IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 11 Ver. III (November. 2016), PP 59-63
www.iosrjournals.org

Spectrum of Cytopathological Findings in Cases of Lymphadenopathy-A 3 Years Study

Dr. Ipsita Saha M.D.[1], Dr. Sambit Dasgupta* M.D.[2], Dr. Sarmila Sen M.D.[3]
[1]*Acquisition Of Data, Analysis And Interpretation Of Data, Drafting The Article, Revising It Critically For Important Intellectual Content, Final Approval Of The Version To Be Published*
[2]*Assistant Professor Calcutta National Medical College*
[3]*Associate Professor Calcutta National Medical College Department Of Pathology Calcutta National Medical College Gora Chand Road, Kolkata, West Bengal, India*

Abstract: *Lymphadenopathy is one of the commonest conditions encountered in clinical practice. Fine Needle Aspiration Cytology(FNAC) has proven to be an easy, reliable and cost effective diagnostic tool for lymphadenopathies. The appropriate use of FNAC may obviate the need for an open biopsy. The purpose of the present study is to see the spectrum of cytopathological findings of FNAC of lymph node over a period of 3 years and to find out its correlation with the histopathological diagnosis. A retrospective study was conducted on cases of lymphadenopathy whose FNAC and biopsy were done during a 3 year period. FNAC was done in 1542 cases and correlation between cytopathological and histopathological examination results could be done in 79 cases. Out of 1542 cases 51% were male and 49% were female. The commonest anatomical site of lymphadenopathy was cervical followed by supraclavicular and axillary. The peak age group ranged between 11-20 years. Out of 1542 FNAC cases, 693 cases (44.9%) were diagnosed as granulomatous lymphadenitis, 639 cases(41.4%) as chronic non-specific lymphadenitis, 62 cases(4.02%) as lymphoproliferative disorder, 119 cases(7.72%) were suggestive of metastatic deposits in lymph node. Histopathological correlation showed diagnostic discordance between cytopathological and histopathological results in 3 out of 79 cases. Therefore, FNAC is safe procedure with high degree of concordance with histopathological diagnosis and can be used independently in choosing initial treatment option, but biopsy is confirmatory in lymphoproliferative disorders.*
Keywords: *Lymphadenopathy, FNAC, Biopsy, correlation*

I. Introduction

It is more than 80 years since Martin and Ellis introduced aspiration biopsy in 1930 as a substitute for excisional biopsy[1]. Enlarged lymph nodes were the first organs to be biopsied by fine needle aspiration. In 1967 Zajichek and Franzen at Karolinska Hospital, Sweden defined précised diagnostic criteria for diagnosis of lymphnode lesion[2].Today lymph nodes are one of the most frequently sampled tissues for FNAC. Reactive hyperplasia, granulomatous and suppurative lymphadenitis are among the commonly encountered problems in every day clinical practice. Lymph nodes are also common sites for metastases from different cancers[3]. A rapid and accurate diagnosis of lymphadenopathy through FNAC followed by confirmation by histopathology (wherever applicable) helps in reducing morbidity and mortality by starting specific therapy in time and this is the need of the hour. This study aims to study the spectrum of cytopathological features in patients presenting with lymphadenopathy. Special attention was paid to the incidence of various etiological causes of lymphadenopathy in respect to age, sex and anatomical site. Correlation between cytopathological and histopathological investigations were also done.

Materials and methods:
Materials:
[1] Disposable syringe with needle
[2] Glass slides
[3] Leishman-Giemsa stain, Z N stain, PAP stain H and E stain
[4] Knife for tissue cutting
[5] Formalin for fixation
[6] Alchohol , xylene and paraffin wax for tissue processing
[7] Paraffin wax for blocking
[8] Microtome for section cutting
[9] Light Microscope

Methods:

- Type of study- Retrospective cross sectional hospital based study over a period of 3 years
- Study population- Patients presenting with lymphadenopathy referred from various departments for cytopathological examination(1542cases) and biopsy samples of lymph node send for histopathological examination(79 cases).
- **Method of collection of data:**
- **Inclusion criteria of the present study**

A) Patients presenting with superficial palpable lymphadenopathy referred from various departments including OPD for FNAC and FNAC done under radiological guidance were included in this study.
B) Lymph node biopsy specimens send to the department of Pathology for histopathological examination were also included in the study.
C) Cases of lymph node biopsies whose FNAC were done in the department of Pathology were included in the correlation study.

