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**Comparative study between FNAC and
TCNB for Diagnosis of Breast masses**

Most diseases of the breast present as a palpable mass. The majority of breast lesions are not malignant, and most 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 (FNAC), and Tru cut needle biopsy (TGNB) or core needle biopsy (CNB). FNAC has grown in popularity and became the first initial used procedure after history taking and clinical examination for diagnosis of solid and cystic breast lumps. This study was designated to investigate the accuracy of FNAC in comparison to TCNB for diagnosis of palpable breast masses. Subjects and methods: Fine needle aspirates (FNA) were obtained from all patients and TGNB were obtained from 57 patients. Surgical biopsy specimen (SBS); incisional and/or excisional were done for 71 patients. The success rate, sensitivity and specificity of FNAC were calculated and the results were compared with those of TCNB. Results: The success rate, sensitivity and specificity of FNAC were 76.1%, 93.4% and 78.3% respectively. The success rate, sensitivity and specificity of TCNB in this study were 89.5%, 86.1% and 100% respectively. Conclusion: FNAC is a reliable tool for diagnosis of benign and malignant breast lesions with accuracy comparable to TCNB. The success rate decreases in cases of recurrent lumps. TCNB has the upper hand for full histopathological diagnosis of breast lesions.

Key words: FNAC, TCNB, breast lump.

Abbreviations: Fine-needle aspiration cytology; FNAC, Tru cut needle biopsy; TCNB, core needle biopsy; CNB, Surgical biopsy specimen; SBS, Fine-needle aspiration; FNA

INTRODUCTION:

Most diseases of the breast present as a palpable mass. Although fortunately most are benign, breast cancer is the second most common cause of cancer deaths in women (Rosen and Oberman, 1993 & Doengan and Spratt, 1995). During management of patients with suspected breast cancer, the usual procedure is to confirm the diagnosis by the paraffin embedded sections or frozen sections and then proceed to mastectomy.

Both TCNB or CNB and FNAC were used to achieve the diagnosis of breast mass prior to

the operation. Both are safe and economical techniques that can be widely applicable in the outpatient clinic (Ballo and Sneige, 1996).

Many studies were conducted to evaluate the accuracy of TCNB in the diagnosis of breast lumps. One of them showed that the sensitivity of TCNB was 88.9%, the specificity was 96.8% and the overall accuracy was 93.5% (Gukas et al, 2001). Another study indicated that the overall accuracy of TCNB was 90% while that of FNAC was 94% (Scopa et al, 1996). Although TCNB allows histological classification of the diagnosed lesions, sampling errors, specimen

damage and pneumothorax may occur (Dowlatshahi et al, 1991).

Regarding FNAC, it has been shown that the sensitivity was 92%, specificity was 83% and the overall accuracy was 88% in the study of Reinikainen et al, (1999). Another study showed that the overall accuracy of FNAC in the diagnosis of benign and malignant breast lesions was 97.3% and 97.7% respectively (Yu et al, 2000).

Cytological Indicators of Benignity

Aspirates of benign breast lesions usually contain ductal epithelial cells, myoepithelial cells with a background of bare bipolar nuclei. In cases of benign cystic lesions, apocrine metaplastic cells and macrophages or foam cells are common findings (Howat and Coghill, 2003). Benign epithelial cells show good cohesion and tend to form flat single-layered sheets. The cells within the sheet appear equal in size with uniform rounded or oval nuclei. The nuclear/cytoplasmic (N/C) ratio may be high in some benign ductal cells, so this feature is not a reliable criterion to differentiate benign from malignant lesions. The chromatin pattern is vesicular with or without small nucleolus (Trott, 1996). The presence of myoepithelial cells in breast aspirates is an important feature to diagnose benign lesions and to differentiate benign from malignant lesions (Ramzy, 2001).

Cytological Indicators of Malignancy

Cellularity of the aspirate, dyscohesion and nuclear atypia are important cytological criteria of malignancy (Trott, 1996 and Howat & Coghill, 2003). Linsk and Franzen, (1985) and Howat and Coghill, (2003) reported that lack of cell-to-cell cohesion should raise the alarm that the aspirate is malignant and other criteria should be searched for. Diagnosis of frank malignancy should be raised in case of absence of myoepithelial cells and presence of atypical large pleomorphic epithelial cells. When confronted with an equivocal aspirate search for pairs of myoepithelial cells, this permits a diagnosis of malignancy. When these cells are absent or atypical; large, pleomorphic and irregular, the diagnosis of frank malignant could be made (Trott, 1996). Malignant cells usually show anisocytosis, form acini, ducts or present as tissue fragments (Ramzy, 2001). Additionally, malignant cells usually show nuclear moulding as the neoplastic cells are crowded and fit into each other, concavity into convexity. Abundant necrotic material in otherwise cellular aspirate is usually attributable to tumor necrosis (Howat and Coghill, 2003). The other general cytological criteria of malignancy including pleomorphism, hyperchromatism, increased N/C ratio, irregular thick nuclear chromatin with irregular chromatin distribution may be detected in aspirates from malignant breast lesions (Ramzy, 2001). Trott (1991) divided the criteria of malignancy into obvious criteria and less obvious one as shown in Table 1.

Table 1 : Cytological criteria of malignancy (Trott, 1991)

| Obvious features | Less obvious features |
|-------------------------------|------------------------------------|
| - Large size | - Intracellular vacuoles |
| - Nuclear border irregularity | - Monomorphism |
| - Large nucleoli | - Mitoses |
| - Lack of cohesion | - Single cells with much cytoplasm |
| - Cellular pleomorphism | - Absence of benign pairs |

Aims of the work

- 1- To assess the success rate, sensitivity and specificity of FNAC in the diagnosis of breast lumps.
- 2- To compare such variables with success rate, sensitivity and specificity of TCNB.
- 3- To correlate the results of both FNAC and TCNB with the definitive histological diagnosis of SBS.
- 4- To verify if FNAC is a reliable tool for differentiation of breast lumps and whether it could be used in the outpatient clinic for provisional diagnosis of such cases.

