

A Study of Histomorphology of Patient with Various Lymphnode Lesions Presenting at a Tertiary Care Hospital

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Abstract

Introduction: Histopathological examination of lymph node is one of the gold standard test for the diagnosis of neoplastic and non-neoplastic lesions, as lymphadenopathy is a common presentation of large variety of disorders including benign and malignant. This study aims at identifying various histopathological lesions of lymph node, their patterns and frequency of occurrence and clinical features.

Material & Methods: A retrospective observational study was conducted in the Department of Pathology, C.U. Shah Medical College, over 2 years. All surgically excised lymph node biopsy included. Clinical data were collected from records. Specimens were fixed in 10% formalin, processed, and stained with H&E. Lesions were classified as Neoplastic and non-Neoplastic based on standard histopathological criteria.

Result: Out of 63 cases, non-neoplastic lesions were more common than neoplastic lesion. Non-neoplastic lesions included tuberculous lymphadenitis, non-specific reactive hyperplasia and other granulomatous lesions and inflammatory lesions. Neoplastic lesions included metastasis, Hodgkin's lymphoma and non-Hodgkin's lymphomas.

Conclusion: Non-neoplastic diseases were more common than neoplastic diseases. Among non-neoplastic, tuberculous lymphadenitis was the most common lesion and among neoplastic lesions, metastasis was more common. Histopathological examination remains indispensable for accurate diagnosis and optimal management of lymphnode lesions.

Keywords: Tuberculous Lymphadenitis, Metastasis, Reactive Lymphoid Hyperplasia, Hodgkin Lymphoma, Non Hodgekin Lymphoma.

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Introduction

Lymph nodes are discrete ovoid lymphoid structures present throughout the body. They drain lymph from different parts of the body and become involved in many pathological conditions. Lymphadenopathy refers to an abnormal change in size, shape, or consistency of lymph nodes. The causes may be broadly divided into neoplastic and non-neoplastic. Non-neoplastic causes include infections, drug reactions, lipid storage disorders, and non-specific inflammatory conditions.

Clinically, lymphadenopathy may be peripheral or visceral. Peripheral lymphadenopathies are easily detected by general physical examination and are often biopsied as they are easily accessible for lymphadenectomy. However, visceral

lymphadenopathy require laprotomy or imaging assistance. Among the peripheral nodes, those in the upper part of the body (cervical, supraclavicular, axillary) are preferentially biopsied than lower limb nodes (popliteal, inguinal, or femoral), as the former are more likely to yield definitive diagnosis whereas the latter is often characterized by non-specific reactive or chronic inflammatory and fibrotic changes. Lymph node biopsies are routinely performed for the evaluation of lymphadenopathies.

Tuberculosis and other infections are a major cause of lymphadenopathy in developing countries especially in regions where HIV is common, whereas in developed countries; non-specific

reactive hyperplasia predominates. The pattern of lymph node enlargement is also different for different age groups. Malignancies are more common in adults compared to children. Reactive hyperplasia to minor stimuli is a significant cause of lymphadenopathy in children.^{1,4} Generally in primary healthcare, patients older than 40 years with lymphadenopathy, without any obvious cause, have chances of malignancy about 4% and in patients under 40 years of age, this chance is about 0.4%. Considering numerous causes of lymphadenopathy, it has become essential to define diseases presenting with lymphnode enlargement.

Aims and Objectives:

1. To describe histomorphology of various lymph node lesions.
2. To Categories various lymph node lesions.
3. To Correlate Clinical features with various lymph node lesions.

Material & Method:

This descriptive, cross-sectional study was conducted to study different causes of lymphadenopathy. In biopsies were included in this hospital-based, non-interventional study. The specimens obtained were processed for histopathological examination. All the lymph node biopsy specimens received from last 2 year included. Specimens with incomplete records were excluded from the study. A pre-designed proforma was used to record all the demographic and laboratory data including age, gender, site of biopsy, size of largest lymph node biopsied, and a clinical diagnosis made based on Morphology and cut section appearance.

