Original Research Article

Descriptive Cytological Statistics of Fine needle Aspiration Cases of Breast Lesions- the Unique Kasr El-Aini Hospital (Cairo University Hospital) Experience

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Authors' contributions

This work was carried out in collaboration between two authors. Author R.M.A is designed the study, wrote the protocol and managed the literature searches. Author T.R.S performed the statistical analysis and wrote the first draft of the manuscript. The Authors read and approved the final manuscript.

ABSTRACT

Background: This study aimed at registering the fine needle aspiration cytology (FNAC) of breast lesion cases received by the pathology department in Kasr El-Aini Hospital (Cairo University Hospital) in the last 3 years (Jan 2010 – dec 2012). one hundred and three cases were collected.

Aims: Review of all available archival material of FNAC of breast lesions in the last 3years (Jan 2010- Dec 2012), collected from the pathology department, faculty of medicine, Kasr El-Aini Hospital (Cairo University Hospital). Statistical analysis to correlate between clinical and patient data available in the request sheets, in one hand, and the pathological findings of value, on the other hand. Evaluate incidence of different pathological diagnoses for patients, in Cairo University Hospital, during this period.

Study design: Cytological and A Retrospective Statistical.

Place and Duration of Study: Department of Pathology, Kasr El-Aini Hospital (Cairo University Hospital Review of all available archival material of FNAC of breast lesions in the last 3 years between Jan 2010- Dec 2012.

Methodology: Slides and data will be collected from the archives of the pathology department, Faculty of Medicine, Cairo University Hospital during the 3 year period between Jan 2010- Dec 2012.

Data acquired from the pathology sheet is: Age, gender of patients diagnosed to have any breast lesion (neoplastic & non-neoplastic lesions), as well as any available mammography and the final cytological diagnosis. Slides will be reviewed for the cytological features which favored such diagnosis.

The Results: In the survey of fine needle aspiration cytology (FNAC) of breast lesions in the pathology department of Kasr El-Aini Hospital (Cairo University Hospital) during the period from January 2010 till December 2012, 201 cytologically documented cases were analyzed. The age range was from 12 to 86 years, and the mean age of the sample was 42.85 years. The minimum mass size value was 0.5 cm and the maximum mass size value was 11 cm. The mean of the mass size was 3.8 cm and 199 were females, opposing 2 males.

Conclusion: This work may be put as a nidus for a nationwide registry of FNAC diagnosis of different breast lesions in different governorates, and to compare between differences in the percentages of each diagnostic category whenever encountered.

Keywords: Fine Needle Aspiration Cytology

1. INTRODUCTION

Fine-needle aspiration (FNA) cytology is a popular technique used in the evaluation of breast masses due to its advantages of being sensitive, specific, simple, economical, safe, quick and acceptable to the patients. It is commonly used in addition to clinical examination, mammography, ultrasonography & magnetic resonance imaging (MRI) spectroscopy, for the diagnosis of breast lesions [1]. Recognizing that the majority of breast lesions is benign (fibro-audience is, fibrocystic changes, fibro-adenomas, fat necrosis, Peoria-ductal mastitis, duct-ectasia, hematoma, abscess… etc.), open biopsy will be inconvenient & costly [1,2]. Only a small fraction of the patients, who are clinically or radiologically or cytologically suspicious of malignancy, undergoes histopathological examination [3]. Nevertheless, in FNAC of breast lesions, there are instances where the differentiation of benign and malignant is not possible. This problem arises when the paucity of specimen sampling is encountered or there is a morphological overlap between benign and malignant lesions (e.g., atypical hyperplasia and low-grade carcinoma in situ, or in papillary lesions) [4,5]. As a result and to accommodate these problematic areas, cytological reporting categories are used to objectively describe their features in psychological terms and to incorporate the groups with uncertainties. The most commonly used categorization is a five-tier system, with categories ranging from insufficient materials (C1), benign (C2), atypical (C3), suspicious of malignancy (C4), or frankly malignant (C5) [6,7,8]. According to the different Authors, sensitivity of FNAC of breast lumps varies from 87% to 99%, specificity ranges from 56% to 100%, positive predictive value of 76% to 99%, and negative predictive value of 85% to 99% [5,9].

