

Study of Palpable Breast Lumps By Fine Needle Aspiration Cytology

Dr Vaseem Ansari¹, Dr Rajnish Kumar², Dr Rajender Kr. Thakral³,
Dr Meenakshi Tyagi⁴, Dr Kamna Gupta⁵, Dr Alok Mohan⁶

1PG JRIII, 2,3,6 Professor, 4 Assistant Professor and 5 Associate Professor

(Department of Pathology, Muzaffarnagar Medical College, India)

Corresponding Author: Dr Rajnish Kumar

Abstract

Background: Palpable breast lump is one of the commonest problem in women and breast cancer is major cause of both morbidity and mortality in women. Due to the high sensitivity and specificity of FNAC, it can be used effectively as diagnostic modality for palpable breast lumps and it is simple, rapid, cost effective and minimally invasive method.

Material and Methods: It is a hospital-based study of prospective type study was conducted in the Muzaffarnagar Medical College and Hospital in the Department of Pathology for duration of one year. 100 female patients presented with palpable breast lump, fulfilling inclusion criteria were included.

Result: FNAC was done on 100 cases of breast lumps and were reported according to five-tiered system of National Cancer Institute (NCI 1997), 93% cases were satisfactory and rest 7% cases were not satisfactory (C1 category) for a cytological diagnosis. Out of 93 cases, benign lesions (C2 category) were 73%, malignant lesions (C5 category) were 10%, atypical lesions (C3 category) were 7% and suspicious category (C4 category) include 3% cases. Fibroadenoma was the most common benign lesion. Sensitivity, specificity, positive predictive value, negative predictive value and efficiency of present study is 80%, 93.10%, 66.67%, 96.43% and 91.18% respectively.

Conclusion: Fine needle aspiration cytology (FNAC) is an acceptable OPD procedure to use as a diagnostic modality in cases of suspected breast lesions due to its high sensitivity and specificity, low cost, quick result and high accuracy.

Key Word: Palpable breast lump, breast cancer, FNAC, NCI 1997.

Date of Submission: 10-06-2021

Date of Acceptance: 25-06-2021

I. Introduction

Palpable breast lump is one of the commonest problem in women going to health association clinics around the world.¹ Breast cancer is driving cause of both morbidity and mortality in women. In Indian women breast carcinoma is the second most common malignancy comprising 22.2% of all the new diagnosed cancers and 17.2% of all cancer deaths.² Fine needle aspiration cytology was introduced in 1930 and has been world widely implied as a first line diagnostic technique for patients presenting with breast lumps. The primary purpose of FNAC is to distinguish between benign and malignant lesions. Breast FNAC can differentiate among inflammatory lesions, cystic changes, benign tumors, proliferative breast disease with or without atypia and malignant tumors.³ It is a simple, reproducible, useful, rapid, accurate, cost effective, feasible and minimally invasive method. FNAC reduces the rate of exploratory procedure in case of inflammatory and non neoplastic conditions of breast.⁴ The sensitivity and specificity of FNAC as diagnostic modality for palpable breast lumps are 65-99% and 96-100% respectively.² National Cancer Institute (NCI 1997) defined a five-tiered system to report cytological breast smears. Of these, C1, C2 and C5 are as a rule unequivocal. The equivocal categories C3 (atypical probably benign) and C4 (suspicious probably malignant) need to be assessed to determine their cytomorphological correlation. C2 and C5 cases have been associated with a high degree of diagnostic accuracy and thus do not constitute diagnostic conundrum. C3 and C4 cases however, require further evaluation either by core needle or incisional biopsy for histological characterization. Definitive therapeutic surgery should not be undertaken on the basis of C3 or C4 report but biopsy should be done prior to therapeutic surgery.^{5,6,7}

II. Material And Methods

A hospital-based study of prospective type study was conducted in the Muzaffarnagar Medical College and Hospital in the Department of Pathology for the time duration of one year.

Study Design: Prospective study

Study Location: Department of Pathology, Muzaffarnagar Medical College and Hospital, Muzaffarnagar Uttar Pradesh.

Study Duration: One year.