Patients and methods

This study included seventy-two patients collected from the Outpatient Clinic of Surgery Department at Sohag University Hospital in the period from November 2002 to September 2003.

Firstly the patients were subjected to accurate history taking as age, sex, affected side, history of recurrence and history of other associated symptoms were documented. Then proper clinical examination was done and several parameters including site and size of the lump, any associated clinical signs (nipple retraction, skin dimpling, ulceration, peau d'orange appearance and enlarged axillary lymph nodes) were documented. The provisional clinical diagnosis was also considered. A spreadsheet including all clinical data was constructed.

FNAC were obtained from 72 cases, TCNB were obtained only from 57 cases and the results were compared to the results of SBS (incesional and/or excesional biopsy) that was obtained from 71 cases. The remaining case, SBS could not be obtained as the patient left the hospital before getting TCNB or SBS.

FNAC using 5-ml syringe and 22-gauge needles (internal diameter is 0.6 mm) was obtained using the technique described in the literature (Trott, 1996). Average of three needle passes were made for each lump except in one patient who refused more than one needle

pass. The collected aspirates were fixed for few minutes in ethyl alcohol (95%) and then stained by H&E.

The cytological interpretation was classified into definitive benign, definitive malignant and non-conclusive or non-diagnostic results, including suspicious and unsatisfactory cases. According to Al-Kaisi, (1994) suspicious cases are those in which an unequivocal diagnosis of benignity or malignancy cannot be concluded due to overlap of the cytological criteria used to distinguish benign from malignant. The unsatisfactory reports indicate scanty or acellular aspirate (less than 5 clumps of epithelial cells) or poor preparation or artifacts (as drying) or excess blood or inflammatory cells obscuring the underlying lesion according to Trott, (1996).

A 14-gauge Tru-cut needle (of 20 mm length and 1 mm internal diameter) was used according to the technique described in literatures (Fentiman et al, 1980 and Browning, 1990) to obtain multiple tissue cores. The collected cores were fixed in 10% formalin and then embedded in paraffin and cut at 5-micron thickness. The slides were stained with H&E as usual. The results of TCNB were classified into benign, malignant and tiny non-diagnostic specimens. Some difficulties were experienced during TCNB sampling of certain cases. These include small-sized lumps, recurrent small nodules and lumps diagnosed as chronic breast abscess and evacuated during sampling. The results of both FNAC and TCNB were then correlated with the histological diagnosis obtained by SBS.

The success rate, sensitivity and specificity for both FNAC and TCNB were calculated and compared to each other. The success rate is the percentage of cases diagnosed accurately by this method. Sensitivity is the number of carcinomas diagnosed positively as well as those with equivocal appearances (i.e. excluding false negative cases or inadequate cases) expressed as a proportion of the total number of carcinomas included in the study. Specificity is the number of correctly identified benign lesions expressed as a proportion of the total number of benign

lesions included in the study (Trott, 1996).

RESULTS

Clinical data of the examined cases

The series of the examined patients included one male and 71 female. The mean age of benign breast lesions was 37.6 years, whereas the mean age of malignant breast tumors was 47.7 years. The commonest presented size for breast lump ranged from 2-4 cm (61.1%). Both right and left sides are included in the study (51.4%, 48.6% respectively). Breast lump is common in the retroareolar region and upper outer quadrant part of the breast (29.2% and 26.4% respectively), but rare in the lower inner quadrant (4.2%).

Based on SBS benign lesions are 23/71 (32.4%) cases; twelve of them (52.5%) were below the age of 40 years. On the other hand malignant lesions are 48/71 (67.6%) cases. We found that malignant tumors commonly affect patients aging from 30 to 50 years 35/48 (72.9%), but are rare in patients less than of 30 years of age, 1/48 (2.1%).

Malignant lesions are commonly associated

with enlarged axillary lymph nodes and retracted nipple or skin dimpling (31% and 28.2% respectively). These features may also be present in benign lesions. Two cases of chronic breast abscess were associated with retracted nipple, one of them showed prominent peau d'orange appearance. Ulcerations and bleeding per nipple were only limited to malignant tumors; 2/48 (4.2%) and 1/48 (2.1%) respectively.

The number of benign lesions in this study is 23/71 as confirmed by histological examination of SBS. Twelve of them (52.5%) were below the age of 40 years. The number of malignant lesions is 48/71; only one of them (2.1%) was below the age of 30. Malignant lesions were found mainly in patients aged from 30 to 50 years (45/48, 72.9%).

Histological variants of the examined lesions

Based on SBS, 23/71 (32.4%) are benign and 48/71 (67.6%) are malignant. The different histological types are shown in Table (2) with the IDC, NOS is the commonest diagnoses in the examined lesions, 43/48 (89.6%).

