malignancy in 13 patients.

DISCUSSION:-

A lump in the breast is a common complaint presenting in the surgical out-patient department of all major hospitals, with anxiety regarding a possible malignancy being extremely common. Hence a quick diagnosis of a lump in the breast is essential. Criteria such as cost effectiveness, use of anaesthesia, time between the diagnostic procedure and report, patients' hospital stay and most importantly, reliability in deciding subsequent treatment, are all factors to be taken into account in this regard. Considering patients' comfort, lack of requirement of anaesthesia, rapid analysis and reporting, and an absence of false positive results makes FNAC an ideal initial diagnostic modality in breast lumps. The expansion of FNAC in the primary diagnosis of cancer in the last 30 years has been enormous and hugely successful. Its use in detecting the presence of cancer before surgery and as a guide to rational treatment has been well documented. Countries with most developed aspiration biopsy techniques are Sweden, Slovenia, the USA and India. At Karolinska hospital (Stockholm, Sweden), FNACs average 11,000 annually and at the Institute of Oncology Ljubljana, Slovenia 10,000. In the USA, the highest number is encountered at M. D. Anderson at Houston, Texas with 7,000 aspirates every year. At All India Institute of Medical Sciences (AIIMS) the annual volume of cytology specimens is more than 15,000, with FNACs comprising roughly half of the aspirations. Our present study was conducted on 50 female patients with a palpable breast lump each of whom underwent a fine-needle aspiration cytology of the lump followed by excisional surgery either in the form of a lumpectomy or a definitive surgical procedure like a mastectomy, depending on the diagnosis at aspiration cytology. The aspiration cytology findings were then matched with the final histology report to see as to how accurate FNAC was as compared to open biopsy i.e., to assess the cyto-histologic correlation. None of our patients was subjected to a core biopsy and its correlation with FNAC was not a part of our study. Our study also did not attempt to draw any conclusions as to whether one diagnostic modality could replace the other. Patients were selected regardless of their religion, occupation and financial status. All these patients underwent an FNAC and patients who did not follow up after FNAC were not included in this study. Every patient included in this study was admitted and underwent a definitive surgical procedure as demanded by the FNAC report. It varied from excision biopsy or incision and drainage to a modified radical mastectomy. The procedure of FNAC was performed by trained personnel in the pathology department following a uniform protocol. All pathology specimens underwent a histopathological study, the final report was compared with that of FNAC and the correlation was sought. The results obtained were

tabulated and conclusions drawn based on statistical tests. Though many aspects relating to the patient profile were tabulated and compared with those in other similar studies, the most important aspect of this study was to draw conclusions regarding the cytohistological correlation in these patients. In the fifty consecutive women selected for our study, the age ranged from fourteen years to sixty-one years with an average of thirty-seven and a half years. The maximum (nine patients) was found in the forty to forty-four year group followed by eight patients in the thirty to thirty-four year group. We found that there were no patients before the age of thirty-five to thirty-nine who were detected with malignancy, with the maximum number of patients seen in the forty to forty-four age group. Whereas benign lesions were seen in patients of all age groups, they were more commonly seen in younger age groups with the maximum of eight patients in the thirty to thirty-four age group. In a similar study done by Hussain 36 on 50 patients, the age distribution was between fifteen and sixty-five years and the maximum patients were seen in the thirty one to forty year group (30%). Similar studies done by Homesh et al., Tiwari and Ariga et al. showed similar age patterns. In our study, the right breast was involved in 22 patients while the left breast was involved in twenty-eight patients. Bilateral involvement was seen in six patients. In their series, Hussain et al. 36 showed left breast involvement in 27 patients (54%) while in the other 23, the right breast was involved. No surgical importance can be attached to this observation since patient selection was in no way dictated by involvement of any particular breast. The upper and outer quadrant was the commonest site of the lump in our patients (22 patients) while the upper inner quadrant was involved in 10, the lower and outer in 9 and the lower and inner quadrant in 9. Hussain 36, in his series, had 29 patients (58%) with a lump in the upper and outer quadrant and 9 had a lump in the upper and inner quadrant while 4 patients had a palpable lump in the lower and outer quadrant. There were 5 and 3 patients having a lump in the lower inner and central quadrant, respectively. Both studies showed the upper and outer quadrant to be the dominant quadrant to have a palpable lump. Thirty-seven out of our fifty patients were married. This corresponds to 74% of patients in comparison to 69.3% of 296 patients who were married in the series by Homesh et al. 62 Thus, in both series more married women presented to the out-patient department than unmarried ones. Though not directly related to our study, these figures may indicate the relative reluctance of young unmarried women to present to the out-patients department for a breast examination, since benign breast lumps, especially variants of ANDI (Aberrations of Normal Development and Involution), are definitely not uncommon in the young unmarried patient. Also only 7 of our married patients were nulliparous and all those who had children had breastfed their babies. In our patients, the duration of the lump ranged from 2 months in 18 patients to 7 months in 3 patients. All the others reported duration in between 2 and 7 months as shown in Table 2. In comparison, the study by Hussain 36 showed the duration of the lumps in a range between 1 month to 2 years with a majority of patients having a history of between 6 months and a year. Earlier presentation in case of our patients was probably due to the location of our hospital in a metropolitan city with a large urban population quite aware of the importance of a breast lump and the necessity of a medical consultation if one happened to develop a lump. This is definitely a reflection of the increased awareness regarding breast lumps amongst the female population. The commonest pathology found in our patients was fibroadenoma in 29 patients. This was followed by fibrocystic disease in 4 patients and malignancy in 13 patients. In their study on 91 patients, Tiwari et al. also reported fibroadenoma as the commonest pathology (39.6%). Other important conditions such as subareolar abscess, invasive ductal cancer, breast abscess, fibrocystic disease, duct ectasia, and galactocoele ranged from 5.5% to 7.7%. Size of the needle used for FNAC has often been a point for discussion since patient comfort and patient friendliness is an important aspect of FNAC as a superior diagnostic procedure. Disadvantages of a finer needle were an inadequate aspirate while disadvantages of a thicker needle included pain and hematoma formation. All our patients underwent FNAC using a no. 23 needle with no patient