Sample size: 100 patients.

Inclusion criteria:

- All females with palpable breast lump,
- Cases coming within the specified period of time.

Exclusion criteria:

- Totally unresponsive patient,
- Unpalpable breast lesion,
- Patients with recurrent breast malignancy,
- Past or current chemo-therapeutic or preventive treatment,
- Pulsatile vascular lesions/ tumors of vascular origin in breast,
- Male patients.

III. Methodology:

All the recommended patients was subjected to aspiration using 22-23 gauge needle with 20 ml disposable plastic syringes for aspiration. Needle was introduced into the palpable lesion, either once or multiple times at different sites depending upon the size of the lump. Cellular material was aspirated and expelled onto slides. Four to five smears were prepared from the aspirated material and stained with Giemsa staining. Repeat aspiration was done on patients in whom aspirated material obtained was inadequate for interpretation and in patients presented with multiple swellings, size of the largest lump was taken into consideration.

Histopathological examination of accessible biopsies (34 cases) was done from the study. The biopsy specimen was fixed in 10% buffered formalin for a period of 24 hours and then grossing was done. The gross and cut section finding was noted. A few sections were taken from suitable areas for tissue processing and paraffin embedding. Sections of 4-5 micron thickness were taken and stained by H&E, thus histopathological diagnosis was made.

Statistical analysis

The obtained results were statistically analyzed and sensitivity, specificity, positive predictive value, negative predicative value and efficiency were calculated.

IV. Results

Present study include patients from 14 years to 81 years. Mean age of presentation was 32 years. Present study showed that majority of the patients, 90/100 (90%) presented with breast lump were of <50 years of age while 10/100 (10%) patients presented in >50 years of age (Table 1).

According to five-tiered system of National Cancer Institute (NCI 1997), 93% cases were satisfactory and rest 7% cases were not satisfactory (C1 category) for a cytological diagnosis. Out of 93 cases, benign lesions (C2 category) were 73%, malignant lesions (C5 category) were 10%, atypical lesions (C3 category) were 7% and suspicious category (C4 category) include 3% cases (Figure 1).

Majority of the cases of breast lumps, 29/100 (29%) were seen in the 3rd decade, followed by 27/100 (27%) in the 4th decade while the least number of cases, each 1/100 (01%), were seen in the 8th and 9th decade. Maximum number of benign cases 27/73 (36.98%3) were seen in the 3rd decade and maximum number of malignant cases, 04/10 (40%) were found in the 5th decade (Table 2).

Out of 100 patients presented with breast lump, maximum number of cases, 49/100 (49%) were found in left breast followed by 42/100 (42%) cases in right breast, while bilateral involvement was seen in 09/100 (09%) of cases. Maximum number of benign cases 34/73 (46.58%) were found in the left breast and maximum number of malignant cases, 08/10 (80%) were observed in the left breast (Figure 2).

Majority of the patients presented with breast lump showed involvement of superomedial quadrant of breast, 31/100 (31%) followed by involvement of superolateral quadrant, 21/100 (21%). Maximum number of benign cases 24/73 (32.87%) were found in the superomedial quadrant followed by 15/73 (20.54%) in the inferomedial quadrant while maximum number of malignant cases, 08/10 (80%) were found in the superolateral quadrant followed by 02 cases (20%) in the central part of the breast (Table 3).

C1 CATEGORY (UNSATISFACTORY SMEAR)

Seven cases (07%) of inadequate smears were observed. Repeat aspiration of breast lump was done on all patients with inadequate cellularity but the cells obtained was still inadequate for interpretation and thus labeled as Unsatisfactory.

C2 CATEGORY (UNEQUIVOCALLY BENIGN)

Out of 73 cases of C2 category, there were 43 cases(58.9%) of benign tumors, 17 cases of inflammatory lesions(23.29%), 8 cases of benign proliferative breast disease(10.96%), 3 cases of lactational breast(04.11%) and 1 case(01.37%) each of fat necrosis and inclusion epidermal cyst (Table 4).