Table 2: Based on SBS the frequencies of different breast lesions are:

| The Lesions | Number | % |
|--|-----------|--------------|
| -Benign breast lesions | 23 | 32.4% |
| 1- Inflammatory | 10 | 14.1% |
| 2- Benign proliferative breast disease | 9 | 12.7% |
| 3- Fibroadenoma | 4 | 5.6% |
| -Malignant breast lesions | 48 | 67.6% |
| 1- Ductal carcinoma in situ | 1 | 1.4% |
| 2- Invasive duct carcinoma Not otherwise specified | 43 | 60.6% |
| 3- Medullary carcinoma | 1 | 1.4% |
| 4- Mucoïd carcinoma | 1 | 1.4% |
| 5- Lobular carcinoma | 1 | 1.4% |
| 6- Mixed lobular and ductal carcinoma | 1 | 1.4% |
| Total | 71 | 100% |

Cytological diagnosis of the aspirated lesions:

According to Trott (1996) and Howat and Coghill (2003)) benign lesions had good cellularity and other cytological features of benignity (cohesed uniform ductal epithelial cells, myoepithelial cells and many bipolar nuclei in the background). Malignant tumors showed also good cellularity with prominent features of malignancy (cellular dyscohesion, pleomorphism, hyperchromatism, increased N/C ratio and absence of myoepithelial cells).

FNAC of the 72 investigated lesions revealed variable results, between definite benign, definite malignant, suspicious and unsatisfactory lesions (Table 3).

Table 3: The cytological diagnosis of the 72 lesions aspirated

| Results of FNAC | Number of lesions | % |
|--|-------------------|-------------------|
| <u>A- Conclusive diagnostic results</u> | <u>54</u> | <u>75%</u> |
| 1- Definite malignant lesions | 36 | 50% |
| 2- Definite benign lesions | 18 | 25% |
| a) Inflammatory | 7 | 9.7% |
| b) BPBD | 7 | 9.7% |
| c) Fibroadenoma | 4 | 5.6% |
| <u>B- Non-conclusive Results</u> | <u>18</u> | <u>25%</u> |
| 1- Suspicious lesions | 11 | 15.3% |
| 2- Unsatisfactory lesions | 7 | 9.7% |
| Total | 72 | 100% |

Success rate, sensitivity and specificity of FNAC:

The success rate of FNAC for diagnosis of benign breast lesions is 18/23 (78.3%) and for diagnosis of malignant tumors is 48/72 (78%). The total success rate of FNAC for both benign and malignant lesions is 54/72 (76.1%) as shown in Table (4). The sensitivity and specificity of FNAC for diagnosis of different breast lesions are 93.4% and 78.3% respectively.

**Table 4: Success rate, sensitivity and specificity of FNAC
in the diagnosis of benign and malignant breast lesions:**

| The lesions | Results of SBS | Results of FNAC | | | | Success rate of FNAC | FNAC sensitivity | FNAC specificity |
|-----------------------|----------------|-----------------|-----------|-----------|----------|----------------------|------------------|------------------|
| | | Ben. | Malig. | Susp. | Uns. | | | |
| A- Benign | 23 | 18 | -- | 1 | 4 | 78.3% | -- | -- |
| B- Malignant | 48 | -- | 36 | 9 | 3 | 75% | -- | -- |
| C- Undiagnosed | 1 | -- | -- | 1 | -- | -- | -- | -- |
| Total | 72 | 18 | 36 | 11 | 7 | 76.1% | 93.4% | 78.3% |

Histological results of TCNB:

TCNB revealed definite diagnosis in 51/57 lesions that proved by SBS (Table 5).

Table 5: The results of TCNB of the investigated 57 lesions

| The lesions | Results of TCNB | % |
|-------------------------------------|-----------------|--------------|
| A- Benign lesions: | 14 | 24.6% |
| - Inflammatory | 5 | 8.8% |
| - BPBD | 8 | 14.04% |
| - Fibroadenoma | 1 | 1.8% |
| B- Malignant lesions | 37 | 64.9% |
| - DCIS | 1 | 1.8% |
| - IDC, NOS | 33 | 57.9% |
| - Mucoïd carcinoma | 1 | 1.8% |
| - Lobular carcinoma | 2 | 3.5% |
| D- Undiagnosed tiny specimen | 6 | 10.5% |
| Total | 57 | 100% |

Success rate, sensitivity and specificity of TCNB:

The total number of benign and malignant lesions diagnosed by TCNB was 51/57 with success rate 89.5% (Table 6). The number of benign lesions diagnosed by TCNB was 14/14 (100% success rate), while the number of diagnosed malignant lesions was 37/43 (86.1% success rate). The sensitivity and specificity of TCNB are 86.1% and 100% respectively.

Table 6: Success rate, sensitivity and specificity of TCNB in the diagnosis of benign and malignant breast lesions (57 lesions):

| The lesions | Results of SBS | Results of FNAC | | | | Success rate of TCNB | TCNB sensitivity | TCNB specificity |
|---------------------|----------------|-----------------|-----------|----------|--------------|----------------------|------------------|------------------|
| | | ----- | Ben. | Malig. | Susp. | | | |
| A- Benign | 14 | 14 | -- | -- | 100% | -- | -- | |
| B- Malignant | 43 | -- | 37 | 6 | 86.1% | -- | -- | |
| Total | 57 | 14 | 37 | 6 | 89.5% | 86.1% | 100% | |

Comparison between success rate of FNAC and TCNB:

Table (7) reveals the success rate of both TCNB and FNAC in the 57 lesions. It is 100% and 78.6% for benign lesions respectively and 86.1% and 76.7% for malignant tumors respectively. The success rate of TCNB and FNAC for all the examined are 89.5% and 77.2% cases respectively.

