

# The Predictive Value of Fine Needle Aspiration Cytology in the Assessment of Cervical Lymphadenopathy

Hayder M. Abdulnabi

## ABSTRACT :

### BACKGROUND:

Cervical lymphadenopathy is a common clinical problem that needs a prompt diagnosis to manage. FNAC plays an increasing role in the differentiation of its pathology. The aim of this study was to show the value of cytological examination in the assessment of cervical lymphadenopathy in relation to histopathological examination.

### METHODS :

A prospective study where 50 randomly selected patients with cervical lymphadenopathy underwent fine needle aspiration cytology in the pathological department, college of medicine, Kufa university, for the period from Feb.2004 to Feb.2005.

### RESULTS :

Non specific lymphadenitis was the common pathology in 20 patients (40%), followed by tuberculous lymphadenitis in 16 patients (32%), lymphoma in 22% and metastatic tumour in 12% of cases respectively. In 44 patients out of 50 the pathology was confirmed histopathologically.

### CONCLUSION :

It is proved by this study that FNAC play an important role in the diagnosis of cervical lymphadenopathy as accurate as histopathological examination.

**KEYWORDS:** FNAC (Fine needle aspiration cytology), Cervical lymphadenopathy

## INTRODUCTION:

The human being contains about 800 lymph nodes, no fewer than 300 of them lie in the neck<sup>(1)</sup>. Any of these lymph nodes may become enlarged due to various causes.

The fine needle aspiration is widely used in the assessment of patients with neck masses. It is safe and inexpensive out patient procedure, and has recently gained a wide acceptance since it offers a high degree of accuracy<sup>(2,3)</sup>. In Iraq, tumours of lymphatic tissue are often encountered and account for 8% of total cancer cases (it is the fifth most common cancer)<sup>(2)</sup>. Moreover, lymph nodes are a common site of metastasis for different cancers. Thus, clinical recognition and urgent diagnosis of palpable lymphadenopathy by FNAC is of great importance<sup>(3)</sup>.

## METHODS :

50 patients, randomly selected, with cervical lymphadenopathy, attending the department of pathology in Kufa medical college teaching hospital were included in this study. Complete history and physical examination was done to all

of them. Complete blood picture, blood film examination, chest X- ray, and otorhinological examination were also done.

The patients were prepared for FNAC after reassurance and psychological support. The area was cleaned with antiseptic solution and a 10 cc syringe with a needle of (21 gauge) bore was used.

44 patients out of 50 underwent an excisional biopsy to the same lymph node under general anesthesia. The specimen were send in 10% formalin to the laboratory. and stained by HNE stain. Both cytological and histopathological examinations were done by the same histopathologist.

## RESULTS :

There were 30 female patients (60%) and 20 males (40%) with an age range between 1-70 years. Most of them, 14 patients (28%), were in their twenties. The median age was 27 years in females and 25 years in males. (Table 1)

**Table 1 (Age and Sex distribution)**

Age(years)	Female	%	Male	%	Total	%
1-10	1	2	3	6	4	8
11-20	7	14	6	12	13	26
21-30	9	18	5	10	14	28
31-40	3	6	5	2	4	8
41-50	6	12	-	0	6	12
51-60	3	6	3	6	6	12
61-70	1	2	2	4	3	6
Total	30	60	20	40	50	100

Department of Surgery / College of Medicine /  
Kufa University

## FINE NEEDLE ASPIRATION CYTOLOGY

The lymphadenopathy was common in the left side of the neck in 29 patients (58%) and in the right side in 21 patients (42%)

The anterior triangle lymph nodes were involved in 24 patients (48%), 9 of them were submandibular (37.5%). The posterior triangle lymph nodes were involved in 26 patients (52%). Nine of them in the occipital group (57.69%), with minimal sex differences. (Table 2)

**Table 2 (Site distribution of cervical lymphadenopathy according to the sex)**

Site	Female	%	Male	%	Total
Submental	1	3.33	-	0	1
Submandibular	5	16.66	4	20	9
Carotid	4	13.33	4	20	8
Muscular	3	10	3	15	6
Supraclavicular	6	20	5	25	11
Occipital	11	36.66	4	20	15
Total	30	100	20	100	50

