



Original Research Article

Descriptive analysis of histopathological diagnosis of lymph node biopsies at a Tertiary Referral Center

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ABSTRACT

Background: Lymphadenopathy is a common clinical problem and biopsies done to know the cause of nodal enlargement may be neoplastic or non-neoplastic. Neoplastic lesions are mainly lymphohematogenous malignancies and metastases while non-neoplastic lymphadenopathies are varied. This study was undertaken to determine the histopathological spectrum of lymphadenectomies.

Materials and Methods: This was a descriptive study wherein 516 cases of histologically diagnosed peripheral lymph node biopsies from Aug 2016 to July 2019 were reviewed. Surgical resection specimens with lymph node dissection were excluded from the study.

Results: Neoplastic lesions were 47.68% (246 cases) consist of 21.5% (111 cases) of non-Hodgkin lymphoma, 17.6% (91 cases) of Hodgkin lymphoma and 8.5% (44 cases) of metastatic lesions. The non-neoplastic lesions were 52.32% (270 cases), which included 21.1% (109 cases) of tuberculosis followed by follicular hyperplasia, 9.5% (49 cases), chronic lymphadenitis 8.9% (46 cases).

Conclusions: Lymphoma was the most common cause of biopsied lymphadenopathy in our study (NHL comprising 21.5% and HL comprising 17.6%) followed by tubercular lymphadenitis (21.1%).

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1. Introduction

The human body has about 600 lymph nodes.¹ Spleen, tonsils, adenoids, and Peyer's patches are parts of the lymphoid tissue, and their role is to clean antigens from the extracellular fluid. Peripheral lymph nodes are those which are located deep in the subcutaneous tissue and can be palpated if any process causes them to enlarge. Lymphadenopathy (LAP) is the term to describe the conditions in which lymph nodes become abnormal in size, consistency, and number. Lymphadenopathy is a common clinical problem and biopsies are usually undertaken to determine the cause of nodal enlargement, which may be neoplastic or non-neoplastic. The neoplastic disorders are mainly lymphohematogenous malignancies and metastases

while the causes of non-neoplastic lymphadenopathy are more varied such as infections (bacterial, viral, fungal), drug reactions (including certain vaccines), lipid storage disorders and a wide variety of other non-neoplastic lymphoproliferative disorders such as systemic lupus erythematosus (SLE), Rosai Dorfman disease, Kimura disease, Kikuchi Fujimoto disease, Castleman disease and clinically, lymphadenopathy may be peripheral or visceral. Peripheral lymphadenopathies are easily detected by routine physical examination and are often biopsied as they are easily accessible.

Studies show, in India, lymphomas are the most common cause of lymphadenopathy, followed by reactive lesions, tubercular lymphadenitis and metastatic nodes. Among the lymphomas, NHL is most common of all lymphomas. In the Western world NHL is 3 to 4 times more common than HL and the incidence is rising while that of HL is declining.

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Hence this study was undertaken with the aim of evaluating the spectrum of histopathological diagnosis of lymph node biopsies. Palpable lymph nodes are an important diagnostic clue to the etiology of the underlying condition. Though fine needle aspiration cytology is commonly used to establish the etiological diagnosis, excision biopsy of the lymph node remains the “gold standard” for diagnosis.²

2. Aims and Objective

1. To diagnose lymph node diseases by histopathological examination.
2. To subclassify neoplastic conditions on morphological and immunophenotypic characteristics.
3. To study the spectrum of lymph node diseases (NHL, HL, chronic granulomatous disease, non specific hyperplasia, specific hyperplasia, metastases, etc) and their demographic distribution (type, age and sex).

3. Materials and Methods

Specimen in the study were Lymph node biopsies. Brief history and clinical details were taken for study, methods were comprised of standard histopathological technique for diagnosis of lymph node diseases. Use of immunohistochemical markers as and when required. En bloc lymph node dissection in known cases of primary or associated with evidence of primaries elsewhere in the body were excluded from study. It was prospective study for three year – Aug 2016 to July 2019.

