

Patterns of lymph node pathology using biopsy evaluation tool for lymphadenopathy: a retrospective descriptive study conducted at Al Hussein Medical City 2014–2016

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Objective The study was assumed to determine the histopathological spectrum of lymphadenopathic specimens and showed the age and gender variation of these lesion.

Methods It was a descriptive retrospective study wherein 130 cases of lymph node biopsy reports of specimens from patients 3 months to 81 years at Al Hussein Medical City between 1 January 2014 and 31 December 2016 were studied.

Results A total of 130 lymph node biopsies were received of which female 58.46% (76 cases) and male 41.53% (54 cases), a male to female ratio of 1:1.4 and the *P* value 0.011 with significance difference. The age range was from 3 months to 81 years. Most cases were seen in the age group of 21–30 years (25 cases 19.23%). The non-neoplastic lesions were more common comprising 66.9% (87 cases) included 46.9% (61 cases) of chronic nonspecific lymphadenitis, tuberculosis lymphadenitis 18.46% (24 cases) and other lesions 1.5%, while the neoplastic lesions 33.07% (43 cases) included non-Hodgkin lymphoma 13.07% (17 cases), Hodgkin lymphoma 12.30% (16 cases) and secondary metastasis 7.69% (10 cases). The more common site was cervical 93.07% (121 cases), axillary 4.6% (6 cases), inguinal 1.5% (2 cases) and mesenteric 0.7% (1 case).

Conclusions The most common pathological pattern seen was chronic nonspecific lymphadenopathy (46.6%) followed by tuberculosis lymphadenitis 18.46%, non-Hodgkin lymphoma 13.07%, Hodgkin lymphoma 12.30%, and secondary metastasis 7.69% and others 1.5%. It is more common in female than male, and the more common site is cervical lymphadenopathy 93.07%. The earlier diagnosis and management of tuberculosis and earlier diagnosis of malignancies before the onset of nodal metastases may explain the result.

Keywords hodgkin lymphoma, non-hodgkin lymphoma, lymphadenopathy, lymph node

Introduction

Lymphadenopathy mean that the lymph nodes have aberrant size, consistency or number, caused by infiltration of either inflammatory cells or neoplastic cells into the nodes. Careful clinical history of sign, symptom and size of lymph node, presence of generalized lymphadenopathy, hepatosplenomegaly to reach the diagnosis. Diagnostic lymph node biopsy is one of the most common procedures in surgical practice. When node biopsy is done, the most atypical node will be selected that helps the pathologist to give a diagnosis.^{1,2}

This study will address all types of lymph node diseases in the excised specimens of lymph node. They will be broadly grouped into one of the four types: 1. Non-specific reactive hyperplasia; 2. Granulomatous lymphadenopathy; 3. Lymphoid neoplasm; 4. Miscellaneous. Further subgroup will be done if necessary depending on presence or absence of certain morphologic features, clinical and microbiological inputs and other relevant parameters.³

Materials and Methods

This was a descriptive retrospective study of 130 cases of lymph node biopsies diagnosed in the Department of Pathology of specimens from patients 3 months to 81 years at Al Hussein Medical City between 1 January 2014 and 31 December 2016. Sections from formalin-fixed, paraffin-embedded blocks stained with H & E stains were studied in all cases.

Results

A total of 130 lymph node biopsies were received during the period under review, out of these, female 58.46% (76 cases) and male 41.53% (54 cases) giving a male to female ratio of 1:1.4 the *P* value of gender distribution 0.011 significance difference **Table 1**. The age range was 3 months to 81 years. Most cases were seen in the age group of 21–30 years (25 cases 19.23%) and the least cases were seen in the age group <1 year (3 cases 2.3%) **Table 2**. Most common cause was benign, which was chronic nonspecific lymphadenitis 46.9% (61 cases) female 24.61% (32 cases) and 22.30% (29 cases) male, while the neoplastic cause most common cause is non-Hodgkin lymphoma 6.1% (8 cases) female and 6.9% (9 cases) male.