Table 7: Comparison between the success rate of both FNAC and TCNB in the diagnosis of different breast lesions (57 cases)

| The lesions | SBS | Results of FNAC | Results of TCNB | Success rate of FNAC | Success rate of TCNB |
|----------------------|-----------|-----------------|-----------------|----------------------|----------------------|
| A- Benign lesions | 14 | 11 | 14 | 78.6% | 100% |
| B- Malignant lesions | 43 | 33 | 37 | 76.7% | 86.1% |
| Total | 57 | 44 | 51 | 77.2% | 89.5% |

Aspiration of recurrent breast lumps:

The cases of recurrent breast lumps were 18 (25%). Table (8) shows the ability of FNAC to diagnose such cases of recurrent breast lump.

Table 8: The success rate of FNAC in the diagnosis of recurrent breast lesions (18 lumps):

| The lesions | SBS | Results of FNAC | | | | Success rate of FNAC |
|---------------------|-----------|-----------------|----------|----------|----------|----------------------|
| | | Ben. | Malig. | Susp. | Uns. | |
| 1- Benign lesion | 7 | 3 | -- | 1 | 3 | 3/7 (42.9%) |
| 2- Malignant lesion | 11 | -- | 6 | 3 | 2 | 6/11 (54.6%) |
| Total | 18 | 3 | 6 | 4 | 5 | 9/18 (50%) |

Our study showed that:

FNAC can perfectly differentiate between benign and malignant breast lesions. It can accurately diagnose some benign breast lesions as fibroadenoma (Figure 1 A and 1B).

Using FNAC, it is possible sometimes to differentiate between ductal carcinoma and lobular carcinoma of the breast as:

- Ductal carcinoma shows prominent cytological features of malignancy as marked dyscohesion, prominent pleomorphism and increased N/C ration (Figure 2A and 2B) and sometimes abnormal mitosis (Figure 2C).
- Lobular carcinoma shows bland cellular features with monotony of cells and intracytoplasmic vacuoles (Figure 2D).

Using FNAC, it is difficult to differentiate between DCIS and IDC of the breast. The presence of necrosis and microscopic calcification that are required in FNAC to suggest *in-situ* component of the tumor are absent in our studied aspirates.

TCNB can be used accurately to differentiate benign breast lesions from malignant ones, to diagnoses invasive lobular carcinoma (Figure 2E), to differentiate between invasive lobular carcinoma from invasive ductal carcinoma and to differentiate between ductal carcinoma *in situ* from invasive ductal carcinoma. SBS is the standard tool for diagnosis of benign and malignant breast lesions, to diagnose invasive and *in situ* (Figure 2F) breast lesions and to confirm the diagnosis of both FNAC and TCNB.

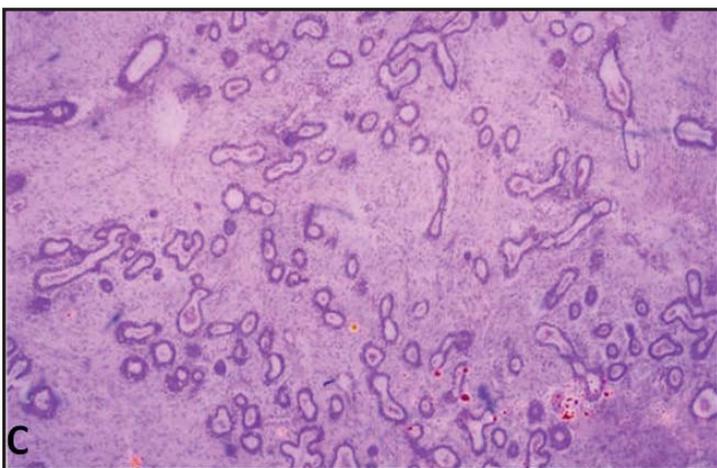
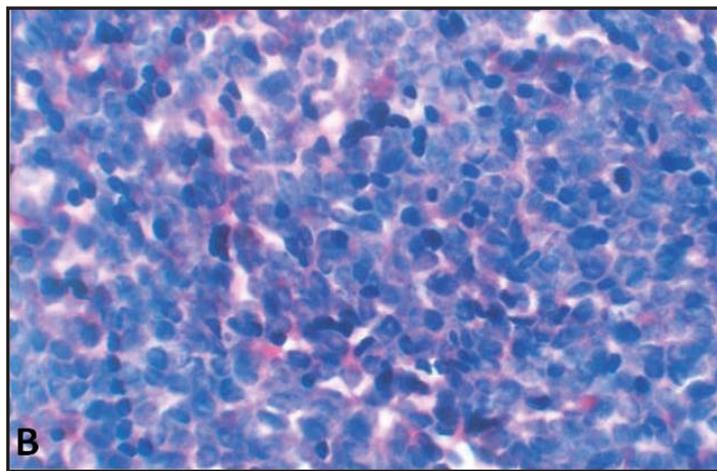
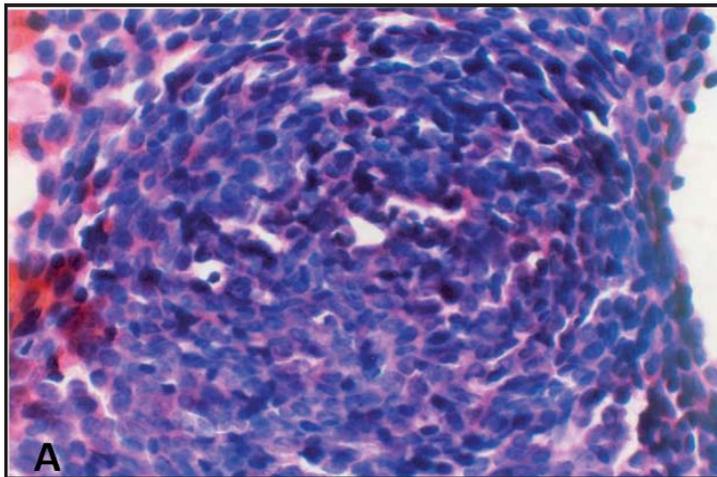


