DOI: https://doi.org/10.53350/pjmhs211561481

ORIGINAL ARTICLE

Frequency of Fine Needle Aspiration Cytological Category C5 in Breast Lesions among Females of Various Age Groups

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ABSTRACT

Background: Benign as well a**s** malignant neoplasm of breast still appears to be the prime tumour among females and the prevalence of the disease is increasing all over the countries. The likelihood of emergence of breast neoplasm is linked to a number of factors i.e. reproductive life events and the factor of lifestyle that modify levels of endogenous sex hormones. One of most important risk factors is growing old age. Fine needle aspiration cytology (FNAC) is a least traumatic, reliable simple, complication free technique and economical for the diagnosis of mass lesions. It can be easily repeated if an adequate aspirate is not obtained.

Aim: To determine the frequency of cytological category of FNAC C5 of breast lesion among different age groups.

Study Design: Cross sectional comparative research study

Place and Duration of Study: Department of Histopathology, Shaikh Zayed Hospital, Lahore from 21st January 2016 to 22nd September 2016.

Methodology: One hundred and twenty female patients selected who presented with complain of palpable lesion in breast and was correlated with physical examination recording the size and consistency of mass. The procedure was performed on patients with complete clinical and radiological work up. After preparation of direct smear, slides were processed according to routine processing and then stained with H&E and Giemsa.

Results: Thirty (25.80%) were between 18-30 age group while 42(35.00%), 47(39.20%) were between 31-45 and 46-60 age groups respectively. Though majority of FNAC cases were found in age group 31–45 but there was no significant difference among three groups by age.

Conclusion: Malignancy in palpable breast masses can surely be diagnosed by a combination of clinical examination of breast and FNAC which when performed by a dedicated cytopathologist should be an integral part of a breast screening service. Middle age group had highest frequency but difference was insignificant.

Keywords: Fine needle aspiration cytology, Palpable breast lesions, Age groups

INTRODUCTION

Breast diseases are very common in females and range from inflammatory lesions to benign and invasive carcinomas.[1] Pakistan has a significant cancer burden. It has been estimated that about 40,000 patients die every year due to breast cancer alone and 90% of these cancers can be cured if detected early. There are no national cancer screening programmes that can educate people about cancer screening and early detection.[2] In Asian countries; Pakistan is bearing the highest load of breast cancer patients. Even Young females also present at late stages of breast cancer, with a negative impact on prognosis.[3]

The continued vigilance and earlier diagnosis of any lesion in breast can help in decreasing the incidence of invasive carcinomas.[4] But in Pakistan women ignore their health problems including breast cancer due to many factors. Most important of these are hesitancy of women to be examined themselves from male physicians and lack of mutual understanding with spouse to discuss about breast cancer.[5]

Inflammatory lesions are common in lactating females. Benign tumours are frequent in young adults and malignant tumours are common in older females. Breast diseases are mostly confined to females not only for the hormonal influence but also of their more complex structure and greater volume, whereas male breasts are rudimentary non-functional organs, relatively insensitive to endocrine stimuli and apparently resistant to neoplastic growth.[6]

Most breast diseases present as a palpable lump, mastalgia and nipple discharge. Although most lumps are benign but the neoplasm constitutes the most important lesions of the female breasts. Due to increased public awareness about cancer, the appearance of a lump causes great concern to the patient. Evaluation and diagnosis of breast diseases involves the triple assessment that is clinical history and examination, radiological imaging and tissue sample taken for either cytological or histological analysis.

Ultrasonography and mammography, fine needle aspiration cytology (FNAC) and core biopsy are the investigations of choice for diagnosis of majority of breast conditions but excisional biopsy remains the gold standard for diagnosis.[7]

Numerous studies have been done on carcinoma of the breast but studies on the general pattern of breast diseases in female population are limited.[8] There is a dearth of such studies in our country and there exists a need to know the incidence of different types of breast diseases so that guidelines for prevention, early detection and treatment can be developed.

Fine needle aspiration cytology is easiest and economical diagnostic modality for the diagnosis of breast lesions and for categorization of breast lesions, a five tier system (C1-C5) is being used all over the world with categories ranging from insufficient materials (C1), benign (C2), atypical (C3), suspicious of malignancy (C4), or frankly malignant (C5).

Cytological categorization initiative was taken by National Coordinating Committee for Breast Screening and National Breast Screening Program of UK. It has been introduced into practice as a guide to report the results of aspiration cytology by fine needle into a five tier categorization to ease the understanding of diagnosis for surgeon as well as patient.[9]

MATERIALS AND METHODS

This cross sectional comparative study was carried out at Histopathology Department, Shaikh Zayed Medical complex, Lahore from 21st January 2016 to 22nd September 2016. A total of 120 patients selected who presented with complain of palpable lesion in breast and was correlated with physical examination recording the size and consistency of mass. The size of breast mass was measured in length by measuring tape. The tumour size was measured by measuring tape. Females of age eighteen to sixty years old with palpable mass of breast were included. Female patients who didn't give consent, diagnosed already and impalpable masse were the exclusion criteria. For FNA procedure disposable 10 cc syringe of needle gauge 22 was used. Patient's name with glass marker was labelled on clean glass slides. A 95% alcohol fixative was used and H&E and Giemsa were used to stain the slides (Fig.1).

