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Comparison of Fine Needle Aspirate and Lymph Node Biopsy in Lymphadenopathy – A prospective clinical study

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Original Article

ABSTRACT

Result of fine needle aspirate cytology (FNAC) to palpable lymph nodes of 150 patients are presented. Those are compared to the subsequent histopathological and clinical diagnosis. Benign lymphadenopathy ware the most common pathology seen (55%) including cases of non-specific reactive hyperplasia and Tuberculous lymphadenitis. Those were followed by lymphoma (26%), metastatic carcinoma(16%) while leukemia was diagnosed in only (2%) . The results of FNAC compared favorably with those of tissue biopsy with an overall accuracy of 89.5% for malignant lymphadenopathy, (90.5%) sensitivity and (98.8%) specificity. FNCA is proved to be an easy, safe, rapid and effective tool in the diagnosis of lymphadenopathy. Its successful use depends on a close cooperation between the pathologist and clinician.

***Keywords**... Lymphadenopathy, Fine Needle Aspirate, Lymsph Node Biopy, cytology*

1.INTRODUCTION

Fine needle aspiration biopsy (FNAB) is a diagnostic procedure, the essence of which is to obtain cells from a suspected , masses and perform a microscopic examination of these cells. Technically, this diagnostic procedure involves the percutaneous insertion of a thin needle into suspicious formation, aspiration of cells from this formation with a syringe , subsequent fixation, cytological staining of the obtained aspirate, and further examination by microscopy . Another possible study of the sample can be isolation of DNA or RNA for molecular genetic testing. FNAB is considered to be a safe and low-traumatic diagnostic method, compared with open biopsy, and is characterized by a low level of possible complication, it is simple and cost-effective way to evaluate lymphadenopathy (1–5)

The value of cytology in investigating patients with suspected malignancy has been increasingly recognized in clinical practice, however in man of our hospitals the cytology service for the time being is more or less confined to exfoliative cytology to determine the pathology of tumors inaccessible by exfoliative cytology(or non exfoliative cells), one may perform fine needle aspiration biopsy(FNAB). Lymph nodes were possibly the first structure to be studied by aspiration biopsy. Needle aspiration biopsy on lymph nodes was first described in 1904 by Grieg and Gray who needled lymph nodes to search for trypanosomes in sleeping sickness (4). In 1921 Guthrie using a 21-gauge needle with a 2-ml syringe observed Reed-Sternberg cell in a patient with Hodgkin's disease (6–8) However large scale use of aspiration biopsy for the diagnosis of neoplastic lesions was first made by Martin and Ellis in the early 1930s and Stewart in 1933, since then FNAB has been used in the diagnosis of different pathologies (6,7,9)

The efficiency of FNAB in the diagnosis of epithelial tumors is well established and documented. Its application to lymphoma is less well recognized and its accuracy and utility in the investigation of lymph node pathology is controversial (10–13).

In Iraq FNAB has been widely applied in diagnosis of different thyroid, breast and lymph reticular pathologies (14,15) as a rapid, inexpensive and accurate method of establishing a diagnosis. primary tumors of lymphatic tissue are commonly encountered in our country forming 8% of total cancer and includes, Non-Hodgkin lymphoma (which is considered the fifth commonest cancer) and Hodgkin's disease(forming the tenth commonest cancer) (16). Moreover superficial lymphadenopathy is a common presentation in many disorders as well as being common site of metastatic malignancies therefore FNAB started to play a big role in diagnosis of lymph reticular malignancies and other malignancies which present as lymphadenopathy.

Because of its simplicity and minimal inconvenience to patients, lymph node aspiration has been acclaimed the most useful office procedure and bed-side technique (4,6,12)

2. PATIENTS and METHODS

This was a prospective study included 150 patients who were clients of the outpatients clinic or admitted to our hospital during a period of one year, (2014-2015). All of the 150 patients were presented or referred to the hospital with one or more group of enlarged lymph nodes.

Inclusion Criteria...

1. Patients of both genders regardless their age.
2. Having one or more group of enlarged lymph nodes for at least two weeks

Exclusion Criteria...