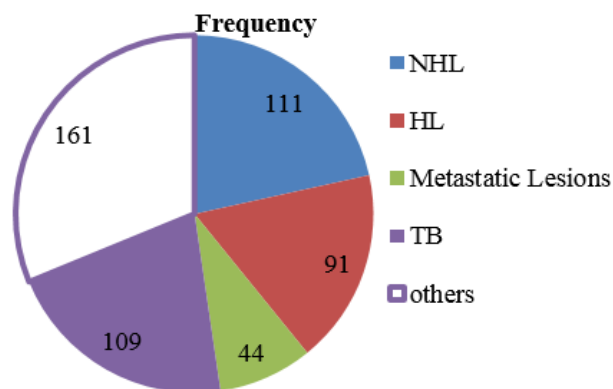
4. Observation

The present study evaluates the spectrum of histopathological diagnosis of lymph node biopsies. A total of 516 specimens (patients) were recruited and evaluated. The age of patients ranged from 1-78 yrs with mean (\pm SD) 29.39 ± 18.53 yrs and median 25 yrs. Most of the patients were in the age group of 11-20 yrs (28.7%) and mostly males (66.3%). Of total, 246 had neoplastic lesions (47.7%) and 270 had non neoplastic lesions (52.3%). In patients, NHL was the most common (21.5%) followed by TB (21.1%) altogether accounting 42.6% of the total diagnosis.

4.1. Non neoplastic lesions

The distribution of Non neoplastic lesions is summarized in Table 1. Of total 516 lymph node biopsy cases, 270 were of non neoplastic lesions (52.3%) of which TB (40.4%) was the most common followed by follicular hyperplasia (18.1%) accounting together 58.5% of the total non neoplastic lesions.

HL-The distribution of HL is summarized in Table 2. Of total 516 lymph node biopsy cases, 88 were of HL (17%)



Graph 1:

of which NSCHL (44.3%) was the most common followed by MCCHL (39.7%) accounting together (84%) of the total HL.

NHL-The distribution of NHL is summarized in Table 3. Of total 516 lymph node biopsy cases, 111 were of NHL (21.5%) of which DLBCL (28%) was the most common.

4.2. Metastatic Lesions

The distribution of metastatic lesions are summarized in Table 4. Of total 516 lymph node biopsy cases, 44 were of metastatic lesions (8.5%) of which metastatic adenocarcinoma (38.6%) was the most common followed by metastatic squamous cell carcinoma (27.3%) accounting together 65.9% of the total metastatic lesions.

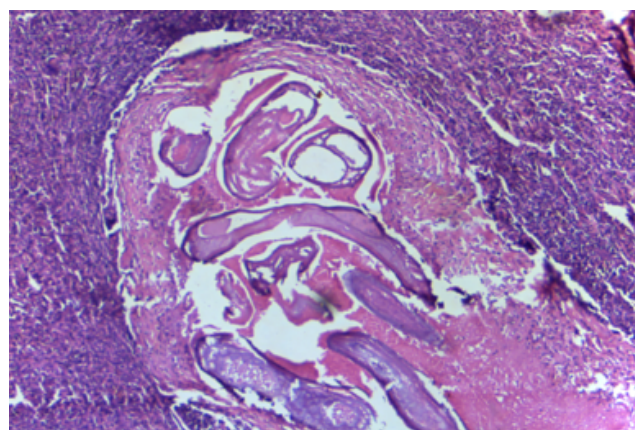


Fig. 1: Filarial lymphadenitis: Dead and calcified filarial organism within fibrosed cyst. 100X. Hematoxylin and eosin stain.

