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ORIGINAL RESEARCH

TO EVALUATE THE ROLE OF FNAC IN ALL PALPABLE LESIONS AND TO FIND OUT THE CYTOMORPHOLOGICAL SPECTRUM OF ALL PALPABLE LESIONS

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ABSTRACT

Background: FNAC can be used as an OPD procedure in diagnosis of palpable lesions without the need to hospitalize the patient. The aim of this study is to evaluate the role of FNAC in all palpable lesions and find out the cytomorphological spectrum of all palpable lesions

Material and methods: This is a retrospective study done in department of Pathology, Adesh Medical college and Hospital, Kurukshetra, Haryana over a period of one year including 400 cases of FNAC presenting with palpable masses at different sites. Cytological findings and results were recorded and accordingly cytomorphological spectrum of lesions were observed and histological correlation was done in possible cases.

Results: Out of 400 cases 281 were females and 119 were male patients (table 1). Maximum number of cases were in the age group 31-40 years. Various palpable lesions from different sites include breast lesions, thyroid swellings, salivary glands, back swellings, upper and lower limb swellings, neck region, axillary swellings and lymph node enlargements. Maximum number of cases were from palpable breast lesions.The largest number of aspirates from head and neck lesions in this study were from lymph nodes (73 cases), followed by thyroid lesions (43 cases). There were 19 cases of salivary gland lesions.

Conclusion: Fine needle aspiration cytology is highly sensitive and specific technique for diagnosis of most of the malignant and benign palpable lesions and it reduces time in making diagnosis and early management of patient can be done.

Keywords: FNAC, palpable lesions, Head and Neck lesions, breast, diagnosis

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INTRODUCTION

Fine needle aspiration cytology (FNAC) is an important easy diagnostic tool for evaluating and diagnosing various palpable lesions encountered in the clinical settings. FNAC was introduced by Martin in 1930 as an important diagnostic technique and it has emerged as a valuable tool in making diagnosis due to easy accessibility and minimal invasive procedure as compared to biopsy. It is easily accepted by the patients due to less morbidity, reduced processing time and early and accurate results in most of the cases.[1]

Most commonly seen palpable lesions include lymph nodes, thyroid, salivary glands, palpable breast lesions, axillary swellings and other subcutaneous lumps etc. Among all these lesions most commonly encountered are lymph nodes and palpable breast lesions. Enlarged lymph nodes are frequently encountered in outpatient departments in various age groups. They may be due to some neoplastic etiology, primary or metastatic, or a reactive change to some infective process including acute and chronic inflammatory reactions. Tuberculosis is also an important cause due to its high prevalence in developing countries. Aspiration cytology has been used safely and extensively as a valuable technique in early diagnosis of lesions involving lymph nodes yielding high sensitivity and specificity.[2]

In India, breast carcinoma is the second most common malignant neoplasm leading cause of morbidity and mortality in female patients.[3,4] Palpable breast lump is one of the most common presentation of patients presenting with breast pathology which includes benign as well as malignant etiologies. Triple test is the mainstay of diagnosis in palpable breast lumps which includes FNAC, mammography and ultrasonography along with clinical examination. FNAC is rapid, simple, safe, cost effective and good screening procedure with high sensitivity, specificity and we can easily categorise the breast lesions. Suspicious lesions alongwith malignancies can be rapidly diagnosed and further management can be started reducing the morbidity rate.[5,6]

FNAC is also important in diagnosing metastatic malignancies and primaries in other sites. FNAC is an easy procedure demanding less equipment as compred to biopsy and also less painful. It is also reproducible, accurate, require less processing and reporting time, more patient acceptance, more cost effective and overall an important screening tool. It has an important value in preoperative diagnosis of palpable lesions like lipoma, nerofibroma, fibroadenoma, epidermal cyst etc. The accuracy rate ranges from just over 50% to 95 % depending on the experience of the aspirator and the interpreter.[7]

The present study is done to evaluate the role of FNAC in all palpable lesions and find out the cytomorphological spectrum of all palpable lesions.