1. Patients who refused to participate
2. With previous excision of lymph nodes and having histopathology reports
3. History of proved malignancy

Study protocol... For all patients, fine needle aspiration (FNA) and surgical excision of lymph nodes were performed at the same time. Cytology report and diagnoses were obtained on the second day.

Study tools... The instrumental set for FNA consisted of 10cc disposable syringe and standard 22 gauge needle.

Procedure... After cleaning the area by an antiseptic solution, the needle was guided in a straight line through the lesion, the piston of syringe was retracted, creating a vacuum in the system and thus material was drawn into the needle. The needle moved back and forth while directed through different areas of tumors (minimum in 4 directions) before withdrawal. The aspirate was smeared on seven slides; four of them were immediately fixed in 95% ethanol and then stained by papa Nicolaus stain. The other three smears were left to dry, one of them was then stained by Leishmans stain, while the last two aspirates (reserved fixed smears) were left for special stains when indicated (e.g. PAS stain, Ziehl Neelson stain, etc.).

Surgical excision of lymph nodes was achieved using local anesthesia in 100 patients, after cleaning the area by antiseptic solution, the skin, subcutaneous tissue and deeper structures were infiltrated by (xylocaine 2%) then surgical excision was performed. The use of local anesthesia done as an outpatient procedure and was safe since we encountered no complications. The remaining 50 patients required general anesthesia, due to the following factors...

1. Size of lymph node (large size lymph nodes were difficult to be removed under local anesthesia)
2. Dangerous anatomical location of the lymph node (possibility to injure nearby vital structures could not be avoided)
3. Age of patients, as it was very difficult to preform surgical biopsies under local anesthesia in children.

Clinical examination and investigations... Using a pre-constructed data collection form

(questionnaire) , the data collected and reported . Data obtained through

1. A thorough history taking and complete clinical examination.
2. Ultrasound examination of the abdomen and pelvis to disclose the state of other lymphoreticular organs as liver and spleen and to verify the condition of intra-abdominal lymph nodes.
3. Chest x-Ray; to determine the state of mediastinal lymph nodes and to detect any intra thoracic lesions which might be the cause of enlarged lymph nodes.
4. Complete hematological investigations to get clues about cause of lymphadenopathy.
5. Certain serological investigations were requested accordingly.
6. Other investigation as pleural, peritoneal and bone marrow aspirates and biopsies were also performed in some cases

Four categories of cytological responses were defined ...

1. Unsatisfactory (the aspirate was repeated till getting adequate material).
2. Benign.
3. Suspicious for malignancy.
4. Malignant.

Results of histologic and cytological diagnosis were tabulated and comparative analysis was done in order to obtain as a final step to assess the accuracy and efficiency of FNA in diagnosis of lymphadenopathy. Validity parameters including sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and efficiency of Test were calculated according to the following equations

$$\text{Sensitivity} = \frac{TP}{TP + FN} \times 100\% \quad , \quad \text{Specificity} = \frac{TN}{TN + FP} \times 100\%$$

$$PPV = \frac{TP}{TP + FP} \times 100\% \quad , \quad NPV = \frac{TN}{TN + FN} \times 100\%$$

$$\text{Efficiency of Test} = \frac{(TP + TN)}{TP+TN + FP+FN} \times 100\%$$

TP ... True positive, TN... True negative, FP... False positive,
FN... False negative

3. RESULTS

A total of 150 aspirates and biopsies were collected from the 150 participated patients.

The largest number of patients presented in the age group (11-20); tuberculosis was the most predominant pathology in the lymph nodes of this group. lymphoma was found to be more common in the age group and metastatic lesions in (61-70), (**Table 1**)

Table (2) shows the chief complaint of those patients. It is evident that lymphadenopathy as a sole complaint was most common presentation, it was reported in 70 patients (49%).