Out of 130 lymph node biopsies analyzed, the neoplastic lesions were 25.38% (33 cases) including Hodgkin lymphoma 12.30% (16 cases), non-Hodgkin lymphoma 13.07% (17 cases). The most common cause was non-Hodgkin lymphoma 13.07% (17 cases), which was large cell type 6.9% (9 cases) (**Fig. 1**), small cell type 3.8% (5 cases), large and small cell type 1.5% (2 cases) and T-cell type 0.7% (1 case). The most common age presented was 41–50 years (**Table 3**).

While the Hodgkin disease, which is Hodgkin lymphoma 12.30% (16 cases), the most common types are both nodular sclerosis and mixed cellularity 5.3% (7 cases). More common in age 11–20 years (**Figs 2 and 3**), while the secondary metastasis account 7.69% (10 cases) (**Table 4**).

Non-neoplastic lesions were more common comprising 66.9% (87 cases) including 46.4% (61 cases) of chronic

non-specific lymphadenitis, and granulomatous lesions are tuberculosis lymphadenitis 18.46% (24 cases) (Fig. 4), other lesions were 1.5% (2 cases) (Table 2).

The more common sites of lymphadenopathy were cervical 93.07% (121 cases), axillary 4.6% (6 cases), inguinal 1.5% (2 cases) and mesenteric 0.7% (1 case) (Fig. 5).

Discussion

Palpable lymph nodes propose an important diagnostic hint to the etiology of the underlying condition. This study showed that females were more commonly affected; patients with benign etiology were younger, whereas those with malignant etiology were older.

The present study showed females 58.46% (76 cases) and males 41.53% (54 cases) giving a male to female ratio of 1:1.4. Similar results of female predominance were also reported,⁴⁻⁷

but disagree with a study from Sudan with a male to female ratio of 1.22:1.⁸

In this study, predominant site of lymph node biopsy was cervical. This observation was consistent with most of the recent studies.⁹⁻¹¹

The most common benign cause of lymphadenopathy was 66.9% (87 cases), and these results were agreed with the previous results.^{4,7,10,11} Chronic, non-specific lymphadenitis comprised 46.9% (61 cases) of the predominant pattern in non-neoplastic lesions. This was agreed with the study of Moore et al. found 47.8% of reactive lesions.¹²

Tuberculosis lymphadenitis was the second common lesion comprising 18.46% (24 cases) but it has been reported by several authors as the predominant cause of lymph node enlargement in adults in the tropics.^{13,14} In the Western countries, infections like tuberculosis have become rare and malignancies including lymphoma are now the predominant causes of lymph node enlargement.¹⁵

Lymphoma was the third commonest specific cause of lymphadenopathy constituting 25.3% (33 cases), non-Hodgkin

Table 1. Male and female distribution

	Number	Female	Male
Granulomatous diseases/tuberculosis	24	22	2
Neoplastic diseases/hodgkin's lymphoma	16	9	7
Non-Hodgkin's lymphoma	17	8	9
Metastatic	10	3	7
Nonspecific lymph node disorder	8	5	3
Follicular hyperplasia			
Sinus histiocytosis	7	3	4
Chronic nonspecific lymphadenitis	46	24	22
Miscellaneous	2	2	
Total	130	76	54

P value 0.011.

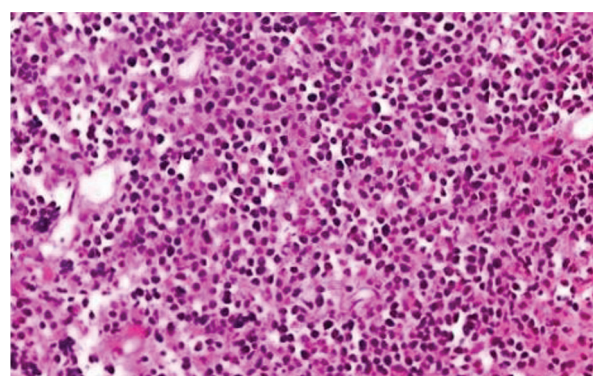


Fig. 1 Diffuse large B-cell lymphoma show a sheets of large lymphoma cells with prominent nucleoli are present.