MATERIALS AND METHODS

The present study was done in the Department of Pathology, Adesh Medical college and Hospital, Kurukshetra, Haryana over a period of one year. This retrospective observational study included 400 cases of FNACs done on various swellings performed as outdoor procedure. The palpable swelling was fixed with one hand and all aseptic precautions taken, 22- 23G needle with

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10ml syringe was inserted into the swelling using the plunger and a negative pressure was applied. At times when swelling was very small specially in case of a lymph node only needle aspiration was done. Minimum passes were tried to obtain the material. The aspiration material was smeared on the clean glass slides and smearing was done alongwith fixation when required. In cystic lesions the fluid obtained was centrifuged and smears were made from centrifuge material. Air dried smears were stained with Giemsa stain, and wet smears using Papanicolao stain. Lymph node swellings, with purulent or cheesy material as aspirate or with clinical suspicion of tuberculosis as indicated by history were stained by Ziehl Neelsen stain. Cytological findings and results were recorded and accordingly cytomorphological spectrum of lesions were observed and histological correlation was done in possible cases.

OBSERVATIONS AND RESULTS

A total of 400 patients underwent FNAC procedure. Out of 400 cases 281 were females and 119 were male patients (table 1). Maximum number of cases were in the age group 31-40 years (table 2). Various palpable lesions from different sites include breast lesions, thyroid swellings, salivary glands, back swellings, upper and lower limb swellings, neck region, axillary swellings and lymph node enlargements. Maximum number of cases were from palpable breast lesions (table 3).

Breast Lesions :

A total of 147 cases of breast lesions underwent FNAC procedure which include 140 females and 7 males. Age ranges from 18 to 90 years. Maximum number of cases were in the age group 31-40 years (table 4). Most common presentation was lump without pain (table 5).

Right sided lesions (80 cases) were more in number than left side (67 cases) and upper outer quadrant was most commonly involved (table 6). Blood mixed aspirate was the most common type of aspirate. Maximum number of cases show benign cytology and 4 cases are inadequate for interpretation and show blood only. We found 18 cases revealing malignant cytology and diagnosed as carcinoma breast (table 7). Histopathological correlation was done in 50 cases inclusive of 8 malignant cases and 42 benign cases. Ductal carcinoma was most the most common type observed among malignant cases on histology.

On cyto-histopathological correlation out of 50 cases concordance was seen in 48 cases whereas discordance was seen in 2 cases. Out of the total 42 benign lesions on cytology 39 cases showed concordance, whereas 3 cases showed discordance. All malignant lesions showed 100% concordance on histopathological examination. On cytohistological correlation, 2 cases diagnosed as fibroadenoma on cytology were found to be hamartoma when examined on histology slides and 1 case diagnosed as BBD with epithelial hyperplasia was diagnosed as invasive ductal carcinoma on histology. Sensitivity in this study was 88.88% and specificity was 100%. Positive predictive value (PPV) 100% was and negative predictive value (NPV) was 97.6%.(table 8)

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Lymph Node Lesions

Lymphadenopathy cases underwent FNAC procedure in 73 patients. Maximum number of cases were from cervical lymph node, right side (table 9). Maximum percentage of cases reveal reactive cause of lymphadenopathy. We found 10 cases of malignancy, 59 cases show benign cytology and 4 cases showed blood only (table 10). In granulomatous lesions, 13 cases showed AFB positivity out of 18 cases (table 11). Cytohistological correlation was done in 22 cases which included 5 cases of malignancy and 17 benign lesions. We found 2 false negative cases which were given benign on cytology but due to large size of lymphnode and long history given by the patient excision was advised. Sensitivity in this study was 71.42 % and specificity was 100% . Positive predictive value (PPV) 100% was and negative predictive value (NPV) was 88.23% (table 12)

Salivary gland lesions

There were 19 cases of salivary gland enlargement including parotid gland (12 cases) and submandibular gland (7 cases) lesions. Only one case was inadequate for diagnosis and showed blood only. Out of 12 cases of parotid lesions we found pleomorphic adenoma in 5 cases, 1 case of mucoepidermoid carcinoma, 2 cases of sialadenitis, 2 cases of benign cyst, 1 case of benign lymphoepithelial lesion and 1 case of blood only. Out of 7 cases of submandibular gland lesions we found 1 case of low grade mucoepidermoid carcinoma, 1 case of acute suppurative lesion, 2 cases of pleomorphic adenoma and 3 cases of sialadenitis on cytological findings. Only 2 cases were correlated histologically and both were consistent with the cytological diagnosis of pleomorphic adenoma.