- **Exclusion criteria of the present study**

A) Patients already diagnosed to be suffering from non-lymphoid malignancy.

A total number of 1542 cases of lymphadenopathy underwent FNAC during the study period of 3 years. Out of 1542 cases 1519(98.5%) cases presented with superficial palpable lymphadenopathy and therefore FNAC was done without radiological guidance. The rest 23(1.5%) cases were underwent FNAC under radiological guidance. All FNACs (1542 cases) were performed using 10ml disposable syringe. Smears were air-dried and stained with May-Grunwald Giemsa (MGG) stain and PAP stain was also performed following alchohol fixation. Ziehl Neelsen (ZN) for detection of acid fast bacilli (AFB) were performed in all aspirates.All the stained smears were critically evaluated. Out of 1542 cases 95% were referred from OPDs whereas 5% were indoor patients.

The cytological diagnosis was correlated with the histopathological findings in 79 cases and concordance and discordance rates were evaluated. Final histopathology reports (considered gold standard used for the diagnosis of the lesions) were based solely on the findings of formalin fixed paraffin embedded tissue and H & E staining.

II. Result and analysis

Out of 1542 FNAC cases 51% were male and 49% were female. The commonest anatomical site of lymphadenopathy in our series was cervical-1048(68%) cases, followed by supraclavicular -216(14%) cases, axillary-170(11%)cases, inguinal-77(5%)cases. Other sites included- mesenteric (14), submental (6), mediastinal (5), retroperitoneal(4), and epitrochlear (2 cases). [Table 1]. The peak age group ranged between 11-20 years. [Table 2] On FNAC, 693 cases (44.9%) were diagnosed as granulomatous lymphadenitis, 639 cases(41.4%) as chronic non-specific lymphadenitis, 62 cases(4.02%) as lymphoproliferative disorder and 119 cases(7.72%) were suggestive of metastatic deposits in lymph node.[Table 3] Out of 62 cases diagnosed as suggestive of lymphoproliferative lesions 23 cases were suggestive of Hodgkin disease, 39 cases were suggestive of non-Hodgkin lymphoma.[Table 4] Out of the 119 cases of lymphadenopathies reported as suggestive of metastatic deposit in FNAC 68(58%) cases were suggestive of squamous cell carcinoma, 24(20%) cases were suggestive of adenocarcinoma, 6(5%) cases were suggestive of malignant melanoma, 4(3%) cases were suggestive of papillary carcinoma, and rest 17(14%) cases were indeterminate.

Histopathological correlation showed diagnostic discordance between cytopathological and histopathological results in 3 out of 79 cases. [Table 5]

Table 1: Distribution of cases of lymphadenopathies according to anatomical locations