2. MATERIAL AND METHODS

This work included two hundred and one cases of fine needle aspiration cytology smear and related data for each case obtained through the collection of all archived cases of the pathology department, Faculty of medicine, Cairo University Hospital, during the 3 year period between January 2010 - December 2012.
i) Data collected from the pathology sheet include age, gender of patients diagnosed to have any breast lesion (neoplastic and non-neoplastic lesions), the size of the mass, as well as any available mammography data and the final psychological diagnosis.
ii) Smears will be reviewed for the psychological features which favored such diagnosis.
iii) The diagnoses will be categorized by categories ranging from insufficient materials (C1), benign (C2), atypical (C3), suspicious of malignancy (C4), or frankly malignant (C5) [10,11,12].

2.1. Statistical analysis will be conducted

i) To evaluate the incidence of different pathological diagnosis for patients during this time interval.
ii) To evaluate a possible relationship between Fine Needle Aspiration diagnoses of the different breast lesions and age, gender, sizes of the mass or any available Clinical, pathological data.
III) STATISTICAL ANALYSIS WILL BE CONDUCTED USING SPSS VERSION 15.0 (STATISTICAL PRODUCT FOR SERVICES SOLUTIONS). IV) DATA WILL SUMMARIZE USING NUMBERS AND PERCENTAGES FOR QUALITATIVE VARIABLES, WHILE FOR THE QUANTITATIVE VARIABLES, THE MEAN; STANDARD DEVIATION; AND RANGE WILL BE USED AND CHI-SQUARE TEST WILL BE USED TO DETECT THE CORRELATION BETWEEN THE TWO VARIABLE.

3. RESULTS

3.1 Distributions and measures according to sex, age, mass size and diagnosis

3.1.1 Sex distribution in all cases

The majority of cases were females, 199 were females, opposing 2 males (Table 1).

Table 1.Sex distribution of all cases

Sex	Frequency	Percent
Male	2	1%
Female	199	99%
Total	**201**	**100%**

3.1.2 Age range and distribution in all cases

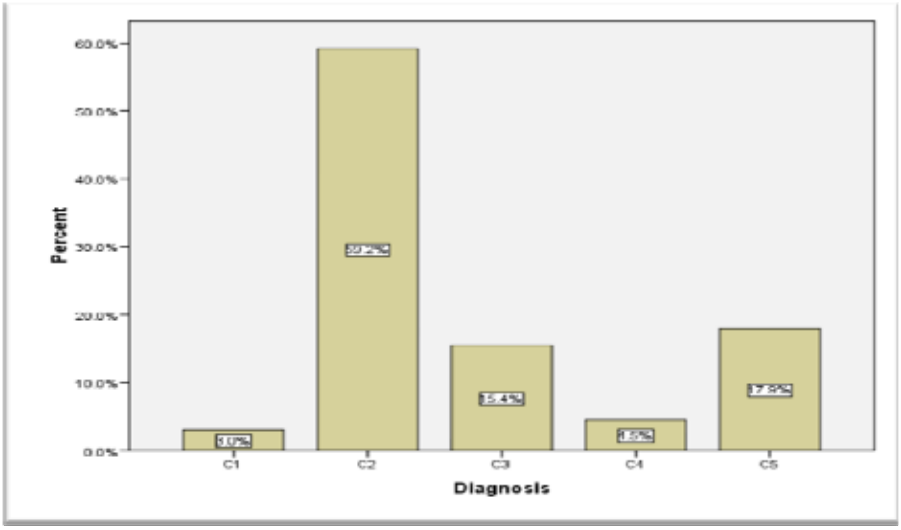
We used intervals of 10 years, each starting from the age of 10 years. Approximately one-third of the sample (35%) in the age group 40-50 years. Few individuals are in the age groups; under 20 years and above 70 years old. In general, the age distribution is fairly symmetric.

3.1.3 Mass size range in all cases

The majority of individuals have mass size of 3 cm (18.4%). The mass sizes with the smallest number of patients were" 0.5 cm, 1.4 cm, 4.2 cm, 4.5 cm, 5.5 cm and 11 cm, each represents 0.5% of individuals. At the same time, most of the individuals have mass size between 2 cm and 5 cm, approximately 76% of the individuals.