Chronic non specific lymphadenitis was the commonest cytopathology in 17 cases out of 50 (34%). Followed by tuberculosis (32%), lymphoma (16%), and secondary tumour in 12% of cases. The diagnosis of tuberculosis depended

on the presence of chronic inflammatory cells infiltration( mainly lymphocytes), the presence of eosinophylic necrotic material and sometimes the presence of Langerhans giant cell. Table 3

**Table 3 (Fine needle aspiration cytology results)**

Cytopathological diagnosis	No. of cases	%
Chronic non specific inflammation	17	34
Tuberculosis	16	32
Lymphoma	8	16
Suspicious	3	6
Secondary tumours	6	12
Total	50	100

Tuberculosis was the commonest histopathological result. It was confirmed in 16 patients out of 44 (36.36%). Followed by non

specific lymphadenitis in 11 patients (25%) . Lymphoma was found in 11 patients and secondary tumours in 6 patients. Table 4

**Table 4 (Histopathological results)**

Histopathological diagnosis	No. of cases	%
Non specific inflammation	11	25
Tuberculosis	16	36.36
Lymphoma	11	25
Secondary tumour	6	13.63
Total	44	100

A comparism between cytopathological and histopathological diagnosis to the 44 patients, who underwent both cytological and histopathological examination, showed that 4 cases (9.1%) revealed nonspecific inflammation by FNAC and by histopathological examination. One case diagnosed as suppurative inflammation by FNAC and by histopathological examination. Six cases diagnosed as reactive follicular hyperplasia by FNAC, while 5 cases were diagnosed so histopathologically and one case

was found to be a sinus hyperplasia.

In 16 patients out of 44 (36.3%), the FNAC was suggestive of tuberculosis and so found to be by histopathological examination. Suspicious result was found in 3 cases of the 44 patients (6.8%), by FNAC, proved to be lymphoma on excisional biopsy. Eight cases were diagnosed as lymphoma by FNAC were so histopathologically. Two of the eight cases diagnosed as non Hodgkins lymphoma and six as Hodgkins lymphoma. Table 5

## FINE NEEDLE ASPIRATION CYTOLOGY

**Table 5 ( FNAC and histopathological finding in cervical lymphadenopathy)**

Pathological diagnosis	FNAC	Histopathology
Non specific inflammation	4	4
Suppurative inflammation	1	1
Reactive hyperplasia		
Follicular	6	5
sinus	-	1
Tuberculosis	16	16
Suspicious	3	-
Lymphoma	8	11
Secondaries	6	6
<b>Total</b>	<b>44</b>	<b>44</b>

Six cases out of fifty (16%) diagnosed as secondary tumour by FNAC found to be a papillary cell carcinoma of the thyroid in three cases (50%), squamous cell carcinoma in two

cases (33.34%) and adenocarcinoma in one case respectively (16.66%). This was confirmed by histopathological examination. Table 6

**Table 6 ( Metastatic lymph node in relation to the primary origin)**

Tumour diagnosis	Site of primary tumour	No. of cases	%
Papillary cell carcinoma	Thyroid gland	3	50
Adenocarcinoma	Stomach	1	16.16
Squamous cell carcinoma	Oesophagus	1	16.16
Squamous cell carcinoma	Nasopharynx	1	16.16
<b>Total</b>		<b>6</b>	<b>100</b>

Table 7 shows a comparison between FNAC and histopathological examination regarding the type of lymphoma.

**Table 7 ( FNAC and histopathological findings in lymphoma)**

Pathological diagnosis	FNAC	%	Histopathology	%
Non Hodgkins lymphoma	2	25 75		
Low grade Intermediate grade High grade			1	33.
			1	33
			1	33.
<b>Total</b>	<b>2</b>		<b>3</b>	<b>100%</b>
Hodgkins Lymphoma	6			
Lymphocytic predominant Mixed			3	37.
cellularity Lymphocytic depletion			3	5
			2	37.
<b>Total</b>	<b>6</b>	<b>100%</b>	<b>8</b>	<b>100 %</b>

**DISCUSSION:**

The results of this work indicate that benign lymphadenopathy constitutes a significant proportion of findings in aspirates of enlarged lymph nodes. It is also proved that cytological examination may not only help to distinguish between benign and malignant types, but may also suggest the nature of the benign process. Hence, this study showed benign lesions in more than 70% of cases, of which reactive hyperplasia constitutes 40% of cases. This was higher than what is reported in the literatures (about 55%)<sup>(4,5)</sup>. In this study the incidence of tuberculosis (36.6%) is also higher than what is present in the literatures (about 4%)<sup>(6,7,8)</sup>, and these differences may be due to different local epidemiological conditions.