FIBROADENOMA: Of the benign tumors, fibroadenoma being the most common lesion which was observed in 41 cases (56.16%).The smears were highly cellular and the diagnosis was based on the presence of cohesive clusters of bimodal population of benign ductal epithelial cells and myoepithelial cells arranged in branching antler horn pattern against a background of fair number of bare nuclei and stromal fragments.

INFLAMMATORY LESIONS: Of the inflammatory lesions, 12 cases (16.44%) of mastitis and 5 cases (06.85%) of granulomatous mastitis were diagnosed. Breast lumps diagnosed as mastitis presented with history of short duration of lump in the breast along with tenderness and local rise of temperature. The aspirates were yellowish & blood mixed and showed plenty of neutrophils and macrophages with few ductal epithelial cells. No granuloma was seen in smears of these cases.

5 cases were diagnosed as granulomatous mastitis, out of which one case was having nipple retraction and showed groups of epithelioid cells, giant cells, plasma cells and lymphocytes with few ductal epithelial cells in an inflammatory background. The Z-N stain for AFB was done in all inflammatory lesions but no AFB was seen.

FIBROCYSTIC DISEASE: 4 cases (05.48%) were diagnosed at cytology and the patient presented with ill-defined mass and the smears were poorly to moderately cellular showing few benign clusters of epithelial cells and myoepithelial cells arranged mainly in sheets. Bare nuclei were also seen. Apocrine cells and few cystic macrophages were seen in majority of the cases.

BENIGN CYSTIC LESION: Benign cystic lesion at cytology was reported in 04 cases (05.48%) and the patients presented with well defined mass and the aspirates were yellowish & blood mixed. Repeat aspiration was done on all these patients but the material obtained was same. The smears were poorly to moderately cellular showing few benign clusters of epithelial cells and myoepithelial cells arranged mainly in sheets. Fair number of cystic macrophages were seen in majority of the cases.

C3 CATEGORY (ATYPICAL PROBABALY BENIGN)

7 cases (07%) were diagnosed in this category. Smears showed cohesive clusters and papillae of ductal epithelial cells and myoepithelial cells with few bare nuclei and stromal fragments in the background. Few clusters showed atypia in the form of mild to moderate nuclear pleomorphism, focal nuclear overlapping and crowding with prominent nucleoli. Apocrine cells and macrophages were also seen in some cases.

C4 CATEGORY (SUSPICIOUS PROBABLY MALIGNANT)

3 cases (03%) on cytology were diagnosed in this category. At cytology, few clusters of pleomorphic ductal epithelial cells with cellular and nuclear pleomorphism arranged in papillary pattern were seen. The cytologic diagnosis given was highly suspicious of carcinoma.

C5 CATEGORY (MALIGNANT LESIONS)

10 cases (10%) were diagnosed in this category. The smears were moderately to highly cellular with pleomorphic malignant ductal epithelial cells present in loose clusters, sheets, and singly. Cells showed an enlarged hyperchromatic nucleus, increased N:C ratio, moderate to marked nuclear pleomorphism, coarse to granular to clumped chromatin, irregular nuclear margins and prominent nucleoli. Palpable ipsilateral axillary lymph node was observed in 1 case and the lymph node aspirates showed metastatic carcinoma.

Total 100 breast FNAC were done and out of these, 34 breast biopsies (lumpectomy, mastectomy and tru cut biopsy) were received for histopathological examination. Histopathological diagnosis was made and histo-cytological correlation was done.

Out of 34 cases, histopathological diagnosis was consistent with cytological diagnosis in 31 cases (91.18%) and rest 3 cases (8.82%) were inconsistent.

Sensitivity, specificity, positive predictive value, negative predictive value and efficiency of malignant cases is 80%, 93.10%, 66.67%, 96.43% and 91.18% respectively (Table 5).