discomfort and none of the patients complained of any untoward side effects. Walker et al. 22 compared the use of 21G and 23G needles for FNAC in breast lumps; 125 patients were included; 61 and 64 patients underwent FNAC with a 21G and 23G needle, respectively. A chi squared test had showed no statistical difference in the results whichever needle was used in their study. Expertise of the person performing and interpreting the fine-needle aspiration often influences results.

CONCLUSION:-

Fine-needle aspiration cytology(FNAC) is a patient friendly, easy, reliable, repeatable and simple diagnostic test. When performed by an expert pathologist, the diagnostic accuracy of FNAC is very high. A high sensitivity and a high positive predictive value proved that a positive FNAC in the breast means a definite diagnosis of the concerned pathology if compared with the final histology report. The high specificity and a high negative predictive value for malignancy illustrated the high accuracy of FNAC in the diagnosis of malignancy in the breast. Very importantly, a report negative for malignancy was highly accurate (>92%) in predicting an absence of malignancy. Thus, we have no hesitation in concluding that FNAC is a very important preliminary diagnostic test in palpable breast lumps, and done by expert hands, the results show a high degree of correlation with the final histopathology report.

REFERENCES:-

1. Amrish Kambhoj, Investigating a lump for suspected cancer: fine needle aspiration cytology by AIIMS, 2007.
2. Ansari NA, Derias NW. Fine needle aspiration cytology. *J Clin Pathol* 1997; 50: 541-543.
3. Martin H, Ellis E. Biopsy by needle puncture and aspiration. *Ann Surg* 1930; 92: 169-181.
4. Somers RJ, Young KP, Kaplan MT, Bernhard UM, Rosenberg M, Somers D. Fine Needle Aspiration biopsy in management of solid breast tumors. *Am J Surg* 1985; 120: 673-7.
5. Watson DP, McGuire M, Nicholson F, Given HF. Aspiration cytology and its relevance in diagnosis of solid breast tumors. *Surg Gynecol Obstet* 1987; 165: 435-41.
6. Ciatto S, Cariaggi P, Bulgaresi P, Confortini M, Bondari R. Fine needle aspiration cytology of breast; review of 9533 consecutive cases. *The Breast* 1993; 2: 87-90.
7. Dixon J M, Clarke P J, Crucioli V, Dehn T C, Lee E C, Greenall M J. Reduction of the surgical excision rate in benign breast disease using fine needle aspiration cytology with immediate reporting. *Br J Surg* 1987; 74: 1014-6.
8. Hitchcock A, Hunt CM, Locker A, Koslowski J, Strudwick S, Elston CW. A one year audit of fine needle aspiration cytology for the pre-operative diagnosis of breast disease. *Cytopathology* 1991; 2: 167-76.
9. Horgan PG, Waldron D, Mooney E, O'Brien D, McGuire M, Given HF. The role of aspiration cytology examination in the diagnosis of carcinoma of the breast. *Surg Gynecol Obstet* 1991; 172: 290-2.
10. Khan AU, Muhammad G. Fine needle aspiration cytology in the diagnosis of breast masses. *J Coll Physicians Surg Pak* 1994; 4: 98-101.