Figure 1: FNAC from fibroadenoma (A and B) showed marked cohesion of cells (H&E, x200), and SBS from fibroadenoma (C, H&E, x40)

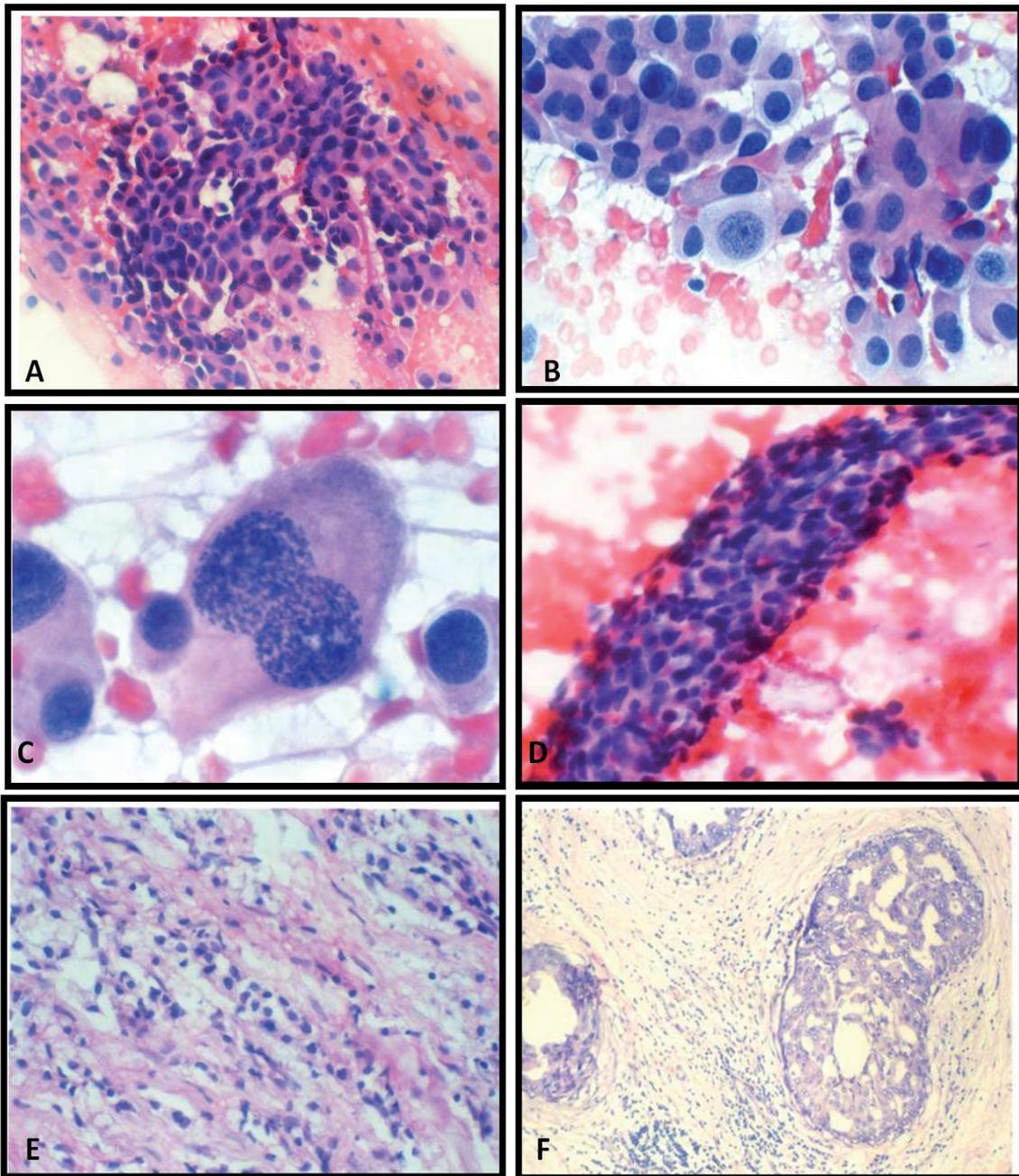


Figure 2: FNAC from invasive duct carcinoma showed marked dyscohesion of cells (A, H&E, x20 and B, H&E, x400), and abnormal mitosis (C, H&E, x400). TCNB from invasive lobular carcinoma showing Indian file pattern (E, H&E, x200) and SBS from ductal carcinoma in situ (F, H&E, x100)

DISCUSSION

FNAC was obtained from 72 patients with frequency of benign lesions was 23/71 (31.5%) and of malignant tumors was 48/71. The high rate of malignant breast lesions in this study could be explained by the fact that people who attend the outpatient clinic repeatedly are the patients who are suspicious for malignancy while a patient who was informed that her breast lump is clinically benign usually refused surgical procedures. These results are in agreement with Miccoli et al (1986) who found that 150/204 of breast lumps (73.5%) are malignant and 54/204 of lumps (26.5%) are benign, Ciatto et al (1989) who found that 851/1018 of breast lumps (83.6%) are malignant and only 167/1018 of breast lumps (16.4%) are benign and El-Ghorori et al, (1998) who found that 62% of them are malignant and 38% are benign. In contrast, in a study included 246 patients, 153/246 (62.2%) are benign and 93/246 (37.8%) are malignant (Kim et al, 2000).

Our data reflects also that incidence of benign breast lesions is higher in younger age group and as the patients get older, malignant tumors begin to dominate. This finding is in agreement with previous reports of Miccoli et al, (1986), Hughes et al (1989) and Sainsbury et al (1998). In a different series of 626 cases, the mean age for benign lesions was 44.7 years while that of malignant lesions was 54.4 years (Miccoli et al, 1986).