Table 1: Age wise distribution of patients of breast lumps on fine needle aspiration cytology

Age (years)	No of cases	%
10-19	17	17
20-29	29	29
30-39	27	27
40-49	17	17
50-59	06	06
60-69	02	02
70-79	01	01
>80	01	01
Total	100	100

Figure 1: Distribution of various types of cytological categories of breast lumps (As per NCI 1997)

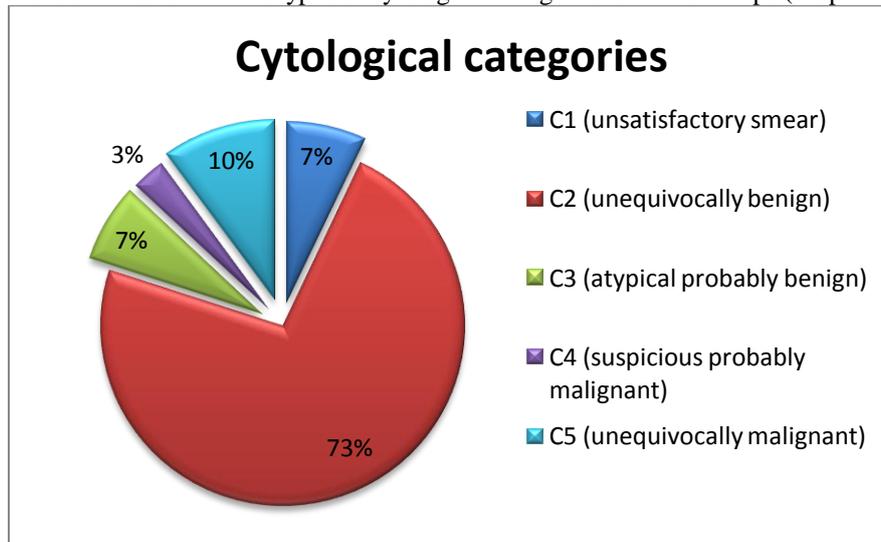


Table 2: Age wise distribution of number of cases of breast lump for each category

Age (yrs)	10-19	20-29	30-39	40-49	50-59	60-69	70-79	>80	Total
C1	02	01	02	01	00	00	01	00	07
C2	14	27	22	07	02	01	00	00	73
C3	01	00	02	03	01	00	00	00	07
C4	00	01	00	02	00	00	00	00	03
C5	00	00	01	04	03	01	00	01	10
Total	17	29	27	17	06	02	01	01	100

Figure 2: Distribution of cases involving side of breast for each category

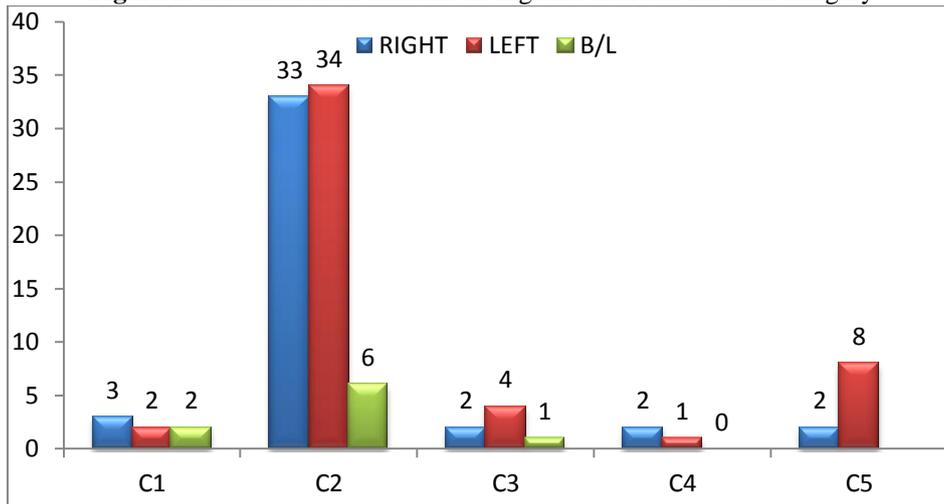


Table 3: Distribution of cases involving site of breast for each category

CATEGORY	SL		SM		IL		IM		Central		Total
	No of cases	%									
C1	01	14.29	02	28.57	02	28.57	02	28.57	00	-	07
C2	11	15.07	24	32.87	12	16.44	15	20.54	11	15.07	73
C3	01	14.29	04	57.13	01	14.29	00	-	01	14.29	07
C4	00	-	01	33.33	00	-	00	-	02	66.67	03
C5	08	80	00	-	00	-	00	-	02	20	10
Total	21	21	31	31	15	15	17	17	16	16	100