Result

Gender distribution: This study showed a male preponderance with the male: female ratio of 1.32:1.

Table 1: Gender wise distribution of Lymphadenopathy cases.

Gender	No. of cases (%)
Male	37(58.74%)
Female	26(41.26%)

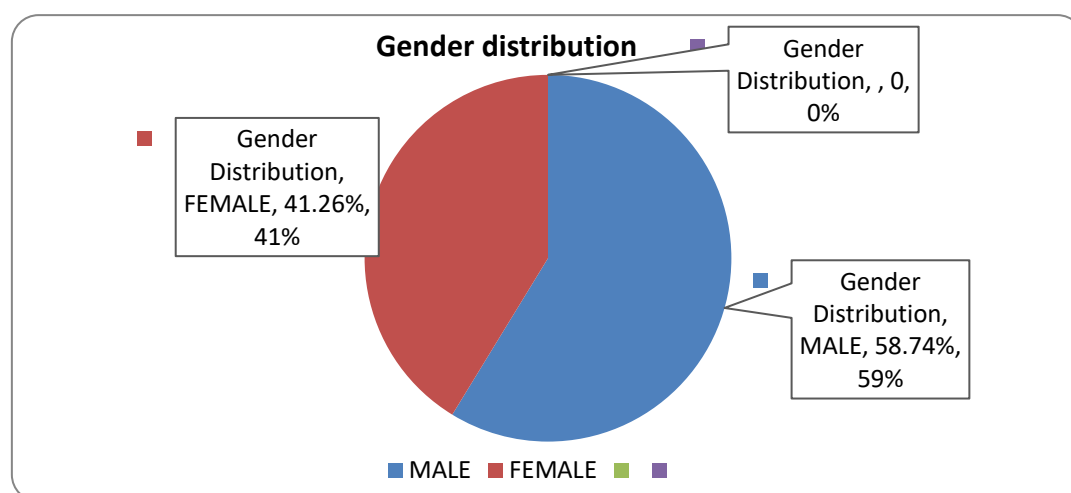


Figure 1: Gender wise distribution of lymphadenopathy cases

Age distribution:

Table 2: Age wise distribution of lymphadenopathy

Age group(years)	Number(n)	Percentage (%)
<10	13	20.63
10-19	09	14.28
20-29	17	26.98
30-39	11	17.46
40-49	03	4.76
50-59	03	4.76
>60	07	11.11
Total	63	100

A total of 63 biopsies were studied with an age range of 03 to 96 years. Majority of cases were age group of 10-19 years. Age-wise distribution of lymphadenopathy is given in Table-2,

Table 3: Age wise distribution of neoplastic disorders (n=08)

Age group(Year)	Hodgkin lymphoma	Non Hodgkin lymphoma	Metastatic lesions	Unclassified disorders
<10	1	-	-	-
10-19	1	-	-	-
20-29	-	-	-	-
30-39	-	1	-	-
40-49	1	-	-	-
50-59	-	1	-	-
>60	2	-	1	-
Total	5	2	1	-

In this study, all lesions were divided into two groups: neoplastic or non- neoplastic. Neoplastic lesions were 08 accounting for 12.69% of all the lesions. The majority of these lesions were in the age group ≥ 60 years. Most common among

neoplastic lesions were metastatic lesions , Hodgkin lymphoma, non-Hodgkin lymphoma, and unclassified lymphoproliferative disorders respectively. Age-wise distribution of neoplastic disorders in Table 3.

Table 4. Age wise distribution of non-neoplastic disorders (n=55)

Age group(Year)	Reactive hyperplasia	Tuberculosis	Other lesions (kimura, kikuchi.)
<10	2	1	1
10-19	8	10	2
20-29	6	7	3
30-39	1	4	4
40-49	2	1	2
50-59	1	-	-
>60	-	-	-
Total(55)	20	23	12

Non-neoplastic lesions were 55 accounting for 87.30% of all the lesions. The peak age group was 10-19 years. The most common non-neoplastic lesion was tuberculous granulomatous followed by reactive hyperplastic lymphadenopathies lesions and other granulomatous lesions respectively in Table 4.