Table 2. Age distribution of lesions in lymph node biopsy finding

	<1	1-10	11-20	21-30	31-40	41-50	51-60	61-70	>70	Total
HL		1	5	4	2	1	3			16
NHL		1	1		1	10		2	2	17
Secondary			2	1	1	2	1	1	2	10
CNLA	2	19	11	10	10	5	1	3		61
TB	1	1	4	10	2	4		1	1	24
Miscellaneous		1	1							2
Total	3	23	24	25	16	22	5	7	5	130

HL, Hodgkin lymphoma; NHL, non-Hodgkin lymphoma; TB, tuberculosis; CNLA, chronic nonspecific lymph adenitis.

Table 3. Age distribution of neoplastic lymph node disease non-Hodgkin lymphoma

NHL	1-10	11-20	21-30	31-40	41-50	51-60	61-70	>71	Total
Large cell					8		1		9
Large & small		1					1		2
Small	1				2			2	5
T-cell				1					1
Total	1	1		1	10		2	2	17

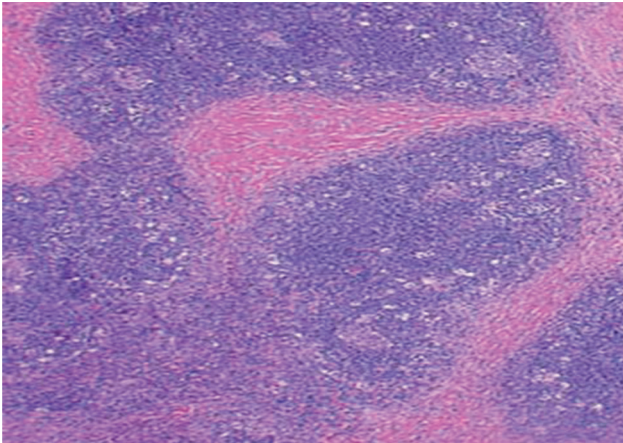


Fig. 2 **Nodular sclerosis Hodgkin lymphoma (NSHL) broadbands of fibrosis. There is a dense inflammatory background.**

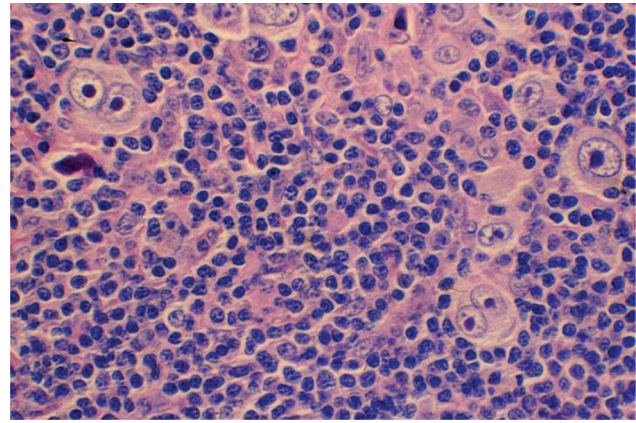


Fig. 3 **Mixed cellularity Hodgkin lymphoma. a lymph node shows classic, binucleated and mononuclear Reed-Sternberg cells (arrow) in a mixed inflammatory background.**

Table 4. **Age distribution of neoplastic lymph node disease Hodgkin lymphoma**

HL	1-10	11-20	21-30	31-40	41-50	51-60	61-70	>71	Total
Nodular sclerosis		3	2	1		1			7
Mixed cellularity	1	2	2	1		1			7
Ly. depletion						1			1
Ly. predonant					1				1
Total	2	8	5	4	10	4	3	4	16