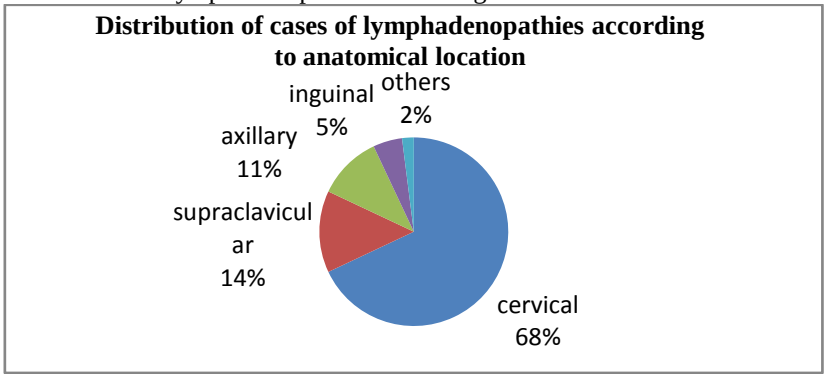

Table 2: Distribution of cases of lymphadenopathies according to age

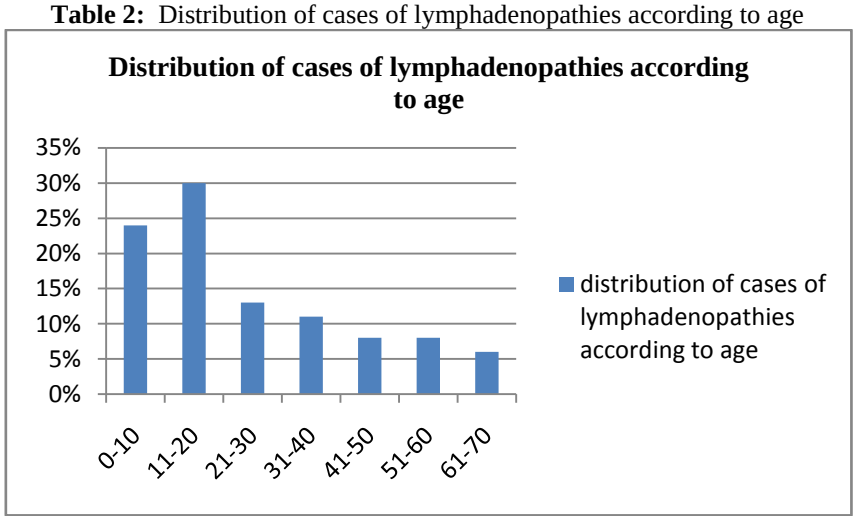

Table 3: Distribution of case according to cytological diagnosis(Total-1542 cases)

Cytopathological diagnosis	Number of cases
Chronic nonspecific lymphadenitis	41.4% (639cases)
Granulomatous lesion	44.9%(693 cases)
Metastatic lymph node	7.72%(119 cases)
Lymphoproliferative lesion	4.02%(62 cases)
Inconclusive	1.88%(29 cases)

Table 4: Distribution of cases of lymphadenopathies according to cytopathological diagnosis in each decade of age

Age	**Chronic non-specific lymphadenitis**	**Granulomatous lesion**	**Lymphoproliferative lesion (suggestive of Hodgkin lymphoma)**	**Lymphoproliferative lesion (suggestive of non-Hodgkin lymphoma)**	**Metastatic deposit**	**Inconclusive**
0-10	242	110	0	3	0	14
11-20	201	257	5	2	0	2
21-30	73	125	2	2	1	1
31-40	65	85	7	3	3	3
41-50	26	61	4	6	28	2
51-60	23	36	3	11	38	2
61-70	9	19	2	12	49	5
Total cases	**639 cases**	**693 cases**	**23 cases**	**39 cases**	**119 cases**	**29 cases**

Table 5: Correlation between cytopathological and histopathological diagnosis of lymphadenopathies(79 cases)

Cytological diagnosis	**No. of cases**	**Histopathological diagnosis**			
		Chronic non-specific lymphadenitis	Granulomatous lymphdenitis	Metastasis	Lymphoproliferative disorder
Chronic non-specific lymphadenitis	6 cases	5cases	_	_	1 case
Granulomatous lymphadenitis	3 cases	_	2 cases	1 case (Squamous cell carcinoma)	_
Metastasis	51 cases	_	_	51 cases	_
Lymphoproliferative disorder	19 cases	1 case	_	_	18cases

Figures:

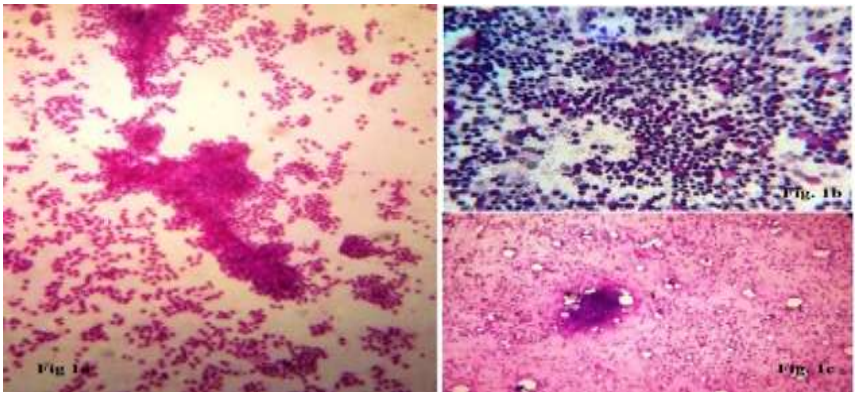

Figure 1: **1a** Photomicrograph of lymph node aspirate showing metastatic deposit papillary carcinoma of thyroid (MGG, X400) **1b.** FNAC smear showing polymorphous population of cells in Chronic nonspecific lymphadenitis(MGG, X400) **1c.** Lymph node FNAC showing granuloma in background of necrosis(MGG, X400)