Thyroid lesions

There were 43 cases presented with thyroid enlargement and underwent FNA procedure. Out of 43 cases 1 case showed blood only. Age of the patients range from 17 years to 75 years and there were 40 females and only 3 males. On cytological examination 2 cases of clear cut malignancy were diagnosed and one case of follicular neoplasm alongwith 2 cases of hurthle cell neoplasm were given as histology examination is required for calling them as malignant. We found 4 cases of autoimmune thyroiditis, 2 cases of thyroid abscess one showing granulomas but AFB was found non- contributory, 2 cases of nodular goiter with cystic change, 23 cases of benign nodular goiter. Histological correlation was done in 15 cases. All results were consistent with the cytological findings and diagnosed as nodular goiter.

Upper and lower limb lesions

There were 34 cases of limbs swelling which presented with palpable lumps. On cytological examination there were 3 cases of benign spindle cell lesion, 3 cases of epidermal inclusion cyst, 4 cases of ganglion cyst, 1 case of nodular fasciitis, 2 cases of acute abscess, 19 cases of lipoma and 2 cases were inadequate for any opinion showing blood only. Histological correlation was done in 10 cases and all were consistent with the cytological diagnosis of lipoma.

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Other palpable lesions

There were 84 number of cases presented with palpable lumps at various sites including back swelling, nape of neck, axillary swellings, flank region lumps etc. 16 cases of axillary lumps showed cytological findings of accessory breast. 24 cases were from back swellings showed blood only in 3 cases, 10 cases of benign epidermal cyst and 11 cases of lipoma on cytology. 10 cases of neck swellings showed 2 cases of acute abscess, 1 case suggestive of malignancy, 7 cases of lipoma. 34 cases from other sites showed skin adenexal neoplasm in 1 case, metastasis from renal cell carcinoma in 1 case, benign keratinous cyst in 12 cases, acute abscess in 3 cases and lipoma in 17 cases. Histological correlation was done in 20 cases including only benign cases of keratinous cyst (8) and lipoma (12) and all were found consistent with the cytological diagnosis.

Table 1: Sex wise distribution of cases

Sex	Number	Percentage
Male	119	29.75
Female	281	70.25
Total	400	100

Table 2 : Age wise distribution of cases

Age	Number	Percentage
0-10	10	2.50
11-20	25	6.25
21-30	86	21.50
31-40	92	23.00
41-50	85	21.25
51-60	57	14.25
61-70	28	7.0
71-80	14	3.50
81-90	3	0.75
91-100	--	--
Total	400	100

Table 3 : Site wise distribution of cases

Site	Number	Percentage
Breast	147	36.75
Lymph nodes	73	18.25
Parotid/submandibular region	19	4.75
Nape of neck	10	2.50
Thyroid	43	10.75
Back	24	6.00

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Upper limb	22	5.50
Lower limb	12	3.00
Axillary swelling	16	4.00
Others	34	8.50
Total	400	100

Table 4: Breast age wise distribution of lesions

Age Group	Number	Percentage
0-10	00	00
11-20	08	5.44
21-30	34	23.12
31-40	41	27.89
41-50	30	20.40
51-60	15	10.25
61-70	10	6.80
71-80	07	4.75
81-90	02	1.35
Total	147	100

Table 5 : Breast : clinical presentation of cases

Clinical Presentation	Number	Percentage
Lump without pain	78	53.07
Lump with pain	57	38.77
Discharge	07	4.76
Associated LAP	05	3.40
Total	147	100

Table 6 : Quadrantwise distribution

Quadrant	Number	Percentage
All	07	4.76
Lower inner	10	6.80
Lower outer	15	10.20
Upper inner	18	12.25
Upper outer	79	53.74
Subareolar	18	12.25
Total	147	100

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Table 7: Distribution of breast lesions as per diagnosis

Diagnosis	Number	Percentage
Abscess	04	2.72
BBD	39	26.53
BBD with cystic change	04	2.72
Carcinoma	18	12.24
Ductal mastitis	02	1.36
Fibroadenoma	50	34.01
Fibroadenoma with some change	08	5.44
Fibrocystic disease	01	00.69
Galactocele	03	2.04
Lipoma	01	00.69
Simple cyst	06	4.08
Gynaecomastia	07	4.76
Inadequate	04	2.72
Total	147	100

Table 8: Cyto-histopathological correlation of 50 cases of Breast Lesions.