3.1.4 Categorization of cases in accord to diagnosis

The majority of the sample is diagnosed as C2 (59.2%). The least percentage 3.0% of the sample is diagnosed as C1. We can rank the diagnosis in an ascending order of occurrence as C2 (59.2%). then C5 (17.9 %) then C3 (15.4%) then C4 (4.5%) and last C1 (3.0%) (graph 1).



Graph 1. Diagnosis frequency for all cases.

3.2 Evaluation of clinicopathological parameters

3.2.1 Evaluation of clinical-pathological parameters with C1

The number of cases in C1 was 6 cases (3% of total).
i) Relation to age: The age ranged from 42 years old to 60 years old with mean 49.67 years. There was no great variation since the standard deviation was a small value. The disease was evenly distributed to the two groups of age 40-50 and 50-60 years old.
ii) Relation to mass size: The mass size for C1 had only three values 1, 2 and 6 cm. The value 1 was the most common with 50% out of 6 cases. The mean value was 2.167 cm.
iii) Relation to sex: All individuals of C1 were females (100%).

3.2.2 Evaluation of clinical-pathological parameters with C2

The number of cases in the C2 group was 119 cases. The distribution with respect to age, mass size and sex were as follows.

i) Relation to age: The age of cases ranges from 12 to 65 years old. The most common age group was 40-50 years old with 38 cases out of 119 cases (31.9%). The least common age group was 10-20 years old with 3 cases out of 119 cases (2.5%). The mean age was 40.32 years.

ii) Relation to mass size: The mass size ranges from 0.5 cm to 11 cm. The mean mass size was 3.478 cm.

The most common mass sizes were 2 cm and 3 cm, comprising approximately 21% of the cases. From the graph the distribution of the mass size was positively skewed; there were a few cases with higher values of mass size. On the other hand, there were many cases with smaller values of mass size.

iii) Relation to sex: All the cases were female (100%).

3.2.3 Evaluation of clinical-pathological parameters with C3

There are 31 cases in the group of C3 (15.4% of total cases).

i) Relation to age: The age of patients ranges from 21 years to 72 years. The most common age category of C3 patients was 40-50 years; 12 out of 31 cases (38.7%). The least common age group was 60-80 years. The mean age was 43.32 years with standard deviation of 11.07 years. The age distribution was skewed to the right;; there were many young individuals.

ii) Relation to mass size: The mass size ranges from 1.5 cm to 10.0 cm. The mean mass size was 4.2 cm with a standard deviation of 1.64 cm, which means there was no great variation. The mass size distribution was almost symmetric. The most common mass size was 4.0 cm in 10 cases out of 31 cases (32.3%).

iii) Relation to sex: All of the 31 cases are females (100%).

3.2.4 Evaluation of clinical-pathological parameters with C4

There were 9 cases in this group (4.5% of total cases).

i) Relation to age: The age of patients ranges from 29 years to 61 years. The most common age category of C3 patients was 40-50 years with 3 cases out of 9 cases (33.3%). and the age group 50-60 years with 3 cases out of 9 cases (33.3%). The mean age was 47.78 years with standard deviation of 10.872 years. The age distribution was skewed to the left; there were many older individuals.

ii) Relation to mass size: The mass size ranges from 2 cm to 6 cm. The mean mass size was 3.944 cm with a standard deviation of 1.38 cm, which means there was no great variation. The mass size distribution was negatively skewed. There were many small mass size values. The most common mass size was 5.0 cm with 3 out of 9 cases (33.3%).

iii) Relation to sex: The C4 diagnosis was dominated by females. The females were 8 patients out of 9 (88.9%). There was only one male out of 9 cases.

3.2.5 Evaluation of clinical-pathological parameters with C5

There were 36 cases in this group (17.55 of total cases).

i) Relation to age: The age ranges from 27 years to 86 years old. The mean age was 48.42 years with standard deviation 13.31, which means there was great variation. The age distribution was positively skewed; there were few cases of older ages. The most common age was 40-50 years with 15 out of 36 cases (41.7%). The least common ages were the older ones ranging from 70 – 90 years.

ii) Relation to mass size: The mass size ranges from 2 cm to 10.0 cm. The mean mass size was 4.806 cm with a standard deviation of 2.13 cm, which means there was no great variation. The mass size distribution was positively skewed; few cases with great mass sizes. The most common mass size was 5.0 cm in 5 out of 36 cases (13.9%) and 6.0 cm by 5 out of 36 cases (13.9%).

iii) Relation to sex: Females dominate this group of patients. The females were 35 out of 36 patients (97.22%). There was only one male out of 36 cases.