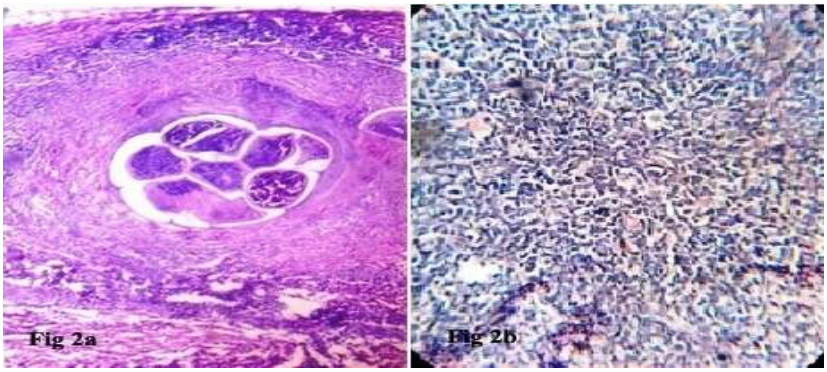

Figure 2: 2a. Photomicrograph showing transverse section of parasite within the lymph node (H&E, X400) **2b.** Photomicrograph showing lacunar giant cell in lymph node a case of nodular sclerosis Hodgkin lymphoma (H&E, X400)

III. Discussion

Lymphadenopathy is one of the commonest clinical presentation encountered in the outpatient department. This may be a reaction to inflammatory process or infection (acute/chronic/ granulomatous) or due to lymphoproliferative disorders or metastatic deposits [3]. Tuberculosis is one of commonest cause of lymphadenopathies in developing countries where its prevalence is high. Lymph nodes are the most common site of metastatic malignancy and sometimes constitute clinical manifestation of the disease [12,13,14]

FNAC of lymph nodes has become a window for diagnosis of many diseases. Optimal material and experience, when combined, make cytological diagnosis of almost equal significance as histopathology. The common cause of lymphadenopathy is either a reaction to inflammatory process or metastatic carcinoma or lymphoproliferative disorder. Using FNA cytology it is often possible to decide the etiology of lymphadenopathy and may also point towards a possible occult primary site in case of secondaries with unknown primaries[3].

In this series satisfactory evaluation could be done in 1513 among 1542 cases of FNAC of lymph nodes.The age range of the patients in our study was 0 -70 years with a peak between 11- 20 years(467 cases) and male patients slightly outnumbered female patients(M:F=1.04:1) this findings is similar to other recent studies [4].The commonest anatomical site of lymphadenopathy was cervical-1048(68%), followed by supraclavicular -216(14%), axillary-170(11%), inguinal-77(5%) Studies conducted by Vidya K et al [4] also showed similar result.

In this study the commonest cytopathological diagnosis of lymphadenopathy was granulomatous lymphadenitis (693 cases-44.9%) [Figure 1c], with a peak between 11-20 years(257 cases), followed by chronic non-specific lymphadenitis[Figure 1b] 246 cases(peak age 0-10 years). However chronic nonspecific lymphadenitis was the commonet cause of lymphadenopathy in study conducted by Arun kumar et al [5] and D Malakar et al [6].

In our study out of 693 cases of granulomatous lymphadenitis 270 cases (39%) were positive for AFB which is similar to studies conducted by Arora at al[7,] W.F. Ng.at al[8], S.S Ahmed at al[9]. Out of 62 cases diagnosed as suggestive of lymphoproliferative lesions 23 cases were suggestive of Hodgkin lymphoma, 39 cases were suggestive of non-Hodgkin lymphoma. Non-Hodgkin lymphoma was the commonest cause of lymphadenopathy in mesenteric lymph node (8 out of 14 cases). In this study out of the 119 cases of lymphadenopathies reported as suggestive of metastatic deposit in FNAC 68(58%) cases were suggestive of squamous cell carcinoma, 24(20%) cases were suggestive of adenocarcinoma, 6(5%) cases were suggestive of malignant melanoma, 4(3%) cases were suggestive of papillary carcinoma [Figure 1a], and rest 17(14%) cases were indeterminate. This result is similar to the study conducted by Raghuveer et al [10], however study conducted by Yueh-Lung et al [11] showed slightly different result.