Regarding the site of the breast lump, our results are consistent with that of Saunders and Baum (2000) who reported that breast cancer commences most frequently in the upper outer quadrant.

In agreement with the findings of Saunders and Baum (2000) and Iglehart (1991) it is clearly evident that clinical signs like enlarged axillary lymph nodes, peau d'orange appearance, ulceration, bleeding per nipple, retracted nipple and skin dimpling are present more frequently with malignant lesions rather than with benign ones.

Ellis et al (1999) referred to the size of the aspirated lump as an important factor that influences the success rate of FNAC diagnosis. The smallest aspirated lump in our result is 1cm and the largest one is 15 cm in their greatest diameter. The mean size of these lumps is 4.3 cm. Our results are consistent with many authors who found that breast lumps, as small as 1cm, are aspirated successfully (Miccoli et al, 1986, Iglehart, 1991 & Ballo and Sneige, 1996). However, in a study included 498 cases of palpable breast lesions, the sizes of the aspirated lumps ranged between 0.5 cm and 25 cm. The small-sized lesions in this study were aspirated successfully (Costa et al., 1993). The smallest palpable breast lesion that can be aspirated successfully was 0.3 cm in the study of Kline, (1988).

TCNB was obtained from 57 of our investigated patients. There are 14 lesions from which TCNB could not be obtained. The surgeon preferred excisional biopsy rather than TCNB in 7/14 lesions; six of them were either small recurrent nodules after modified radical mastectomy (three cases) or small and clinically diagnosed as well-defined fibroadenomas (three cases). The seventh patient was an old male presented clinically by retroareolar mass with destruction and ulceration of the nipple; so excisional biopsy was preferred for diagnosis and treatment. Two lesions were diagnosed as chronic abscesses during the process of aspiration (pus was aspirated); the surgeon proceeded to complete their evacuation and small biopsy was obtained from each. The remaining five lesions were small-sized (two cm or less) and TCNB is difficult to be obtained. Both SBS and TCNB failed to be obtained in one case only. She was a 20 years old girl, and she was diagnosed clinically as a benign lesion and she left the hospital after being aspirated. However, the cytological result of this case was suspicious for malignancy and surgical biopsy is highly indicated.

Consistent with our results, the small-sized breast lump is a common cause of failure of

TCNB (Fentiman et al, 1980). They showed that false negative results of TCNB of breast lump occur with small-sized masses.

In this study, IDC NOS is the commonest histological type of breast carcinoma, representing 89.6% of cases (43/48). This is consistent with Rosen (1996) and Laster and Cotran, (1999) who reported that IDC NOS is the commonest histological type of breast carcinoma and constitutes 70% to 80% of all malignant tumors of the breast.

The cytological results of the 72 investigated lumps revealed that 36 breast lumps (50%) were malignant lesions, 18 breast lumps (25%) were benign, 11 breast lumps (15.3%) were suspicious and 7 breast lumps (9.7%) had unsatisfactory diagnosis.

Consistent with (Al-Kaisi, 1994), we had eleven cases (15.3%) with cytological diagnosis of "suspicious for cancer" in our study. They were suggestive but not conclusive of malignancy as there was lack of cellularity, limited dyscohesion, and minimal nuclear pleomorphism with the presence of scanty bipolar nuclei and benign cell clusters in the background. As we could not diagnose with certainty if these cases are benign or malignant biopsy from such lesions is recommended.

Despite all efforts, we had seven lumps (9.7%) with scanty cellular material. Our result is consistent with Lee et al (1987) who reported a rate of 9.8% technical failure if an experienced person carried out the aspiration and with Hammond et al (1987) who indicated that insufficient material is the most often problem of the technique. On the other hand, Miccoli et al (1986) revealed that 15.5% of the studied cases was unsatisfactory, Bibbo's (1988) who had unsatisfactory result in 13.2% cases and Zerbo et al (1991) who found that 17% of their studied cases are unsatisfactory.

The scanty cellular material in five lumps was due to fibrotic lesions (recurrent lump after previous lumpectomy in three patients and recurrent nodule after modified radical mastectomy in two patients). The cell yield in

these aspirates is scanty even after repeated needling. One of the remaining two unsatisfactory aspirates showed excess red blood cells and scanty epithelial cells and the last one was lump of three cm diameter and the patient was very anxious and she refused repeated needling. Our result was in agreement with Feichter et al (1997) who referred to the intrinsic properties of the aspirated tissue mass (sclerosis, necrosis and cell type) as a cause of such inadequate hypocellularity.

The result of FNAC can be categorized into two main groups, conclusive or diagnostic category and non-conclusive or non-diagnostic category. The conclusive category includes both benign and malignant lesions in which FNAC reached a definite diagnosis. This category includes 18 benign lesions out of 23 lesions diagnosed by SBS (with success rate of 78.3%) and 36 malignant lesions out of 48 lesions diagnosed by SBS (with success rate of 75%). The total number of lesions diagnosed by FNAC is 54 out of 71 lesions diagnosed by SBS. The total success rate for diagnosis of both benign and malignant lesions is 76.1%. In this study, there are no false positive results as all lesions diagnosed as malignant by FNAC are proved by surgical biopsies.