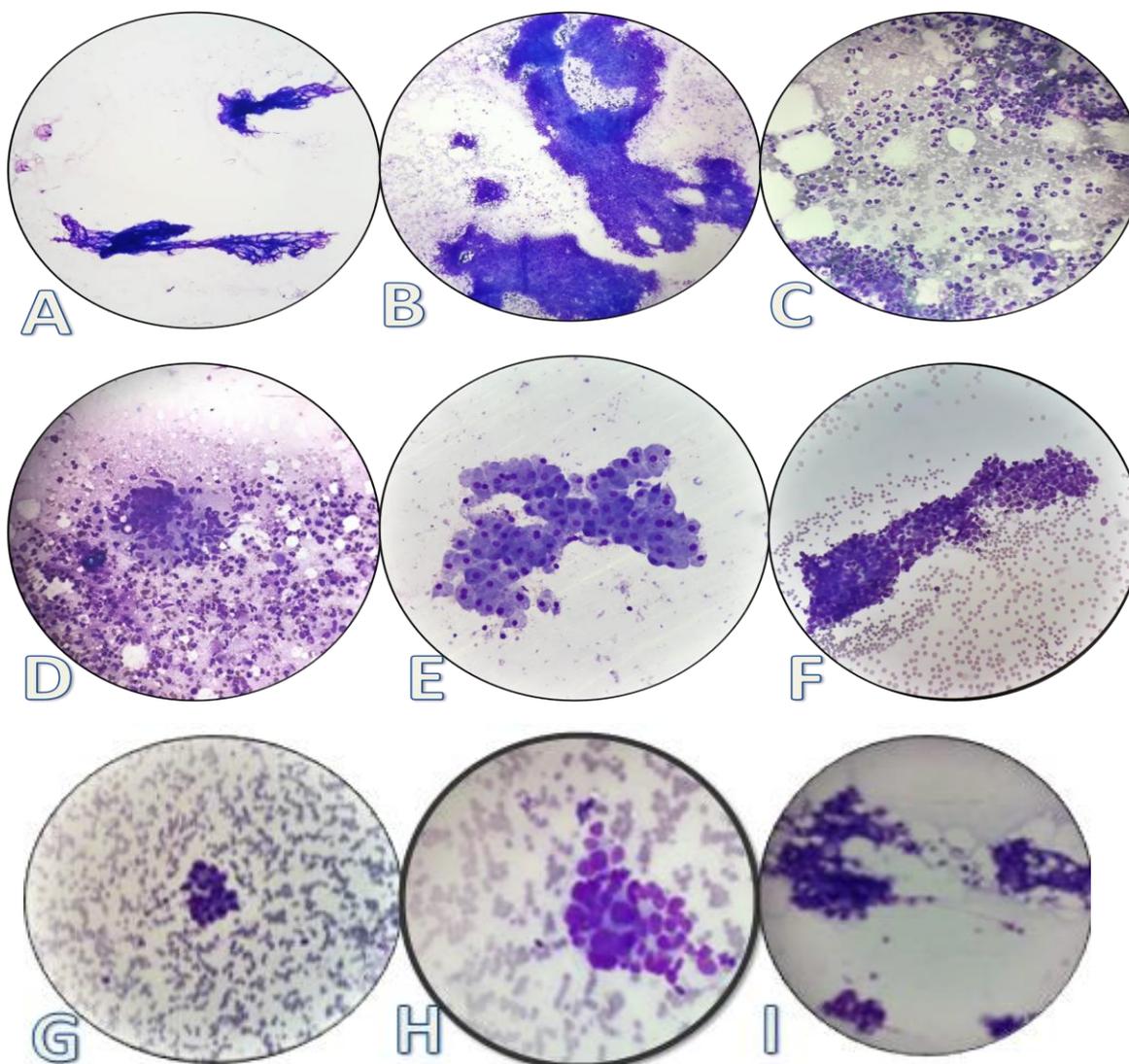
Table 4: Distribution of C2 cases according to their nature, frequency & cytomorphological feature