3.3 Clinicopathological parameters and correlations with FNAC diagnosis

3.3.1 Correlation between age & diagnosis

We can rely on Chi-Square test to inspect the correlation between age and diagnosis because the diagnosis was nominal variable. From the results, we conclude that there was the highly non-significant relationship between age and diagnosis because the p-value=0.460 which was greater than 0.05. (Table2)

Table 2. Relation of fine needle diagnosis with age

	NUMBER	Cases within 10-20	20-30	30-40	40-50	50-60-	60-70	70-80	90-80	MEAN	median	SD	Lowest age	Highest age
C1	6	-	-	3	-	3	-	-		49.67	49.50	6.653	42	60
C2	119	3	30	26	38	18	4	-		40.32	41.00	12.124	12	65
C3	31		5	7	12	5	1	1		43.32	45.00	11.703	21	72
C4	9		1	1	3	3	1	-		47.48	50.00	10.872	29	61
C5	36		3	6	15	7	3	1	1	48.42	47.00	13.315	27	86
Total No.	201	3	39	43	68	36	9	2	1	-	-	-	-	-

3.3.2 Correlation between sex &diagnosis

Sex and diagnosis both were nominal variables. Hence, we can use Chi-square test to detect the correlation between the two variables. From the results, we see that the P-value was 0.017 which is smaller than 0.05. Hence, we can conclude that there was a significant relationship between female sex and diagnosis (Table 3).

Table 3. Relation of fine needle diagnosis with sex

	NUMBER	M	F	M %	F %
C1	6	-	6	0 %	100 %
C2	119	-	119	0 %	100 %
C3	31	-	31	0 %	100 %
C4	9	1	8	11.1 %	88.9%
C5	36	1	35	2.78 %	97.22 %
Total number	201	2	199		

3.3.3 Correlation between mass size & diagnosis

We use the Chi-Square test. The results were in Table (4). From the table, there was non-significant relationship between mass size and diagnosis (Table 4).

Table 4. Relation of fine needle diagnosis with mass size

	NUMBER	Cases within 0.5-1	1-2	2-3	3-4	4-5	5-6	7-6	8-7	8-9	9-10	10-11	MEAN	median	SD	Minimum size	Maximum size
C1	6	3	2	-	-	-	1	-	-	-	-	-	2.167	1.500	1.9408	1	6
C2	119	7	29	32	21	18	5	3	2	1	-	1	3.478	3.000	1.7686	0.5	11.0
C3	31	-	4	4	11	8	2	1	-	-	-	1	4.200	4.000	1.6911	1.5	10
C4	9	-	1	3	-	4	1	-	-	-	-	-	3.944	4.000	1.379	2	6
C5	36	-	-	5	5	5	7	7	1	4	1	1	4.806	4.000	2.1323	2.6	10.0
Total number	201		36	44	37	35	16	11	7	5	1	3					

According to this study, The mass size of all cases ranged from 0.5 cm to 11cm, the majority of individuals have mass size of 3 cm (18.4%). The least mass sizes were 0.5 cm, 1.4 cm, 4.2 cm, 4.5 cm, 5.5 cm and 11 cm, each represent 0.5% of individuals. At the same time, most of the individuals, (approximately 76%) had a mass size between 2 cm and 5 cm. The mean of the mass size was 3.8 cm means a typical mass index value may be 3.8 cm. The median mass size was 3.5 cm means that 50% of individuals have mass size less than 3.5 cm. Our findings were nearly similar to that obtained

by. who found that the breast lesions ranged in size from 1 cm to 12 cm, (the mean of mass size was 4.4 cm). stated that the primary tumour size was 1.5 cm to 11 cm, with an average of 4.1 cm. So, the mass size of C2 diagnosis in our study ranged from 0.5 cm to 11 cm. The mean mass size was 3.478 cm. The most common mass sizes were 2 cm and 3 cm.