Table (3) demonstrates the common site of lymph node involvement; Cervical group of lymph nodes were the commonest site of lymphadenopathy in this study it also represent the commonest site from which biopsies and aspirates were taken. Fifty three patients (35.3%) had significant ultrasonic finding; 27 of them had enlarged intra-abdominal lymph nodes and 26 with enlarged liver and /or spleen. the majority of those (75.4%) were patients with lymphoma. (**Table 4**). On the other hand , significant radiologic findings were found in 49 patients (32.6%) , (**Table 5**).

Table 1. Age distribution of patients according to pathological diagnosis.

Age (years)	Total No. of patients	Reactive Hyperplasia		T.B.		Lymphoma		Metastatic Lesions	
		No.	%	No.	%	No.	%	No.	%
1-10	12	9	75.0	0	0.0	2	16.7	1	8.3
11-20	34	10	29.4	15	44.1	8	23.5	1	2.9
21-30	29	12	41.4	6	20.7	9	31.0	2	6.9
31-40	21	6	28.6	5	23.8	6	28.6	4	19.0
41-50	15	4	26.7	2	13.3	4	26.7	5	33.3
51-60	16	2	12.5	5	31.3	5	31.3	5	31.3
61-70	14	1	7.1	1	7.1	5	35.7	7	50.0
71-80	2	1	50.0	0	0.0	0	0.0	1	50.0
Total*	143	45	31.5	34	23.8	39	27.3	25	17.5
* Cases of pyogenic lymphadenitis and Leukemia were excluded.									

Table 2. Clinical presentation in relation to pathological diagnosis.

Chief Complaint	Total No. of patients	Reactive Hyperplasia		T.B.		Lymphoma		Metastatic	
		No.	%	No.	%	No.	%	No.	%
Lymphadenopathy	70	28	40.0	19	27.1	12	17.1	11	15.7
Fever	24	7	29.2	7	29.2	9	37.5	1	4.2
Anemia	9	0	0.0	0	0.0	6	66.7	3	33.3
Cough and dyspnea	16	0	0.0	5	31.3	4	25.0	7	43.8
Lymphadenopathy with fever	7	4	57.1	2	28.6	1	14.3	0	0.0
Lymphadenopathy with anemia	4	0	0.0	0	0.0	4	100.0	0	0.0
Lymphadenopathy with malaise	9	6	66.7	0	0.0	3	33.3	0	0.0
Ascites	3	0	0.0	1	33.3	0	0.0	2	66.7
Jaundice	1	0	0.0	0	0.0	0	0.0	1	100.0
Total	143	45	31.5	34	23.8	39	27.3	25	17.5

Table 3. Anatomical sites of node involvement in relation to disease state

Group of Lymph node Involved	Total No. of patients	Reactive Hyperplasia		T.B.		Lymphoma		Metastatic	
		No.	%	No.	%	No.	%	No.	%
Cervical Alone	61	33	54.1	17	27.9	5	8.2	6	9.8
Supraclavicular	7	0	0.0	0	0.0	1	14.3	6	85.7
Axillary Alone	12	7	58.3	2	16.7	1	8.3	2	16.7
Inguinal Alone	6	4	66.7	1	16.7	0	0.0	1	16.7
Mesentric Alone	1	1	100.0	0	0.0	0	0.0	0	0.0
More than One Group	36	0	0.0	13	36.1	13	36.1	10	27.8
Generalized	20	0	0.0	1	5.0	19	95.0	0	0.0
Total	143	45	31.5	34	23.8	39	27.3	25	17.5

Table 4. Value of ultra sound in assessment of patients with lymphadenopathy

Ultrasonography Finding	Total No. of patients	Pathology of Lymph node							
		Reactive Hyperplasia		T.B		Lmphoma		Metastatic	
		No.	%	No.	%	No.	%	No.	%
Enlarged intra-abdominal lympha	27	0	0.0	2	7.4	20	74.1	5	18.5
Enlarged Liver and /or Spleen	26	1*	3.8	0	0.0	20	76.9	5	19.2
Total	53	1	1.9	2	3.8	40	75.5	10	18.9
* A case with Systemic Lupus erythematosus									

Table 5. Value of Chest X-Ray In Evaluation of Patient with Lymphadenopathy.