	DIAGNOSIS	No of cases	%
Inflammatory lesion	Acute mastitis	12	16.44
	Granulomatous mastitis	5	06.85
Benign proliferative breast disease	Cystic lesion	4	05.48
	Fibrocystic disease	4	05.48
Benign neoplasm	Fibroadenoma	41	56.13
	Galactocele	1	01.37
	Phyllodes tumor	1	01.37
Miscellaneous	Lactational breast	3	04.11
	Epidermal inclusion cyst	1	01.37
	Fat necrosis	1	01.37

Table 5 : Statistical analysis of cross tabulation of histopathology and cytology

CYTOLOGY	HISTOPATHOLOGY		Total
	POSITIVE	NEGATIVE	
Positive	04(True Positive)	02(False Positive)	06

Negative	01(False Negative)	27(True Negative)	28
Total	05	29	34



- A: Unsatisfactory smear (C1 category). Giemsa x400
- B: Fibroadenoma (C2 category). Giemsa x400
- C: Acute Mastitis (C2 category). Giemsa x400
- D: Granulomatous mastitis (C2 category). Giemsa x400
- E: Apocrine metaplasia in fibrocystic disease (C2 category). Giemsa x400
- F: Benign proliferative breast disease with atypia (C3 category). Giemsa x400
- G: Suspicious for malignancy (C4 category). Giemsa x400
- H: Ductal carcinoma breast (C5 category). Giemsa x400
- I: Invasive ductal carcinoma breast (C5 category). Giemsa x400

V. Discussion

Present study included patients from 14 years to 81 years. Most of the cases of breast lumps were seen in the 3rd decade 29/100 (29%) followed by 4th decade 27/100 (27%). In the studies conducted by **Kosthi A et al(2017)**⁸, **Venkataramana Babu P et al(2016)**⁹, peak incidence of breast lumps was found in the 3rd decade in 35.97% and 34% and studies of **Badge SA et al(2017)**¹⁰, **Mane PS et al(2017)**¹¹, **Gupta G et al(2017)**¹², **Akter S et al(2017)**¹ and **Sumeera Farhath SK et al(2016)**¹³ shows involvement of 4th decade as major age group.

Most number of benign cases 27/73 (36.98%) were falling in the 3rd decade followed by 22/73 (30.13%) in 4th decade. Similar results were found in the study conducted by **Bansi Gorasiya et al², Mane PS et al, Shah SAA et al¹⁴, Pratima et al¹⁵ and Shobha SN et al¹⁶** where benign lesions were common in 3rd and 4th decade.

Most number of malignant cases, 04/10 (40%) were found in the 5th decade followed by 03 cases (30%) in the 6th decade. In the studies of **Rahman MZ et al¹⁷ and Badge S et al** malignant lesions were common in 4th decade while **Arul P et al¹⁸, Akter S et al, Shah SAA et al, Gorasiya B et al and Mane PS et al** observed malignant lesions in 5th & 6th decade.

In the present study, left breast was commonly involved which correlated well with the study of **Kosthi A et al, Arul P et al, VenkataramanaBabu P et al and Kumar KM et al¹⁹** in 50.66%, 55%, 59.25% and 43% respectively.

The majority of breast lumps were located in the superomedial quadrant of breast, 31 (31 %) followed by superiolateral quadrant, 21 cases (21%) and the least number of cases was in the inferolateral quadrant, 15 (15%). **Mehta R et al²⁰, Kosthi A et al, Waghmare RS et al²¹ and Nigam M²²** observed predominantly involvement of superolateral quadrant in 64.6%, 56.88%, 42.54% and 48% of cases.

In the present study 73 cases (73%) of C2 category (benign) were diagnosed.

Studies with similar results are **VenkataramanaBabu P et al(2016), Mane PS et al(2017), Akhtar S et al(2017) and Arul P et al(2017)** showing 70.74%, 68%, 76.12% and 67.3% benign cases respectively.