5. Discussion

A total of 516 lymph node biopsy cases were evaluated in our study. The present study showed, non neoplastic lesions

Table 1: Distribution of neoplastic lesions

Non Neoplastic Lesion/Age	<10	11-20	21-30	31-40	41-50	51-60	>60	Total	Sex M/F
TB	8	40	31	14	9	4	3	109	46/63
Sarcoidosis	-	-	-	-	1	1	-	2	1/1
Foreign Body GD	-	-	-	2	-	-	-	2	2/0
Non Specific GD	5	7	4	4	2	1	1	24	11/13
Filarial	-	4	1	-	1	-	-	6	4/2
Lymphadenitis									
Chronic	3	17	11	6	6	3	-	46	32/14
Lymphadenitis									
Necrotizing L	-	2	-	1	1	-	-	4	3/1
Ischaemic L	-	1	-	-	-	-	-	1	0/1
Amyloidosis	-	-	-	-	-	-	-	1	1/0
Follicular	7	17	13	8	1	3	-	49	38/11
Hyperplasia									
Sinus Histiocytosis	-	2	-	-	-	-	-	2	1/1
Kikuchi	-	-	-	1	-	-	-	1	1/0
Lymphadenitis									
Reactive Lesion	4	9	4	1	4	1	-	23	17/6
NOS									

GD-Granulomatous Lymphadenitis, L-Lymphadenitis, NOS- Not otherwise specified

Table 2: Distributions of HL according to age, sex and subtype.

Subtype HL/ Age(year)	<10	11-20	21-30	31-40	41-50	51-60	>60	Total	Sex M/F
MC CHL	14	12	3	3	1	1	1	35	28/7
NS CHL	20	11	1	5	1	-	1	39	34/5
LR CHL	1	-	-	-	-	-	1	2	2/0
LD CHL	1	-	1	1	-	-	-	-	3/0
NLP	1	1	1	1	-	-	1	5	5/0
HL#	1	3	2	1	-	-	-	7	6/1

HL#: Uncategorized Hodgkin Lymphoma

Table 3: Distributions of NHL according to age, sex and subtype.

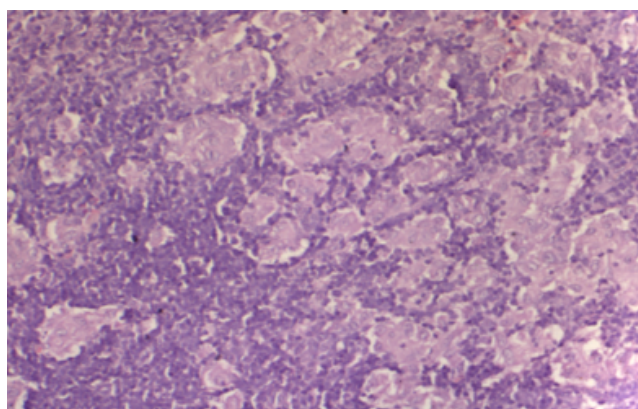
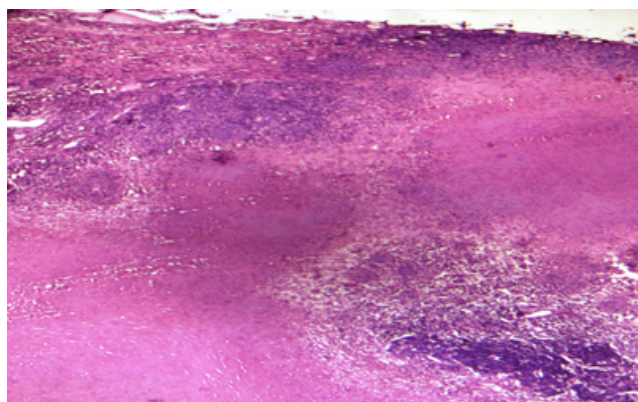
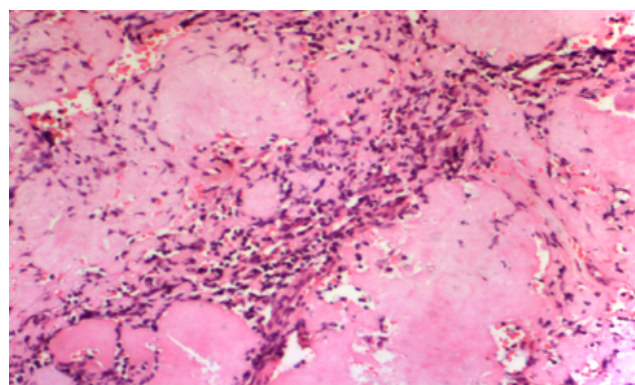
NHL/ AGE (Year)	<10	11-20	21-30	31-40	41-50	51-60	>60	Total	M/F
DLBCL	-	4	5	6	2	7	7	31	18/13
B Lymphoblastic	2	2	-	-	-	-	1	5	4/1
FL	1	2	-	3	-	-	3	9	5/4
MCL	-	-	-	-	-	1	-	1	1/0
LPL	-	-	-	-	1	-	1	2	2/0
THRCBCL	-	-	1	-	-	-	-	1	1/0
SLL	-	-	-	5	2	7	4	18	13/5
B NHL#	1	3	3	-	1	4	1	13	11/2
T Lymphoblastic	1	5	1	-	-	-	-	7	7/0
ALCL	2	2	1	-	2	-	1	8	3/5
AITL	-	1	1	2	-	1	-	5	4/1
T NHL#	-	1	-	-	-	-	-	1	1/0
NHL#	1	-	1	2	3	1	2	10	6/4