Radiological finding	Total No. of patients	Pathology of Lymph node							
		Reactive Hyperplasia		T.B		Lymphoma		Metastatic	
		No.	%	No.	%	No.	%	No.	%
Enlarged Hilar Lymph node	37	0	0.0	9	24.3	23	62.2	5	13.5
Suspicious Shadow on Chest X-Ray	12	0	0.0	6	50.0		0.0	6	50.0
Total	49	0	0.0	15	30.6	23	46.9	11	22.4

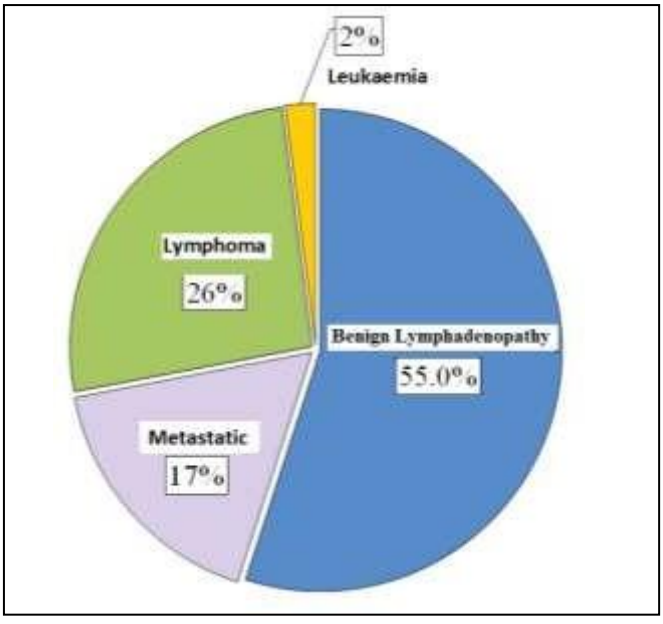

Figure 1. Histopathological distribution of lesions among 150 patients.

Table 6. Cytology-Histopathology Correlation in Benign Lymphadenopathy

Histologic Diagnosis	**Suggestive of TB**	**Pyogenic Lymphadenitis**	**Nonspecific Reactive Hyperplasia**	**Inconclusive**	**Total**
T.B	21	6	5	2	34
Lymphadenitis	-	-	-	-	
Pyogenic Lymphadenitis	-	4	-	-	4
Nonspecific Reactive Hyperplasia	-	-	43	2	45
Inconclusive	-	-	-	0	0
Total	21	10	48	4	83

Table 7. Cytological Finding of FNAin 34 Cases of histologically Confirmed T.B lymphadenitis.

Cytologic Finding	**No. of cases**		**AFB+VE**	
	No.	**%**	**No.**	**%**
Changes Suggestive of TB				
Granulomatous Lymphadenitis	14	41.2	9	26.5
Granulomatous Lymphadenitis with Caseous Necrosis	7	20.6	5	14.7
Non Specific Changes				
Reactive Hyperplasial	5	14.7	2	5.9
Suppurative Necrosis	6	17.6	4	11.8
***Inconclusive (small mature lymphocytes)**	2	5.9	0	0.0
Total	34	100.0	20	58.8

Retrospective application of Ziehl-Neelson stain to all 34 histological smears showed a positive results in 59%,

Table 8. Quality and Accuracy of FNA Cytology (Cyto-histologic) Correlations in Malignant Lymphadenopathy

Diagnosis	**Confirmed Histological**	**Suspicious**	**False negative**	**False positive**	**Accuracy**	**Total**
Hodgkin's Lymphoma	10	1	2	0	76.9%	13
Non-Hodgkin’s Lymphoma	23	2	1	1	88.5%	26
Metastatic	24	1	0	0	96.0%	25
Leukemia	3	0	0	0	100.0%	3

Total	60	4	3	1	89.6%	67

Table 9. Histopathological Finding in Malignant Lymphadenopathy

Type Of Malignancy	**No.**	**%**
Hodgkin's Lymphoma	13	19.4
Non-Hodgkin's Lymphoma	26	38.8
Metastatic	25	37.3
Leukemia	3	4.5
Total	67	100.0