In present study, maximum cases are of Fibroadenoma 41/73 (56.16%) which positively correlates with the studies of **Arul P et al(2017), Shobha SN et al(2017), Poudel S(2016)²³ and Akter S et al(2017)** having 50.65%, 50%, 47.54% and 42.44% cases of fibroadenoma.

Category C5 (malignant) comprised of 10% in the present study and is well supported by the studies of **Ranabhat S et al²⁴, Sumeera Farhath SK et al and Mane PS et al** which shows 8.56%, 8% and 7% of malignant cases respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and efficiency of present study is 80%, 93.10%, 66.67%, 96.43% and 91.18% respectively.

STUDY	SENSITIVITY	SPECIFICITY	PPV	NPV	EFFICIENCY
Muddegowda PH et al (2011) ²⁵	94.5%	98%	95.8%	97.4%	97%
Bukhari MH et al(2011) ²⁶	98%	100%	97%	100%	98%
Arul P et al (2017)	93.1%	99%	97.6%	97%	97.2%
Waghmare RS (2016)	88.24%	100%	100%	93.2%	95.2%
Joshi K et al(2016) ²⁷	92.1%	100%	100%	93.33%	98.5%
Thakkar B et al (2014) ²⁸	97.05%	98.78%	97.05%	98.78%	98.27%
Present study	80%	93.10%	66.67%	96.43%	91.18%

VI. Conclusion

Fine needle aspiration cytology (FNAC) is an acceptable OPD procedure to use as a diagnostic modality in cases of suspected breast lesions. With high sensitivity and specificity, most of the benign and malignant lesions can be dependably analyzed by FNAB. It may give a favorable screening method and allow an improvement of treatment options. So, we conclude that Fine Needle Aspiration Cytology should be used as a routine diagnostic procedure for breast lumps due to its low cost, quick result and high accuracy.

References

- [1]. Akter S, Islam MJ and Haque MS. Fine Needle Aspiration Cytology of Palpable Breast Lumps - Their Cytological Spectrum and Histopathological Correlation. KYAMC Journal January 2017;7(2):780-6.
- [2]. Gorasiya B, and Jhaveri S. Cytological Study of Spectrum of Lesions of Palpable Breast Lumps by FNAC at SMIMER Hospital, Surat. NJMR Apr –Jun 2019;9(2):82-4.
- [3]. Rajyalakshmi r, akhtar m, bhaskar rv, venkataramana k et al. utility of fnac in uncommon inflammatory and reactive lesions of breast: an unsuspected clinical scenario. j. evid. based med. healthc oct. 29, 2018; 5(44):3070-4.
- [4]. Silverman JF. Diagnostic accuracy, cost-effectiveness, and triage role of fine-needle aspiration biopsy in the diagnosis of palpable breast lesions. Breast J 1995;1:3-8.
- [5]. The uniform approach to breast fine needle aspiration biopsy. National Cancer Institute. DiagnCytopathol 1997;16:295-311.
- [6]. Guidelines for non-operative diagnostic procedures and reporting in breast cancer screening. Non-operative Diagnostic subgroup of the National Coordinating Group for breast screening Pathology. NHSBSP Publication 2001;50:15.