The non-conclusive category includes 18 cases (25%); 11 (15.3%) suspicious and 7 (9.7%) unsatisfactory aspirate. Nine out of the 11 suspicious lesions are diagnosed by SBS as malignant lesions and one case is diagnosed as benign breast disease. SBS could not be obtained from the last suspicious cases. Four of the unsatisfactory aspirates were diagnosed as being benign and three are diagnosed as malignant tumors by SBS. Our results come midway between Costa et al (1993) who found that non-conclusive results (suspicious, atypical and unsatisfactory cases) were 96/498 (19.3%) and Kim et al (2000) who reported non-conclusive results in 71/246 (28.7%). This difference may be attributed to the differences in the number of studied cases.

The diagnostic performance of FNAC is usually measured by the sensitivity and

specificity (Giard and Hermans, 1990). In our study the sensitivity and specificity are 93.4% and 78.3% respectively. Regarding the sensitivity of FNAC, our result is consistent with Powles et al (1991) who found that the sensitivity of FNAC was 94%. Whereas it is slightly higher than that of Franzen and Zajicek, (1968), Brown et al, (1993) and El-Ghorori et al, (1998) who recorded that the sensitivity of FNAC were 86%, 83% and 84% respectively.

Regarding the specificity of FNAC, our result was higher than that of Brown et al, (1993) who reported 63% specificity of FNAC, but lower than that of Franzen and Zajicek, (1968) and El-Ghorori et al, (1998) who recorded that the specificity of FNAC were 87% and 84% respectively, and much lower than that of Powles et al (1991) who reported 98% specificity for FNAC. The high number of recurrent lumps compared to the total number of studied lesions (18/72), that usually give hypocellular aspirates, may explain the comparative low rate of specificity in our results. The differences in specificity may be also due to the lack of experience in addition to the lack of needle guidance.

TCNB were obtained from 57 cases in this study, fourteen of them are benign and 43 are malignant as being proved by SBS. The results of TCNB showed accurate diagnosis of all benign lesions with 100% success rate. TCNB showed accurate diagnosis of 37/43 malignant lesions with 86.1% success rate. These malignant lesions are typified by TCNB as 33 cases of IDC, NOS, one case of mucoid carcinoma, another case of DCIS and two cases of lobular carcinoma. One of the last two lesions (lobular carcinomas) is found by surgical biopsy to be a mixed lobular and ductal carcinoma.

We have 6/57 (10.5%) unsatisfactory tiny specimens in this study, five of them are diagnosed by surgical biopsy as IDC, NOS and one is diagnosed as medullary carcinoma. This percentage of unsatisfactory results in our study is slightly higher than that obtained by El-Ghorori et al (1998) who showed that 7% of cases are unsatisfactory. The unsatisfactory tiny specimens of TCNB are mainly due to the

lack of skills and experience for taking a proper core from the lesions. This is in agreement with Bradbeer (1985) and Ballo and Sneige (1996) who referred to the sampling error as the only cause of false negative diagnosis in TCNB.

TCNB reached an accurate diagnosis in 51/57 of different breast lesions diagnosed by surgical biopsy with 89.5% success rate for the diagnosis of both benign and malignant lesions. Our result is higher than that obtained by Fentiman et al (1980) who showed 79% success rate for diagnosis by TCNB in a study involved 151 patients.

The sensitivity and the specificity of TCNB in our study were 86.1% and 100% respectively. Regarding the sensitivity of TCNB, our results were in concordance with that of Bradbeer, (1985), Ballo and Sneige (1996) and El-Ghorori et al (1998) who recorded 89%, 90% and 89% sensitivity for TCNB, respectively. Our results were higher than that of Elston et al, (1978) and Gonzalez et al, (1985) who reported 73% and 74% respectively, but lower than that of Baildam et al., (1989) in which the sensitivity was 95%. Regarding the specificity of TCNB our results were exactly the same of that reported by Elston et al, (1978), Gonzalez et al, (1985), Ballo and Sneige (1996) and El-Ghorori et al (1998).

This study included 18/72 (25%) lesions of recurrent breast lumps. Fourteen of them are recurrent lumps after lumpectomy, while four lesions are recurrent nodules in a scar of previous modified radical mastectomy.

FNAC of these recurrent lumps put the diagnosis of three benign lesions (16.7%), six malignant lesions (33.3%), four suspicious lesions (22.2%) and five unsatisfactory lesions (27.8%). The percentage of unsatisfactory lesions (5/18) in aspirates from recurrent breast lumps is slightly high (27.8%).

The success rate of FNAC in definite diagnosis of such recurrent lumps was only 50%. This low percentage of success may be explained by the fibrosis in the scar tissue in recurrent cases, the high rate of unsatisfactory aspirates (27.8%) that may be due to lack of experience to aspirate

such small lumps which are embedded in a firm scar tissue. Also, it is difficult to assess the success rate of this technique in little number of aspirated recurrent cases. This is different from the study done by Ku et al., (1994) including 72 cases of recurrent breast lumps, they indicated that FNAC can differentiate benign lesions from malignant lesions in post-lumpectomy patients and this will allow non-surgical management of benign lesions. They also stated that FNAC plays an important role in follow-up of post-lumpectomy patients.

The cytological examination using FNAC of breast lesions prior to surgical treatment serves as a rapid, economical, reliable and accurate diagnostic technique for the diagnosis of palpable breast lesions. If used routinely in our crowded outpatient clinics, FNAC will help good selection of malignant breast lesions and subsequent proceeding to biopsy taking could be done. This will allow screening of large number of patients with breast lumps and hence reduce the number of patients with malignant lumps that may be missed in crowded outpatient clinic.