Table 10. Histological sub-classification of non-Hodgkin lymphoma according to modification of National Cancer Institute (NCI) working formula

Histological Type	**No. of Cases**	**(%)**
Low Grade	**6**	**23.1**
CLL	4	
Fallicular Mixed	2	
Intermediate Grade	**9**	**34.6**
Fallicular Large	2	
Diffuse Small (cleaved)	1	
Diffuse Mixed	3	
Diffuse Large	3	
High Grade	**11**	**42.3**
Immunoblastic	5	
Lymphoblastic	3	
Centroblastic	1	
Histiocytic	2	
Total	**26**	**100.0**

Table 11. Validity parameters For FNA of Lymph Node Tumor.

Validity parameter	**value**
Sensitivity	90.5%
Specificity	98.8%
Positive predictive value	98.5%
Negative predictive value	92.0%
Efficiency of Test	95%

Table 12. Tumor Types In Metastatic Lymphadenopathy in relation to The Site Of Primary and The Involved Lymph node

Diagnosis	Site of Primary	Involved Lymph Node	No. of Cases	%
Adenocarcinoma	▪ Respiratory ▪ GIT ▪ Breast	▪ Cervical ▪ Inguinal ▪ Axillary, ▪ Supraclavicular	9	36.0
Squamous Cell Carcinoma	▪ Respiratory ▪ Nasopharynx ▪ Skin	▪ Cervical ▪ Inguinal	7	28.0
Undifferentiated (Anaplastic)	▪ Respiratory ▪ Nasopharynx ▪ pancreas	▪ Cervical	5	20.0
Papillar t Cell Carcinoma	▪ Thyroid	▪ Cervical	2	8.0
Melanoma	▪ Skin	▪ Inguinal	1	4.0
Neuroblastoma	▪ Abdomen	▪ Cervical	1	4.0
Total			25	100

DISCUSSION

Lymphadenopathy is a very common problem in clinical practice , it could be sign of information metastatic tumor or lymphoma. For the differential diagnosis of unexplained lymphadenopathy FNA , is a procedure which can be done in an outpatient clinic and may provide an immediate definitive diagnosis. For many years there has been marked fluctuation in the clinical application of needle biopsy which was performed intermittently in the latter half of the last century and early half of this century (17–19). In the past decade , due to radiological and aspiration technique , control of complication and high accuracy in experienced hand , percutaneous FNAB has been increasingly recognized as an excellent diagnostic method in finding the pathology of several organs (5,12,17–20) . In our country , FNAB was applied since almost three decades as a routine investigatory method and its value as an aid in investigating patients with suspected

malignancy has been increasingly recognized in clinical practice (2,21)

Lymphadenopathy was common in young patients and it is usually the result of benign diseases (8-9) . Kardos et al (22) reported 83 benign lymphadenopathy cases out of their 126 patients in the age group between 2 weeks to 30 years (65.8%). Stani et a l (23) found that 50% of cytologically confirmed benign reactive hyperplasia were confined to age group (1-40) years. In this study we found out that (50%) of our patients were diagnosed in the age group (1-30) years , i.e. 75 patients , 31 of which were reactive hyperplasia. It is well recognized that T.B and lymphoma are commonly encountered in young adults (24) . In this study 26 out of 34 diagnosed as T.B i.e. 76.4% and 23 out of 39 diagnosed as lymphoma, i.e. 59% were found at the age group (20-40) years. The neck region contains very extensive lymphatic channels and lymph nodes (about two-third out of total body lymph node). The cervical lymph nodes are common site to be involved by metastasis either from head and neck pathology i.e. (local drainage) or tram distant regions as gastrointestinal tract and other intra-abdominal pathologies . Moreover cervical lymph node are usually a common site to be involved by T.B and lymphoma (24) . It has been found that (60%) of primary cervical neoplasms were due to primary involvement of these nodes by lymphoma (25). Kardos et a l (22) reported that 79 out of their 126 patients with lymphadenopathy presented as cervical lymph node enlargement.