And in C5 diagnosis cases, the mass size ranges from 2 cm to 10 cm. The mean mass size was 4.806 cm. The most common mass size was 5 cm in 5 out of 36 cases (13.9%) and 6 cm by 5 out of 36 cases (13.9%). So the diagnosis of malignancy increased as tumor size became larger. In C5 diagnosis cases, the mass size ranged from 2 cm to 10 cm. The mean mass size is 4.806 cm. Our findings are nearly in agreement with, who reported that the number of positive and suspicious aspiration results increased as tumor size became larger. Female breast cancer incidence is strongly related to age, with the highest incidence rates in older women, supporting a link with hormonal status. By the age of 50 around 10,000 women were diagnosed with breast cancer (in the UK in 2010), but 80% of all diagnoses were in those over 50 and 45% were diagnosed in women aged 65 and over (in the UK between 2008 and 2010) [13,14]. Age-specific incidence rates rise steeply from around age 35-39, level off for women in their 50s, then rise further to age 65-69 years, drop slightly for women aged 70-74 years, then increase steadily to reach an overall peak in the 85+ age group [4,13]. In this study, the minimum age was 12 years and the maximum age is 86 years. The mean age of the sample was 42.85 years. C2 cases ranged in age from 12 to 65 years old and the mean age was 40-32 years. As regards the age of C2 diagnosis. mentioned that in benign conditions C2, the age varied from 16 to 65 years with a mean of 34.8.Our results nearly coincide with the results obtained by. in a retrospective study of over 300 referrals in Sheffield, they found that the ages of the women ranged from 16 to 85 years with a mean and median age of 45 years from 180 (60%) and were diagnosed as having benign breast disease C2. On the other hand, our results were not in agreement with that obtained by. who found that the benign breast lesions C2, was accounting for 556 (17%) of all cases and the mean age at diagnosis was 27 years. In our study, the 36 cases with C5 diagnosis had an age range between 27 years to 86 years old. The mean age was 48-42 years. These findings were nearly similar to that obtained by [6,14], who mentioned that in malignant conditions C5, the patients ranged in age from 28 to 86 years (mean 51 years). which were also supported by. who revealed an age range from 24 to 80 years with a mean of 42-3 years in malignant breast lesions. Also [14] in their study of 3279 cases, cancer, breast cases constituted 37% with a mean age of 49 years. In contrast to these findings, a slightly higher mean age was recorded by [11,15] which was 54 years.

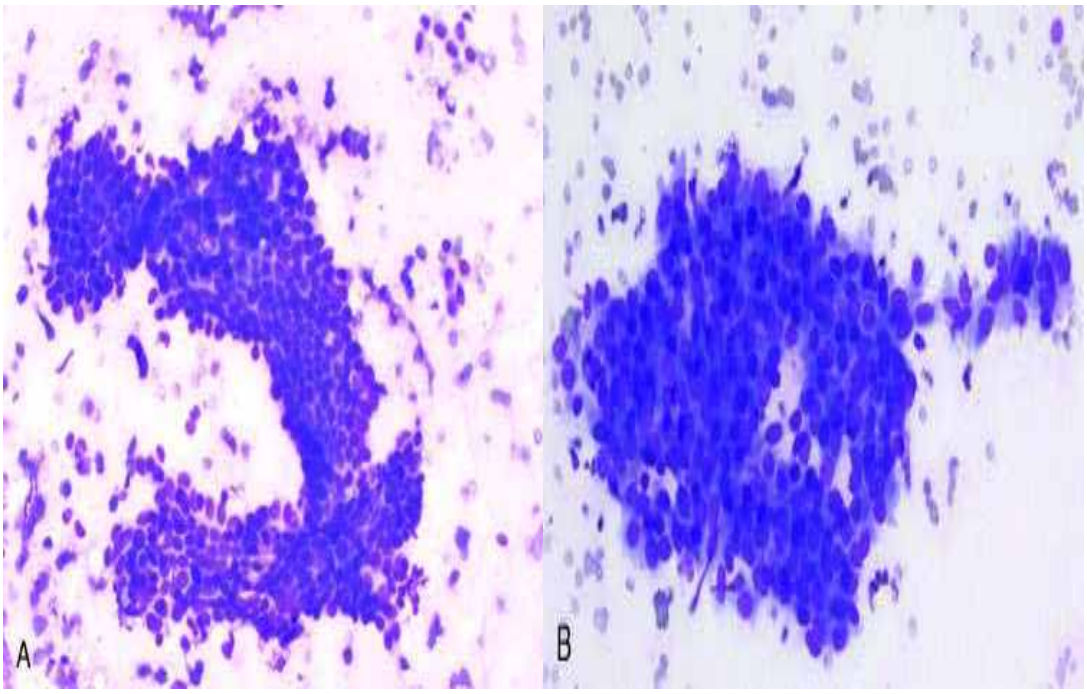


Fig.1. Fibro-adenoma (FA). A - Branching antler-horn clusters are the predominant arrangement of cells. There are rare stripped naked nuclei and bipolar cells in the background, but they are not