Patient was informed about procedure in detail before performing it and a proper verbal and written consent was taken. Procedure was performed on patients with complete clinical and radiological work up. Palpation of the breast mass was carried out in all cases to locate the breast lesion, to feel its consistency, size and extent of the mass, so that aspirate could be taken should not miss the cytology of lesion. Between left thumb and the index finger, mass was held. The skin area over the lesion and surrounding was sterilized with spirit three attempts were done by syringe to have ample aspirate to ease diagnosis. Needle of syringe was entered in breast lesion after clinical assessment and suction was applied. Needle and barrel of syringe was moved in and out so that enough aspirate was obtained. The suction caused by plunger was set free when the aspirate i.e. blood or material is found in the needle hub.

Droplets of aspirate were added onto glass slide and spread over it. After preparation of direct smear, slides were processed according to routine processing and then stained with H&E and Giemsa. Skin where FNA was performed was pressed and bandage done. Slides were examined under microscope.

Data were entered and analyzed by using SPSS-20. Chi-square test was used to compare FNAC C5 among three age groups. P-value ≤ 0.05 was considered significant.

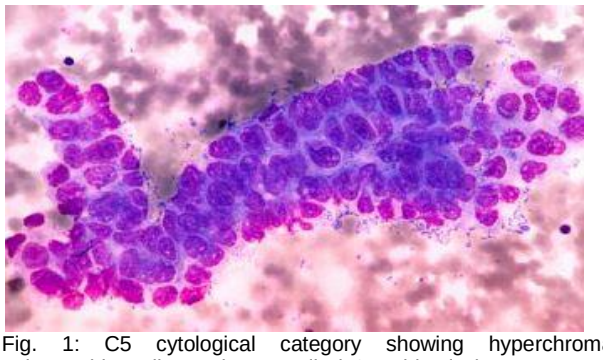

Fig. 1: C5 cytological category showing hyperchromatic polymorphic malignant breast cells (40 X objective)

RESULTS

All patients had lumps 120 (100.0%) while 2 (1.7%) had the complication of nipple discharge. One hundred and fifteen (95.8%) had unilateral breast lesion. Among these 21 (17.5%) had the consistency of lesion as cystic, and remaining solid. Thirty two of these were categorized as C5 on FNAC (Table 1)

The maximum percent of C5 category was in age group 31-45 years with 33.3% cases. The group with age 18-30 had 22.6% while 46-60 had 23.4% of C5 cases with average age was 39.96±12.23 years ranging between 18 and 60 years. This difference between ages was though found insignificant with p-value 0.485 (Table 2).

Table 1: Basic characteristic of lesions

Characteristic	Yes		No	
	No.	%	No.	%
Lump	120	100.0	0	0.0
Complication of nipple discharge	2	1.7	118	98.3
Bilateral	5	4.2	115	95.8
Consistency Cystic	21	17.5	99	82.5
FNAC C5	32	26.7	88	73.3

Table 2: Comparison of FNAC C5 category between different age groups

Age (years)	C5		Other		Total	
	No.	%	No.	%	No.	%
18-30	7	22.6	24	77.4	31	100.0
31-45	14	33.3	28	66.7	42	100.0
46-60	11	23.4	36	76.6	47	100.0
Total	32	100.0	88	100.0	120	100.0

Chi-square = 1.48 P-value = 0.485

DISCUSSION

The fine needle aspiration cytology (FNAC) has achieved great importance in diagnosis and management of palpable breast lesions. Due to simplicity, safety, and diagnostic accuracy, this procedure has become a widely used adjuvant diagnostic technique in management of breast lumps.[10-12]

The National Cancer Institute recommends five categories for diagnosis of breast aspiration cytology[13] in order to bring a degree of uniformity to the diagnostic reporting. These categories are unsatisfactory (C1), benign lesion (C2), atypical, probably benign (C3), suspicious, probably malignant (C4), and malignant (C5).

In this study, out of 32 FNAC C5 category, 7(21.9%) were between 18-30 age group, while 14(43.8%), 11(34.4%) were between 31-45 and 46-60 age groups respectively.

In a retrospective study at the Armed Forces Institute of Pathology, Rawalpindi, the mean age of all breast cancers was 28±2.7 years. FNAC C5 category was most frequent in 26-30 years' age group (78.6%).[14] In another study carried out at Banaras Hindu University, India, 1315 breast lesions in women up to 40 years of age were analyzed and out of these 508 lesions were C5 category (38.6%).[15]

The results of our study are further strengthened by a cross sectional study carried out in Tehran from 1996 to 2000, wherein Hirarchi et al[16] showed that the highest frequency (31.8%) of C5 category was in the 40-49 age group. 23% of breast cancers in women younger than 40 years.

In a study carried out in China by Kwong et al[17], 17.6% of the Chinese women with C5 category were younger than 40 years of age. Similarly a study carried out in Yemen in 1998 showed that age groups mostly affected by C5 category were 30-39 years and 40-49 years.[18]

The results of our study are similar to a multinational, collaborative, retrospective survey aimed at studying the overall picture of C5 category in three Asian regions, Lucknow and Mumbai in India, Kaula Lumpur in Malaysia and Hong Kong, with an emphasis on the picture in young women (<35years of age).

In that study, 26% of the patients with C5categoryatLucknow were younger than 35 years of age with peak incidence in the age group 35-40. Data from Mumbai and Kaula Lumpur showed 11% and 7.6% of patients with C5 category amongst younger than 35 years of age, respectively. Data from other countries showed that 7.4% of American patients, 29.3% of Taiwanese, 12.6% of Singaporean and 8% of Australian with C5 category were under 35 years of age.[19]

CONCLUSION

Malignancy in palpable breast lesions can definitely be diagnosed by a combination of physical examination and FNAC which when performed by a dedicated cytopathologist should be an integral part of a breast screening service. Risk of malignancy category C5 may increase with increasing age.

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