For the diagnosis of lymphoma, FNAC provides excellent cytomorphological material if adequately sampled. The evaluation of FNAC in patients with no previously diagnosed malignancy, or those with suspected lymphoma, should be done with extreme caution. On the other hand false-negative cases generally depends on sampling rather than diagnostic errors<sup>(3,9)</sup>.

Lymphoma had an incidence of 16% in our study, which is lower than in the literatures (35%)<sup>(5,10)</sup>. It was able to diagnose Hodgkins lymphoma in 6 cases (75%) and non Hodgkins lymphoma in 2 cases (25%). It is difficult to evaluate the types and grading of lymphoma by FNAC, and here cooperation between histopathologist and clinician is mandatory and may result in repeating aspiration or recommending a surgical biopsy<sup>(10)</sup>. Histopathologically grading of non Hodgkins lymphoma was equal in the low, intermediate and high grade type (33%) in this study. It was about 50% for high grade type, 33% of intermediate and 27% of low grade type respectively in the literatures<sup>(1,3,11)</sup>.

In our study, the percentage of both lymphocytic predominant and mixed cellularity type of Hodgkins lymphoma was (37.5%) in regards to (55%) of lymphocyte predominant type in the literatures<sup>(11)</sup>. The sensitivity, specificity and accuracy were 78.57%, 66.66% and 73.90% respectively, which is similar to other series<sup>(11,12)</sup>.

Metastatic lymphadenopathy was common in old age groups in our study and in most series<sup>(11,12,13)</sup>. Papillary cell carcinoma was the commonest finding, while squamous cell carcinoma was more common in some series. Accuracy was 100% which is almost similar in most series<sup>(11,12,13,14)</sup>.

**CONCLUSION:**

FNAC appears well established as another method of diagnosis, since its results compare favourably in many respects with those obtained from traditional surgical biopsy. This fact is illustrated by the high accuracy encountered in this study (90.9%) and others<sup>(1,12)</sup>.

**REFERENCES :**

1. AINousairy H, Tawfik L. Lymph node aspiration biopsy cytology. Journal of the Faculty of Medicine, Baghdad University, Iraq, 1987, 29:397-407
2. Iraqi Cancer Registry Centre. Results of Iraqi Cancer Registry 1989/1991. Institute of Radiology and Nuclear Medicine, Baghdad, Iraq, 1993.
3. Alash N1, AbdulMajeed BA, AlHashimi AS, Lymphadenopathy: histopathologic study of 1145 biopsies. Journal of the Faculty of Medicine, Baghdad University, Iraq, 1994, 36:171-9.
4. Martelli G et al. Fine needle aspiration cytology in superficial lymph nodes. European journal of surgical oncology, 1999, 15:13-6.
5. Stani J. Cytologic diagnosis of reactive lymphadenopathy in fine needle aspiration biopsy specimens. Acta cytologica, 2001, 31:8-13.
6. Lau SK et al. FNA biopsy of tuberculous cervical lymphadenopathy. Australia and New Zealand journal of surgery, 2000, 58:947-50
7. Bailey TM, Akhtar M, Ali MA. Fine needle aspiration biopsy in the diagnosis of tuberculosis. Acta cytologica, 1985, 29:732-6.
8. Frable WJ. Thin needle aspiration biopsy. American journal of clinical pathology, 1998, 65:168-80.
9. Singh MK, Verma K, Kapila K. Value of aspiration cytology in diagnosis and subtyping of malignant lymphomas. Indian journal of medical research, 1988, 87:32-6.
10. Koss LG. Diagnostic cytology and its histopathologic bases. Philadelphia, JB Lippincott Company, 1979.
11. Kardoz T et al. FNA biopsy in management of young adults with peripheral lymphadenopathy. Cancer, 1989, 63:703-7.
12. Schwarz R, Chan NH, Farlane JK. Fine needle aspiration cytology in the evaluation of head and neck masses. Am J Surg 1995;159: 482-5.
13. Guyot JP, Obradovic D, Kravenbuht M. Fine needle aspiration in the diagnosis of head and neck growths. That is it necessary. Otorinolaryngol Head Neck Surg 1990; 103:697-701.
14. Schelkum PM, Grandy WE. Fine needle aspiration biopsy of head and neck lesions. Oral Maxill Fac Surg 1991;49:262-7.