prominent in this summer, making it difficult to distinguish from a distal proliferative process (Diff-Quik stain). **B -** Clusters of tightly cohesive cells with minimal nuclear atypicality are characteristic of fibro-adenomas [16].

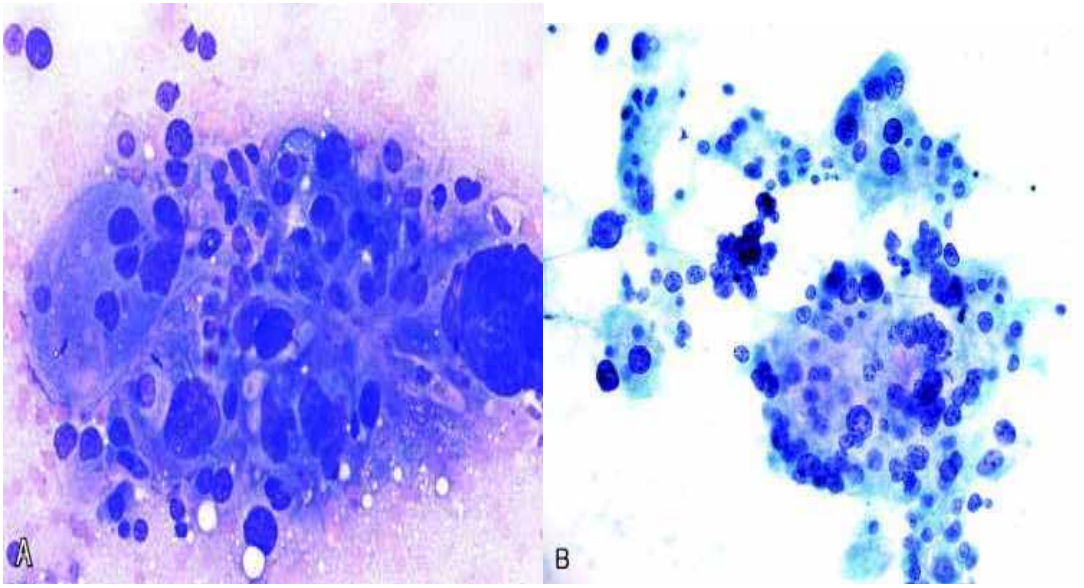


Fig. 2. Ductal carcinoma. Note the pronounced nuclear pleomorphism, multinucleated atypical cells, and nuclear Ethiopia with both Diff-Quik A, and Papanicolaou B, stains [16].

4. DISCUSSION

FNAC is best understood as a method where a fine needle was used to remove a sample of cells from a suspicious mass for diagnostic purposes. The material obtained was made into a psychological sample suitable for microscopic examination [14,15]. The diagnostic accuracy of FNAC depends on several factors, including the site and type of lesion, the experience of the aspirator, the quality of the specimen preparation and the diagnostic skills of the cytopathologist [16]. In the current survey. the age range was from 12 to 86 years, the mean age of the sample was 42.85 years. The minimum mass size value was 0.5 cm and the maximum mass size value was 11 cm. The mean of the mass size was 3.8 cm and 199 were females, opposing 2 males [14,16]. The majority of the study sample was diagnosed as benign breast disease C2 (59.2%). The least percentage 3.0% of the sample was diagnosed as insufficient or inadequate smear C1. We can rank the diagnosis in a descending order of occurrence as C2 (59.2%) benign, C5 malignant (17.9 %), C3 (15.4%) atypical smear, C4 (4.5%) suspicious smear and lastly C1 (3.0%) inadequate smear.