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دراسة مقارنة بين استخدام التحليل الخلوي بإبرة الرشف الدقيقة والفحص النسيجي المأخوذ بإبرة القلع الحقيقي في تشخيص أورام الثدي

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الملخص العربي:

تشكو العديد من السيدات في العيادات الخارجية بالمستشفيات من وجود كتلة بالثدي، وتعد هذه الشكوى هي الأكثر شيوعاً لدى السيدات. و تحتاج في معظم هذه الحالات إلى أخذ عينة لإجراء التحليل الباثولوجي حتى يتمكن من الوصول إلى التشخيص النهائي.

وقد تم حديثاً استخدام العينات الخلوية المسحوبة بإبرة الرشف الدقيقة للوصول إلى تشخيص مبدئي لمثل هذه الحالات. وتعد هذه الطريقة من الطرق السهلة والسريعة والأمنة (نظراً لقلّة مضاعفاتها) إضافة إلى أنها الأقل تكلفة من الطرق الأخرى. أما طريقة التشخيص الباثولوجي بأخذ عينة بإبرة القلع الحقيقي فهي من الطرق الشائعة لتشخيص مثل هذه الحالات وهي تعتمد على أخذ عينة من أنسجة الكتلة للتقييم الباثولوجي.

والغرض من هذا البحث هو إجراء دراسة مقارنة بين دور كل من العينات الخلوية المأخوذة بإبرة الرشف الدقيقة والعينات الباثولوجية المأخوذة بإبرة القلع الحقيقي في تقييم حالات كتلة الثدي في السيدات ومقارنة هذه النتائج بنتائج العينات الباثولوجية الجراحية (القطعية أو الإستئصالية) التي تم الحصول عليها من هؤلاء المرضى.

ولقد تم إجراء هذا البحث على عدد ٧٢ من المرضى اللاتي كانت تشتكي من وجود كتلة بالثدي. وقد تراوحت أعمار هؤلاء المرضى بين ١٩ و ٨٠ سنة وكان متوسط السن ٤٤،١ سنة. في البداية تم أخذ التاريخ المرضي ثم الفحص الدقيق لكتلة الثدي. و بعدها تم سحب العينات الخلوية من جميع المرضى (٧٢) باستخدام إبرة الرشف الدقيقة (مقاس ٢٢) ثم تثبيتها في الكحول الإيثيلي (٩٥٪) وصبغتها بالهيماتوكسلين والإيوسين. بعد ذلك تم أخذ العينات النسيجية بإبرة القلع الحقيقي (مقاس ١٤) من عدد ٥٧ مريضة حيث تم تمريرها بالطريقة المعتادة ثم صبغتها بالهيماتوكسلين والإيوسين. وأيضاً فقد تم الحصول على عدد ٧١ عينة من العينات الجراحية (قطعية و إستئصالية). ولقد اشتملت الدراسة حسب التشخيص الباثولوجي للعينات الجراحية على ٤٨ حالة من أورام الثدي الخبيثة و ٢٣ حالة من أمراض الثدي المختلفة (مشملة على الأورام الحميدة).

أما نتائج الفحص الخلوي للعينات فقد تم تقسيمها إلى:

• حالات تم تشخيصها والجزم فيها بشكل قاطع وعددها ٥٤ / ٧٢ (٧٥٪) وتشمل:

- عينات الأورام الخبيثة وعددها ٣٦ / ٧٢ (٥٠٪) حالة.

- عينات الأمراض الحميدة وعددها ١٨ / ٧٢ (٢٥٪) حالة.

• حالات لم يتم الجزم فيها بشكل قاطع وعددها ١٨ / ٧٢ (٢٥٪) وتشمل:

- عينات محل شك وعددها ١١ / ٧٢ (١٥،٣٪) حالة.

- عينات غير كافية للتقييم وعددها ٧ / ٧٢ (٩،٧٪) حالة.

كما جاءت نتائج الفحص الباثولوجي لعينات إبرة القلع الحقيقي كالتالي:

عينات تم تشخيصها بدقة وعددها ٥١ / ٥٧ (٨٩،٥٪) وتشمل:

- عينات الأورام الخبيثة وعددها ٣٧ / ٥٧ (٦٤،٩٪) حالة.

- عينات الأمراض الحميدة وعددها ١٤ / ٥٧ (٢٤،٦٪) حالة.

• عينات لم يتم البت فيها لأنها صغيرة جداً وغير كافية للتشخيص وعددها ٦ / ٥٧ (١٠،٥٪) حالة.

وقد تبين من هذه الدراسة أن نسبة النجاح في تشخيص هذه الحالات لكل من إبرة الرشف الدقيقة وإبرة القلع الحقيقي هي ٧٦،١٪ و ٨٩،٥٪ على التوالي. كما تبين أيضاً أن درجة الحساسية ونسبة النوعية أو الخصوصية هي ٩٣،٤٪ و ٧٨،٣٪ لإبرة الرشف الدقيقة و ٨٦،١٪ و ١٠٠٪ لإبرة القلع الحقيقي على التوالي.

الخلاصة:

من الممكن استخدام إبرة الرشف الدقيقة في التشخيص المبدئي لحالات كتلة الثدي في العيادات الخارجية بالمستشفى. وإذا تم استخدام هذه الطريقة بشكل روتيني لتمكننا من عمل مسح لعدد كبير من مثل هؤلاء المرضى في وقت قصير. وسوف يساعد هذا في اختيار حالات الأورام الخبيثة والتي نقوم بحجزها بالمستشفى لإجراء المزيد من الفحوصات للوصول إلى التشخيص الدقيق. نسبة النجاح للتشخيص بإبرة القلع الحقيقي أعلى منها لإبرة الرشف الدقيق إلا أن الأخرى يمكن استخدامها دون الأولى للتشخيص المبدئي في كتلة الثدي صغيرة الحجم والتي لا يتعدى قطرها ١ سم.