- [7]. Yusuf I, Atanda AT, Imam MI. Cytomorphologic correlation of equivocal C3 and C4 breast lesions. Archives of International Surgery 2014;4(3):131-5.
- [8]. Kosthi A, Sulya M and Malik R. Role of Fine-Needle Aspiration Cytology in Evaluation of Breast Lumps. Annals of Applied Bio-Sciences 2017;4(3):143-9.
- [9]. VenkataramanaBabu p, Neeraja M, Varalakshmi K.P, SivasankaraNaik V, Sumankumar T.C.S., Cytomorphological study of palpable Breast Lumps by FNAC. Int J Med Res Rev 2016;4(2):238-44.
- [10]. Badge SA, Ovhal AG, Azad K, Meshram AT. Study of fine-needle aspiration cytology of breast lumps in rural area of Bastar district, Chhattisgarh. Med J DY Patil Univ 2017;10:339-42.
- [11]. Mane PS, Kulkarni AM, Ramteke RV. Role of fine needle aspiration cytology in diagnosis of breast lumps. Int J Res Med Sci 2017;5:3506-10.
- [12]. Gupta G, Singh P. Effectiveness of fine needle aspiration cytology in detecting breast lesions. J Adv Med Dent Scie Res 2017;5(4):114-6.
- [13]. Sumeera Farhath SK, Kumar KS, Singh R, Kumar VA. Diagnostic Accuracy of FNAC in Evaluation of Breast Lumps. JMSCR February 2016;4(2):9275-9.
- [14]. Shah SAA, Pervez SN and Javed K. Diagnostic performance of fine needle aspiration cytology (fnac) in the diagnosis of breast lumps. J Ayub Med Coll Abbottabad 2013;25:1-2.
- [15]. Kujur P. Fine-Needle Aspiration Cytology of the Palpable Breast Lump of 106 Cases and Correlation with Histologic Diagnosis: A Prospective Analysis. Int J Sci Stud 2015;3(9):111-5.
- [16]. Shobha SN and Rajashekar YR. Role of FNAC in Breast Lesions. Journal of Diagnostic Pathology and Oncology, January-March 2017;2(1):3-5.
- [17]. Rahman MZ, Islam S (2013) Fine Needle Aspiration Cytology of Palpable Breast Lump: A Study of 1778 Cases. Surgery S12 2013:1-5.
- [18]. Arul P, Masilamani S. Application of National Cancer Institute recommended terminology in breast cytology. J Can Res Ther 2017;13:91-6.
- [19]. Kumar KM, Indira V and Pandey V. Spectrum of Study of Breast Lumps in Young Females between Ages 15 and 20 Years- A Prospective Study in a Teaching Hospital. Sch. Acad. J. Biosci., October 2015;3(10):860-6.
- [20]. Mehta R, Tewari K, Goyal N, Basak U, Gupta A. Triple approach for diagnosing breast lesions-experience at a Tertiary Care Hospital. J Mar Med Soc 2017;19:123-7.
- [21]. Waghmare RS, Sakore SD, Rathod SB. Fine needle aspiration cytology of breast lesions and correlation with histopathology. Int J Res Med Sci 2016;4:4416-21.
- [22]. Nigam M and Nigam B. Triple Assessment of Breast – Gold Standard in Mass Screening for Breast Cancer Diagnosis. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) May.- Jun 2013;7(3):1-7.
- [23]. Poudel S, Ranabhat S, Parajuli B et al. Evaluation of Breast Lump by Fine Needle Aspiration Cytology. J-GMC-N July-December 2016;9(2):38-42.
- [24]. Ranabhat S, Subedi M, Bhandari A, Tiwari M, Maharjan S, Kshetri J, Osti BP. Clinico-pathologic profile of women with palpable breast lumps in Chitwan Medical College, Nepal. Int J Res Med Sci 2015;3:1611-6.
- [25]. Muddegowda PH, Lingegowda JB, Kurpad R, Konapur P, Shivarudrappa A, Subramaniam P. The value of systematic pattern analysis in FNAC of breast lesions: 225 cases with cytohistological correlation. J Cytol. 2011 Jan;28(1):13-9.
- [26]. Bukhari MH, Arshad M, Jamal S et al. Use of Fine-Needle Aspiration in the Evaluation of Breast Lumps. Pathology Research International Volume 2011, 1-10.
- [27]. Joshi K, Mehta N and Goswami H. Utility of Fine Needle Aspiration Cytology in Evaluation of Breast Lesions. BJKines-NJBAS June 2016;8(1):1-6.
- [28]. Thakkar B, Parekh M, Trivedi NJ et al. Role of fine needle aspiration cytology in palpable breast lesions and its correlation with histopathological diagnosis. Oct – Dec 2014;4(4):283-8.

Dr Vaseem Ansari, et. al. "Study of Palpable Breast Lumps By Fine Needle Aspiration Cytology." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 20(06), 2021, pp. 11-18.