The predominance of benign breast lesions in our study is matched with many other studies with the same finding as [17], who stated that non-cancerous diseases of the breast had assumed increasing importance in recent times because of the public awareness of breast cancer and that the vast majority of the lesions that occur in the breast were benign [17, 18,19] found that globally, benign pathological states account for approximately 90% of the clinical presentations related to the breast [18] found that in states such as Uganda, Trinidad and Nigeria, benign breast diseases constituted 70-79% of breast lumps and these were mostly fibroadenoma and fibrocystic change. In keeping with this study [18,19] stated that The majority of this sample was diagnosed as C2 (44%). The least percentage of the sample was diagnosed as C1 (8%). A similar findings were documented by [22,23] in a series of 190 breast masses were identified during the study period. The FNA cytological diagnosis was unsatisfactory due to inadequate specimens in eight cases (4.2%) C1. The diagnoses in the remaining 182 cases were: benign lesions in 98 (53.9%) C2; suspicious for malignancy in 31 (17.0%) C4; and malignant in 53 (29.1%) C5. In contrast to our study, results of psychological diagnosis mentioned by [24,25,26] from a total 113 cases, revealed that 41cases were diagnosed to

be malignant C5 (36.28%), 30 cases reported as suspected malignancy C4 (26.54%), 37 specimens labeled benign C2 (32.74%) and 5 cases reported as inadequate/unsatisfactory C1 (4.42%). (Write the % of each). A retrospective study was performed using a computer database over a 5-year period by [27,28]. A total of 697 patients fulfilled the criteria. Only 5 (0.7%) of the specimens were inadequate for the study; C1. There were 401 total malignant fine-needle aspiration diagnoses; C5 (57%), 125 suspicious readings; C4 (17.9%) and 166 lesions interpreted as benign C2 (23.816%) [29]. performed FNA on 231 patients. There were 117 (51%) malignant FNA diagnoses C5, 20 (9%) cases diagnosed as suspicious C4, 91 (39%) cases interpreted as benign C2. The prevalence of malignant diagnosis in such studies may be explained by genetic differences, geographic distribution, the quality of the specimen preparation and the diagnostic skills of the cytopathology in different diagnostic centers. Benign breast diseases encompass a spectrum of histologic entities usually subdivided into non-proliferative breast lesions, proliferative breast lesions without atypia, and proliferative breast lesions with atypia [30]. found that one in five of all benign breast diseases were profilerative in nature. and one in three of the benign proliferative lesions had Ethiopia. Ethiopia is considered to carry two to four fold risk for developing breast cancer [4,31]. The atypical proliferation occurs most frequently in the post menopausal period. when serum oestrogen wanes, perhaps explaining the Ethiopia [17,31,32]. It is therefore important for surgeons, pathologists and oncologists recognize benign lesions, both to distinguish them from in situ and invasive breast cancer and to assess a patient's risk of developing breast cancer, so that the most appropriate treatment modality for each case can be established [34,35]. In our study The majority of cases were females, 199 were females, opposing 2 males. Just being a woman is the biggest risk factor for developing breast cancer. There are about 190,000 new cases of invasive breast cancer and 60,000 cases of non-invasive breast cancer this year in American women. While men do develop breast cancer , less than 1% of all new breast cancer cases happen in men. The biggest reasons for the difference in breast cancer rates between men and women are:

- Women's breast development takes 3 to 4 years and is usually complete by age 14. It is uncommon for men's breasts to fully form most of the male breasts you see are fat, not formed glands.
- Once fully formed, breast cells are very immature and highly active until a woman's first full-term pregnancy. While they are immature, a women's breast cells are very responsive to estrogen and other hormones, including hormone disrupters in the environment. Men's breast cells are inactive and most men have extremely low levels of estrogen. So hormonal stimulation of highly responsive and vulnerable breast cells in women, particularly during the extra-sensitive period of breast development, is mostly responsible for the development of breast cancer in women than in men [7]. Male breast cancer is a rare condition, accounting for only about 1% of all breast cancers. The American Cancer Society in 2010, found 1970 new cases of breast cancer in men and that breast cancer caused approximately 390 deaths in men (in comparison, almost 40.000 women die of breast cancer each year). Breast cancer is 100 times more common in women than in men. Most cases of male breast cancer are detected in men between the ages of 60 and 70, although the condition can develop in men of any age. A man's lifetime risk of developing breast cancer is about 1/10 of 1%, or one in 1000 [8.36]. In keeping with our study that confirms the female predominance is the study made by [19,26]. Were all the patients were female.