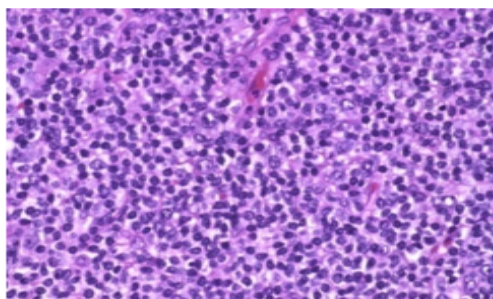
Table 5. Incidence of diseases causing lymphadenopathy

Histopathological Diagnosis	Number cases
Reactive hyperplasia	20
Tuberculosis	23
Other lesions (kimura, kikuchi)	12
Hodgkin lymphoma	5
Non Hodgkin lymphoma	2
Metastatic lesions	1
Total(63)	63

The most frequently biopsied Lymphnode group was cervical lymphnodes followed by axillary, inguinal, and mesenteric lymphnode respectively. In our study, the most common benign lesion causing lymphadenopathy was granulomatous

lymphadenopathy followed by reactive lymphadenopathy. Histopathological incidences of diseases mention in Table 5.

Histomorphology of various lymphnode lesions:

**Fig 2: 40X (H&E) Non hodgekin lymphoma**

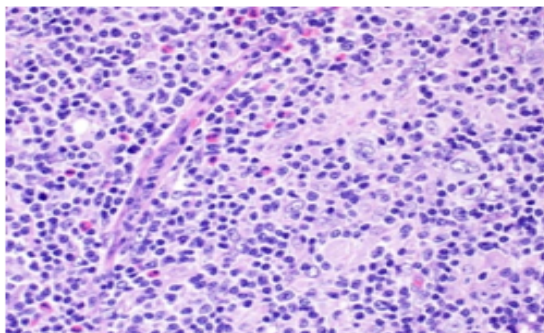


Fig 3: 40X (H&E) Hodgkin lymphoma

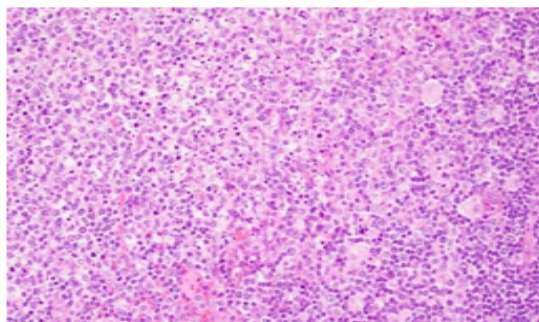


Fig 4: 40X (H&E) kikuchi disease

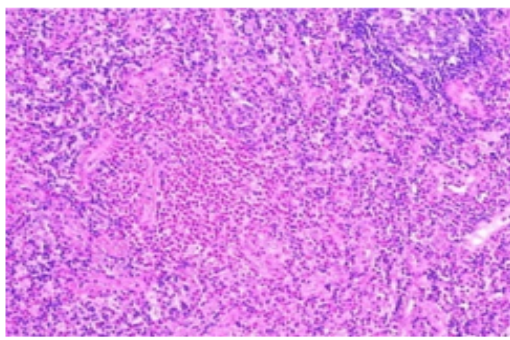


Fig 5: 40X (H&E) kimura disease

Discussion

One of the main anatomical components of the immune system is the lymphnode. Significant lymphnode enlargement results from a normal immunological response because it causes one or more of the cellular components of the lymph nodes to proliferate and expand. [10]

Palpable lymph nodes provide a crucial diagnostic hint regarding the cause of the underlying ailment. Excision biopsy is still the "gold standard" for diagnosing palpable lymphnodes, even if FNAC is frequently utilized to determine the etiological diagnosis. [11] Over a span of 2 year, the current study comprising 63 cases was conducted to assess the various histological patterns of lymphnode biopsies and the clinicopathological associations associated with them.