The most common tumour metastasizing to the cervical lymph nodes was squamous cell carcinoma and the commonest primary site was upper aerodigestive tract whereas the commonest tumour metastasizing to inguinal lymph node was malignant melanoma.

Correlation study between cytopathological and histopathological examination of lymph node showed diagnostic discordance in 3cases. 1 case diagnosed as chronic nonspecific lymphadenitis in FNAC proved to be case of Hodgkin lymphoma in histopathology.1 case diagnosed as granulomatous lymphadenitis in FNAC proved to be metastatic deposit from squamous cell carcinoma with foreign body granuloma and necrosis subsequently in histopathology. Out of 19 cases of lymphadenopathies diagnosed as lymphoproliferative neoplasm in FNAC 18 cases showed diagnostic concordance in histopathology [Figure 2b],and 1 case was diagnosed as giant lymph node hyperplasia.

Parasitic infestation (microfilaria) in lymph node biopsy found in 1 case[Figure 2a].

This study concludes that FNAC is a safe procedure with high degree of concordance with histopathological diagnosis and can be used independently in choosing initial treatment option, but biopsy is confirmatory in lymphoproliferative disorders.

References

[1]. Martin HE, Ellis E.Biopsy needle puncture and aspiration Ann Surg 1930;92,169-81
[2]. Zajichek J; Aspiration Biopsy;part-I cytology of lymph node act 1974,vol-4
[3]. Pandit AA, Candes FP, Khubchandani SR. Fine needle aspiration cytology of lymph nodes. J Postgrad Med 1987; 134-136
[4]. Vidya K, Subramanya N.K. Fine needle Aspiration Cytology of Lymphadenopathies: "3 year study", journal of evidence based Medicine and Health care, Vol-2, issue 31, Aug 3,2015, P-4579-4596.
[5]. Arun Kumar Gupta, MohiniNayar, Mithilesh Chandra. Reliability and limitations of iine needle aspiration cytology of lymphadenopathies. Arranalysis of 1,261 cases. Acta Cytol 1991;35,777-782
[6]. D. Malakar, ILN. Jagoo, Kiran swamp, O.P. Gupta, A.P. Jain, V. W. Poflee. A clinical evaluation of fine needle aspiration cytology in the diagnosis of lymphadenopathy. Ind J Tub I991; 38: 12-20.
[7]. Arora B, Arora D: fine needle aspiration cytology in diagnosis of Tuberculous lymphadenitis: Indian Journal on Medical Research: 91; 189-192: 1990.
[8]. W.F Ng, lgnatius T.M Kung. Clinical research Pathology of tuberculouslyinphadcnitis. Fine needle aspiration approach. J Honk Kong Med Ass 1990; 42(1): 18-21.
[9]. S. S. Ahmad, SI. Akhtar, K. Akhtar, S. Naseem, T. Mansoor, S. Khalil. Incidence of tuberculosis from study of fine needle aspiration cytology in lymphadenopathy and acid fast staining. Ind J Com Med 2005; 30: 63-66.
[10]. Raghuveer C.V et al. Role of Fine needle aspiration cytology in disorder of lymph node. Journal of cytology. 1996; 13: 45-49.
[11]. Yueh-lung Liu, Ya-Ting Lee, CT., Sun-Wang Hsieh, Sow - HsongKuo. Presumption of primary sites of neck lymph node metastases on fine needle aspiration cytology. Acta Cytol. 1997; 41: 1447- 1484.
[12]. Didokar MS, Fanous N, Elias EG, et al, Metastatic carcinoma from occult primary tumors, A study of 254 patiets , Ann surg 1977, 186,628-630.
[13]. Haagensen CD, Feiend CR, Herter FP, SlanetzCAJN, Weinberg JA, The lymphatics in cancers, Philadelphia 1972, WB Saunders.
[14]. Lindbergh R. Distribution of cervical lymphnode metastasis from squamous cell carcinoma of upper respiratory and digestive tracts cancer 1972, 29, 1446-1449