Chhotray and Acharya (26) found that in 1289 patients which presented with lymphadenopathy, the cervical lymph nodes were the most commonly involved group (55.5%), and (57.2%) of patients with metastatic lesions presented with cervical lymphadenopathy. Martelli et a l (27) reported that cervical lymph node involvement were found in (49.3%) of their 266 patients with lymphadenopathy. In our study lymphadenopathy as a chief complaint was reported in (49%) . (30%) of patients with lymphoma , (44%) of those with metastatic carcinoma and (56.6%) of those with benign lesions presented with painless progressive lymphadenopathy. On the other hand, the cervical lymph nodes were found to be the most common involved group (64.6%) in all different pathologies. Of 150 patients included in this study (18%) got enlarged, intra-abdominal lymph nodes which were proved by ultrasound; (92.6%) of which were cases of malignant lymphadenopathy and (7.4%) only were cases of benign lymphadenopathy. We also found that in the majority of patients with enlarged intra-abdominal lymph nodes, cytologic and histologic diagnosis of the accompanied superficial lymph nodes were reported to be malignant. Keeping in mind that the staging of lymphoma will be changed by involvement of these groups of lymph nodes (24), importance of these findings become evident. Eighty three cases (55%) were classified as benign , 45 of them were reactive hyperplasia and 34 were diagnosed as T.B lymphadenitis. The criteria by which a diagnosis of

reactive lymphadenopathy and follicular hyperplasia was established included high cell density, clear polymorphic pattern of cells without malignant features and considerable number of "tangible bodies" (germinal Centre histiocyte with abundant clear cytoplasm containing phagocytosed fragment of generated cells) (11) . Stani et al (23) reported that(52.6%) out of 208 patients were proved cytologically to be benign lymphadenopathy, of these (45.9%) were reactive hyperplasia. Chhotray et a1 (26) reported (49.8%) out of 1280 patients to be benign by FNA.

Kline et al (2)also reported that (49.8%) of their 130 patients were interpreted (28)

The cytologic features which are specific for granulomatous lymphadenitis include eosinophilic stained caseous necrosis, epitheliold cells and multinucleated grant cells in places where mycobacterial infection are prevalent and other granulomatous diseases are uncommon, a diagnosis of T.B can be made confidently when the above features are present (29,30). Lau SK (31) reported (71%) accuracy in diagnosing tuberculous lesions by FNA, while (53%) were positive for acid fast bacilli (AFB) . Potra et a l (32) reported an accuracy of (87%), while Bloch et a l (33) reported an accuracy of (60%) . In this study , 21 cytological smears (out of 34 histologically confirmed T.B cases) revealed typical picture of granulomatous lymphadenitis. Retrospective staining by Ziehl-Nielson stain showed 6 other cases to be positive for AFB; thus raising the total number of cases which are cytologically diagnostic accuracy of (79.4%) was recorded with (59%) was recorded with (59%) positivily for AFB. For the primary diagnosis of lymphoma, FNA provides excellent cytomorphologic material that can be stained by a variety of methods. I n addition it has important place in the diagnosis of lymphoma presented primarily intra abdominally as Burkitt's lymphoma or intrathorasic and mediastinal sites as lymphoblastic lymphoma (34) . In this respect, Kline et a l (28) reported a diagnostic picture in (55%) of their 73 patients with lymphoma, a suspicios picture in (32%) and false negative results in (14%) .

Pontifex and Klimo (35) reported accuracy of (80%) in the diagnosis of lymphoma by FNA and false negative results rate of (5%). Frable and Frable (36) identified correctly all the 22 cases of lymphoma included in their study.

Singh et al (37) reported diagnostic picture of (83.3%) of their 44 Hodgkin's lymphoma patients and (76.6%) of their 43 Non-hodgkin lymphoma patients .