With a M:F ratio of 1.32:1, 37(58.74%) of these patients were male, and 26(41.26%) were female.

This was consistent with the findings of Adesuwa Olu-Eddo et al. [12] and Rani et al., [13] where the M:F ratio was 1.3:1 and 1.2:1, but Khanday et al. [8] and Shah et al. [9] reported the M:F ratio as almost equal, 1.08:1 and 1:1.7, showing slight female preponderance. In the present study, the most commonly affected age-group was 10-19 years. This was consistent with Khanday et al. [8] reported 11-30 years as the commonest age-group. Shiledar et al. [14] and Vaibhaw et al. age group was 41-60 year common. [4] But Shah et al. [9] reported 21-30 as the commonest age-group. All forms of lymphadenopathy in adults and children most frequently involve the cervical lymphnodes. This is because the cervical lymphnode is easily accessible for a biopsy, and these lymphnodes drain the most frequently inflamed and affected area of the body.

The most common site for lymphnode biopsy in the present study was cervical lymph nodes [49 (77.6%)], followed by axillary lymph nodes with

11 (17.3%) cases, inguinal lymph nodes with 2 (0.4%) cases, mesenteric lymph nodes with 1 (0.1%) cases. This finding was similar to Shiledar et al., [14] Shivamurthy et al., [15] and Damle et al., [16] where lymph nodes in the cervical region were the most common site, followed by axillary lymph nodes. In the present study, non-neoplastic lesions comprised 55 (87.6%) cases, and neoplastic lesions comprised [8] (12.00%) cases. These findings were consistent with Damle et al. [16] (80.0%), Kamat [17] (88.92%), Rahman et al. [18] (70.2%), Saraswat et al. [19] (90.9%), Vachhani et al. [20] (75%), and Rao et al. [21] (56%). In the present study, the most common cause of benign lymphadenopathy in all age-groups was granulomatous lymphadenitis, comprising 41.08%, followed by reactive lymphadenitis at 36.36 %, Kikuchi's disease at 3.5%, and Kimura's disease at 3.5% and other conditions 15.12%.

These findings were consistent with Shivamurthy et al. and Rahman et al., where the most common cause of lymphadenopathy was granulomatous lymphadenitis but not consistent with Shiledar et al., [14] Damle et al., [16] and Pottiet al. Where the most common cause of lymphadenopathy was reactive lymphadenitis.

Reactive hyperplasia in the lymph nodes, in response to persistent bacterial, viral, and other infections, variations in socioeconomic status and living standards, or draining the malignant lesions site (which does not exhibit metastatic deposits because of early identification and surgical excision), could be the cause of this.

The higher percentage of granulomatous lymphadenitis may be due to poverty and poor social conditions in developing and under developed countries. In the present study, among neoplastic lesions 08 (12.69%), the most common cause of malignant lymphadenopathy was HL, found in 5 (62.5%) cases, NHL followed by metastasis in 1 (1.25%) cases. These results were not consistent with the findings of Khanday et al., where cases of non-Hodgkin's lymphoma (36.3%) comprised the maximum number of cases, but consistent with other studies, where the most common cause of malignant lymphadenopathy was metastasis.

Conclusion:

Lymphadenopathy is a common clinical presentation, with most of the cases being benign. Age is the most important factor, as benign cases are more common in the younger age-group, and malignancy is more prevalent among the older age-group. The cervical lymph node is the most common site. Granulomatous lymphadenitis was the most common diagnosis in all age-groups, followed by Reactive lymphadenitis. Neoplastic

lesions are less common, and Hodgkin's lymphoma is the most common among these. The subtyping of lymphomas may be facilitated by the addition of immunological markers. According to this retrospective study, lymphadenopathy can be a sign of a variety of systemic and local diseases, and histopathological analysis of these lymph nodes helps with the early and definitive diagnosis of these disorders, reducing morbidity and improving the patient's overall prognosis.

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