NHL#, B cell NHL#, T cell NHL#: Uncategorized

Table 4: Distributions of metastatic lesions according to age, sex and subtype.

Metastatic Lesion/Age (Year)	<20	21-50	>50	Total	M/F
Mets Squamous Cell Carcinoma	-	6	6	12	9/3
Mets Adenocarcinoma	-	11	6	17	10/7
Mets Poorly Differentiated	-	-	2	2	2/0
Mets Undifferentiated	-	1	2	3	3/0
Mets Malignant Melanoma	-	-	1	1	1/0
Mets Nephroblastoma	1	-	-	1	1/0
Mets Small Cell Tumor	1	1	1	3	3/0
Mets Germ Cell Tumor	-	1	-	1	1/0
Mets Transitional Cell Carcinoma	-	1	1	2	0/2
Mets Nasopharyngeal carcinoma	1	-	-	1	0/1
Mets Neuroblastoma	1	-	-	1	0/1

Mets-Metastatic

**Fig. 2:** Sarcoid lymphadenopathy: Closely packed nodular, non-necrotizing granuloma with giant cells. 200X. Hematoxylin and eosin stain.**Fig. 3:** Kikuchi Lymphadenopathy: Areas of necrosis, and apoptosis. 100X. Hematoxylin and eosin stain**Fig. 4:** Amyloid lymphadenopathy: 200X. Hematoxylin and eosin stain

were most common cause of lymphadenopathy 52.32% than neoplastic lesions 47.68%. Most common cause in non neoplastic lesions is tuberculous lymphadenitis 21.1% followed by follicular hyperplasia 9.49%. In our study, frequency of tubercular lymphadenitis was higher than Arun Roy et al. 2013³ which showed tuberculosis is still a major health problem in North India, frequency of reactive lymph nodes, NHL, HL and metastasis were comparable with other studies. NHL was most common comprising 54.9% of all lymphoma while HL constituted 45.1%. In the Western world NHL is reported to be 3 to 4 times more common than HL and the incidence is rising while that of HL is falling.⁴