	Histological diagnosis		
Cytological diagnosis	Malignant	Benign	Total
Malignant (08)	08 (TP)	00 (FP)	08
Benign (42)	01 (FN)	41 (TN)	42
Total (50)	09	41	50

Table 9: Site Wise distribution of lymph node cases

Site of lymph node	Number	Percentage
Left cervical LN	20	27.39
Right cervical LN	34	46.58
Left inguinal LN	01	1.38
Right inguinal LN	01	1.37
Left submandibular LN	02	2.78
Right submandibular LN	03	4.10
Left supraclavicular LN	04	5.47
Right supraclavicular LN	03	4.10
Right axillary LN	03	4.10
Left axillary LN	02	2.73
Total	73	100

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Table 10: Lymph node : diagnosis

Diagnosis	Number	Percentage
Granulomatous inflammation	18	24.66
Kikuchi disease	01	1.38
Metastatic carcinoma deposits	09	12.36
Non Hodgkin lymphoma	01	1.36
Reactive lymphadenitis	37	50.68
Acute suppurative lesion	02	2.75
Blood only	04	5.47
Castleman disease	01	1.36
Total	73	100

Table 11: Cyto-morphological Pattern of granulomatous lesions

Cytological Findings	**Cases**	**AFB Positive**
Epithelioid granulomas with caseous necrosis	12	10
Epithelioid granulomas without caseous necrosis	06	03

Table 12: Cyto-histopathological correlation of 73 cases of lymph node Lesions.

	Histological diagnosis		
Cytological diagnosis	Malignant	Benign	Total
Malignant (5)	05 (TP)	00 (FP)	05
Benign (17)	02 (FN)	15(TN)	17
Total (22)	07	15	22

Discussion

FNAC is a safe, easy and reproducible diagnostic tool for evaluating superficial palpable lesions. The main motive of FNAC procedure is to differentiate between benign and malignant lesions which will help in further management of patient by the clinician and to avoid unnecessary delay in urgent requirement of treatment in malignant cases. Adequate material and keen observation makes cytological diagnosis as important as histopathology.

In our study maximum number of cases were from breast lesions comprising of 147 cases . On cyto-histopathological correlation 48 cases show concordance out of 50 cases which is a good number. Different studies have shown that the most common lesions are benign and needs only reassurance.[8,9] Early screening and diagnosis of breast lesions and categorization into different groups of breast pathology is important. This can be helpful in prevention of cancer and in accurate management of the patients. Early diagnosis helps to prevent patients discomfort and

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anxiety.[10,11] Singh A et al[9] reported that invasive ductal carcinoma is the commonest breast malignancy found on FNAC that is similar to our findings. FNAC of breast lesions is sensitive, specific, and highly accurate as the initial investigation of palpable breast lesions in tertiary hospital.[12] In our study benign lesions were maximum which was concurrent with findings of M. Kumar et al.[13] Early diagnosis of benign lesions helps in decreasing the patient anxiety and early treatment which is very important in patient health care system. Incidence of fibroadenoma is highest in younger women.[14]

FNAC is a valuable diagnostic test in the initial assessment of the patients presenting with a mass in the head and neck region or when a recurrence is suspected after previous treatment. Various parameters like age distribution, sex predilection, site wise distribution, nature of the lesion and histopathological correlation wherever possible were evaluated in this study. The largest number of aspirates from head and neck lesions in this study were from lymph nodes (73 cases), followed by thyroid lesions (43 cases). Other studies from the Indian subcontinent have also shown that the most common sites of FNAC of head and neck lesions were the lymph nodes.[15,16]

Granulomatous /tubercular lymphadenitis was the most common cytological diagnosis in study done by Setal et al[15] but in our study reactive lymphadentis was the most common diagnosis.

Malignancy was reported in 25% of cases by Setal et al and in only 13.72% cases in this study

El Hag et al in a study of 225 cases in Saudi Arabia reported reactive lymphadenitis & tubercular lymphadenitis to together account for 54% of the cases and malignant neoplasms to constitute only 13% of cases[17] which is in our study constitutes around 71% and 13.72% respectively.

Conclusion

FNAC came out to be an effective, safe and easy procedure for making early preliminary diagnosis and management of patient and very good diagnostic tool when combined with histopathology. It has some limitations but the benefits are always more in term of patient care and cost effectiveness. It is quick procedure so helps in decreasing patient morbidity and anxiety about the diagnosis.

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