According to this study, the mass size of all cases ranged from 0.5 cm to 11cm, the majority of individuals have mass size of 3 cm (18.4%). The least mass sizes were 0.5 cm, 1.4 cm, 4.2 cm, 4.5 cm, 5.5 cm and 11 cm, each represent 0.5% of individuals. In the same time, most of the individuals had mass size between 2 cm and 5cm, approximately 76% of the individuals. The mean of the mass size was 3.8 cm means a typical mass index value may be 3.8 cm. The median mass size was 3.5 cm means that 50% of individuals have mass size less than 3.5 cm.our findings were nearly similar to that obtained by [36,37], who found that the breast lesions ranged in size from 1 cm to 12 cm, the mean of mass size was 4.4 cm) [26,37]. Also fund the primary tumour size was 1.5 cm to 11 cm with, the mean average of 4.1 cm. In accordance with our results, the mass size of C2 diagnosis in our study ranged from 0.5 cm to 11 cm. The mean mass size was 3.478 cm. The most common mass sizes were 2 cm and 3 cm. And in C5 diagnosis cases, the mass size ranged from 2 cm to 10 cm. The mean mass size was 4.806 cm. The most common mass size was 5 cm with 5 out of 36 cases (13.9%) and 6 cm with 5 out of 36 cases (13.9%). So the diagnosis of malignancy increased as tumor size became larger. In accordance with our results, in C5 diagnosis cases, the mass size ranged from

2 cm to 10 cm. The mean mass size is 4.806 cm. in our findings, nearly in agreement with Barrows et al. (1986) who reported that the number of positive and suspicious aspiration results increased as tumor size became larger. Female breast cancer incidence is strongly related to age, with the highest incidence rates in older women, supporting a link with hormonal status.

By the age of 50 around 10,000 women were diagnosed with breast cancer (in the UK in 2010), but 80% of all diagnoses were in the over 50 and 45% were diagnosed in women aged 65 and over (in the UK between 2008 and 2010 [14,38].

Age-specific incidence rates rise steeply from around age 35-39, level off for women in their 50s, then rise further to age 65-69 years, drop slightly for women aged 70-74 years, then increase steadily to reach an overall peak in the 85 age group [39].

In this study, the minimum age was 12 years and the maximum age was 86 years. The mean age of the sample was 42.85 years. C2 cases ranged in age from 12 to 65 years old and the mean age was 40.32 years. As regards the age in C2 diagnosis [27]. mentioned that in benign conditions C2, the age varied from 16 to 65 years with a mean of 34.8.our results nearly coincide with the results obtained by [21,40]. in a retrospective study of over 300 referrals in Sheffield they found that the ages of the women ranged from 16 to 85 years with a mean and median age of 45 years from 180 (60%) and were diagnosed as having benign breast disease C2. On the other hand, our results were not in agreement with that obtained by [22] who found that, the benign breast lesions C2, was accounting for 556 (17°/o) of all cases and the mean age at diagnosis was 27 years. In our study, the 36 cases with C5 diagnosis had an age range between 27 years to 86 years old. The mean age was 48-42 years. These findings were nearly similar to that obtained by [37] who mentioned that in malignant conditions C5, the patients ranged in age from 28 to 86 years (mean 51 years). which were also supported by [26,41] who revealed an age range from 24 to 80 years with a mean of 42-3 years in malignant breast lesions. Also [22,42,43] in their study of 3279 cases, cancer, breast cases constituted 37% with a mean age of 49 years. In contrast to these findings, as lightly higher mean age was recorded by [45,46] which was 54 years.

5. CONCLUSION

1- FNAC is a simple, economical, safe, quick and acceptable to patients, and can be performed with little complications.
2-FNAC is a valuable tool in preoperative assessment of breast masses, to differentiate benign from malignant lesions.
3-Classification of FNAC of breast lesions according to five-tier system, with categories ranging from insufficient materials (C1), benign (C2), atypical (C3), suspicious of malignancy (C4), or frankly malignant (C5) Can serve as a common dialect among all professionals involved in breast management.
4-For proper evaluation of breast masses, a triple test with assessment of clinical and radiological findings has to be established. 5-This work may be put as a nidus for a nation wide registry of FNAC diagnosis for different breast lesions in different governorates, and to compare between differences in the percentages of each diagnostic category whenever encountered.

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