Our study says that malignant lymphoma cases are increasing day by day. The low relative frequency of HL, accounts for <10% of malignant lymphomas, is a common finding in a regions of Far East, including China, Japan, Taiwan, and Hongkong.⁵⁻⁹ This is in contrast to higher frequency (40-45% cases) reported in U.S. and Europe. Our study showed increased incidence of HL (45.1%) which was comparable to developed countries. It may be explained by availability of better medical resources for early diagnosis of HL. In our study nodular sclerosis was most common which was comparable with study of Arun Roy et al.³ Studies

showed increase in relative frequency of nodular sclerosis over time suggest that the pattern of malignant lymphoma occurrence in India is gradually changing. Lymphocyte rich was lowest in our study comparable with study of Sukpanichnant S et al,¹⁰ however, rate varies greatly among other geographical regions and the risk is the highest among those with high socioeconomic status. Nodular lymphocyte-predominant Hodgkin lymphoma (NLPHL) is a rare histological subtype, comprising approximately 5% of all HL case.¹¹ Our study showed similar result.

Our study showed the frequency of MCCHL was highest in <10 yrs age group and was higher in males. NSCHL was chiefly present in male children of <10 yrs age. LRCHL showed bimodal age curve, was predominant in <10 yrs and >60 age group, was higher in males. LDCHL was predominant in male adults, NLP was common in <40 years males.

Studies shows FL, MZL, Burkitt lymphoma are less common in India along with increased incidence of B lymphoblastic lymphoma. The lower rate of follicular lymphoma in this study is comparable to that for other countries in the Far East.⁹ It may be explained as the availability of early medical care has made it possible to detect follicular lymphoma sooner, while it is in a completely follicular stage.¹²

CLL/SLL formed 16.2% of all non Hodgkin lymphoma cases, a proportion that is similar to or higher than those seen in most developed countries and some Asian countries. It is higher than in Hong Kong and Korea.^{1,10,12,13} FL accounted for 8.1% of all NHL cases. This reiterates the reported low frequency of FL in developing countries and Asia.^{10,14–16} The epidemiological factors (either genetic or environmental) responsible for this low frequency of FL remain to be elucidated. MCL forming only 0.9% of NHL cases, were rarer than in the most developed countries. Its proportion was lower to the reported 3% from Hong Kong¹⁷ as well. DLBCL accounting for 27.9%, is the single largest subset of NHLs seen in India. In a study by Naresh et al.¹⁸ DLBCL comprised 34% of all NHL. Our study showed the frequency (%) of DLBCL was highest in elderly males. B lymphoblastic lymphomas were predominantly present in <20 yrs males. FL was highest in middle and elderly age group, no sex difference. MCL was present in one case of elderly males. LPL was present in elderly males, THRLBCL was present in one case of adult male. SLL was most common in elderly males.

T-cell and NK cell neoplasms accounted for 19.2% of all NHL. Reports from Hong Kong and Shanghai quote T/NK-cell lymphomas to collectively constitute 25% and 28% of all NHLs.^{9,18} The most common subtypes of mature T-cell lymphomas were ALCL, constituting 7.2% of all NHL, AITL accounting for 4.5% of all NHL. T Lymphoblastic lymphoma was highest in <20 yrs age group and majority in males. ALCL was predominant in younger age group, majority were females. AITL was predominant in adult

males.

Metastases comprised of the remaining nodal malignancies constituting 8.5% of all lymph nodes biopsies. Among them, metastatic adenocarcinoma was the most common. In the United states metastases comprising 29% of peripheral lymph nodal enlargement, second only to reactive hyperplasia.^{4,19}

6. Conclusion

Lymph node biopsy plays an important role in establishing the cause of lymphadenopathy. Lymphoma was the most common cause of biopsied lymphadenopathy in our study, NHL comprising 21.5% and HL comprising 17.6%. T/NK cell lymphomas (19%) show a greater prevalence compared with other studies. In HL, nodular sclerosis (NSCHL) was most common, indicating transition of India in a developed country. Among the non-neoplastic etiologies, tuberculous lymphadenitis was most common so the tubercular programmes should be more effective.

7. Source of Funding

None.

8. Conflict of Interest

None.

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