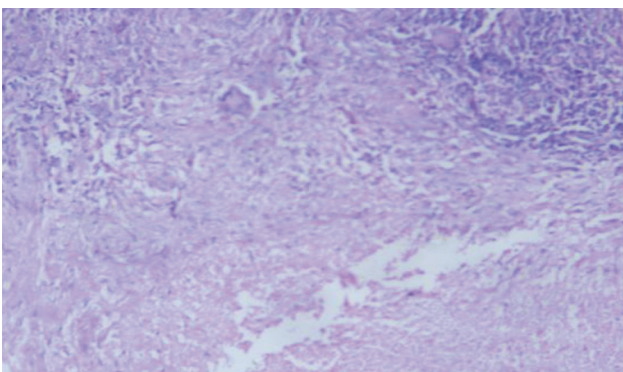


Fig. 4 **Tuberculous lymphadenitis: showing caseous necrosis, multinucleated giant cells (Langhans cell) epithelioid cells, lymphocytes.**

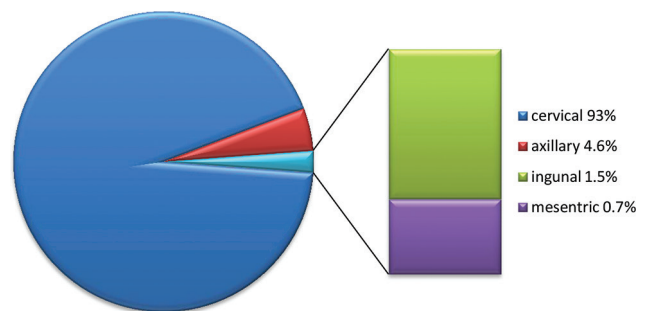


Fig. 5 **Anatomical distribution of biopsy sample (sites of lymphadenopathy).**

lymphoma 13.07% (17 cases), which was large cell type 6.9% (9 cases), small cell type 3.8% (5 cases), large & small cell type 1.5% (2 cases) and T-cell type 0.7% (1 case) most common age presented 41-50 years. This agreed with study from KSA (city of Qassim) showed that diffuse large B cell lymphoma (DLBC) was the most common type of NHL, and a research work from northern Iraq showed the most common NHL was, diffuse large B-cell lymphoma (DLBCL), which comprised 52.2% of NHL, followed by Burkitt's lymphoma.^{8,16}

Hodgkin lymphoma occurred predominantly in young females; however, small number of cases occurred above the age of 45 years. This agreed with other previous reports from the tropics.¹⁷⁻¹⁹ Among HL, nodular sclerosis was the most common subtype comprising 5.3% (7 cases). In USA and Europe, it comprises 70% of classical HL; however, the rate

varies greatly among other geographical regions, and the risk is high among those with high socio-economic status.²⁰

Metastases comprised the remaining nodal malignancies constituting 7.69% (10) of all lymph nodes biopsies. In the United States, metastases is composed of 29% of peripheral lymph nodal enlargement, which is second only to reactive hyperplasia.^{21,22}

Conclusion

Lymph node biopsy has an important role in establishing the cause of nodal enlargement, and biopsy examination is a common tool for the diagnosis. In this study, the chronic non-specific lymphadenitis was the most common type observed followed by TB lymphadenopathy. The most common neoplastic lesion type seen was NHL cell lymphomas, which is mostly large cell type and among the HL, nodular sclerosis (NS)

and mixed cellularity was the most common 5.3%. Previously, TB was the predominant cause of lymph node enlargement in adults among the biopsied nodes. Earlier diagnosis and management of tuberculosis and earlier diagnosis of malignancies before the onset of nodal metastases may explain the result. The most common finding is reactive lymphadenopathy.

The cervical lymph node is the commonest site involved, and most cases are female with male to female ratio 1:1.4.

Conflict of Interest

None. ■

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