In Iraq AI-Nousairy (38) reported an accuracy rate of (57%) for Hodgkin's lymphoma and (75%) for Non-Hodgnostic lymphoma , while in other study by AI-Nousairy et al (21) reported a diagnostic accuracy of (80%) for Non-Hodgkin lymphoma and an accuracy of (95.6%) in diagnosing Hodgkin's disease .

In our study Non-Hodgkin lymphoma was accurately diagnosed by FNA in (88.5%), with one false negative, one false positive and two suspicious cases. Regarding Hodgkin's lymphoma ,

the accuracy of cytological diagnosis was (77%), false negative results were obtained in two cases while the diagnosis was suspected in one case . No false positive diagnosis was reported.

Malignant cell aspirate from metastatic carcinoma and melanoma are aptly named (alien) by Soderstom (39) and display most cytologic criteria of malignancy permitting an accuracy of at least (90%) (40).

The metastatic adenocarcinoma showed medium to large size cells with abundant delicate cytoplasm and round to oval eccentric with large solitary nucleoli , sometimes with mucin secretion . the cells were arranged in flat sheets or sometimes formed rosettes and acinar structures. Metastatic squamous cell carcinoma showed discrete malignant squamous cells with eosinophilic refractile cytoplasm and irregular densely hyperchromatic nuclei . Aspirates from metastatic malignant melanoma showed a dispersed population of pleomorphic cells with abundant eosinophilic cytoplasm, eccentric dark nuclei, some binucleate cells with abundant pigment both intra-cytoplasmic and dispersed in the background (41).

Papillary thyroid carcinoma lymph nodes was characterized by cellular smears, papillary clusters of cells with dense cytoplasm and distinct intercellular borders, intra nuclear clearing , anisokaryosis and occasionally psammoma bodies (5,13,42).

In diagnosing metastatic lesions by FNA , Engzell had a positive diagnosis in (90%) of 257 patients (43). Chhotray et al (26) reported an accuracy rate of (96.5%) in their 495 metastatic lesions with (3.43%) false negative and no false positive results . G. Martelli observed an accuracy of (96.5%) for metastatic lesions in their 266 patients (44). AI-Nousairy (7) reported an accuracy rate of (93%)in their 142 patients with one false positive (7%)(21) . In this work the accuracy of diagnosing metastatic lesions by FNA was (96%). A suspicious diagnosis was given in only one case (4%). Al - Sabah (34)(19) attempted to subclassify histologically 78 cases at Non-Hodgkin lymphoma according to national cancer institute working formula (NCI) (28) and he reported that (50%) of this patients were of high grade type, (23%) intermediate grade and (11.5%) were of low grade type . I n our study histological sub-classification of Non-Hodgkin lymphoma showed that the high grade type represented the bulk of Non-Hodgkin lymphoma cases forming (42.4%) and (23%)respectively . Comparing the sensitivity and specificity for FNA biopsy/ cytology, kardos et a l (22) in an analysis of (37) patients with lymphoma, reported a sensitivity of (93%), specificity (95%) , positive predictive value of (90%) and negative predictive value of (97%). G. Martelli (44) reported a sensitivity of (78.3%) for lymphoma and (96.5%)for metastatic cancer. recorded a sensitivity of (89.4%), specificity (90.9%), positive predictive value (96.8%) negative predictive value (74.1%) and the efficiency of their test was (89.8%). I n this work, sensitivity being a

measure of false negative was (90.5%), while the specificity a measure of false positive was (98.8%) the positive value was (92%) and the efficiency of our test was (95%).

CONCLUSIONS

Fine Needle Aspiration has a high accuracy especially in diagnosing lymphadenopathies particularly in metastatic carcinoma. The use of FNAC is a simple procedure offers many advantages to clinician and pathologist, and the most important being the potential avoidance of surgical operations in many cases. FNA was needed short time to be performed and results were obtained within 30-60 minutes. The successful use of FNAC depends on close cooperation between the clinician and pathologist, working together and using their respective skills to best advantages. However, further studies are still highly suggested for further assessment.

Ethical Clearance... All official agreements were obtained and informed signed consents were

obtained from all patients before they were enrolled in the study

Conflict of interest... None

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