

Spectrum of Malignant Lymphoma in a Tertiary Care Hospital of North Eastern India

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ABSTRACT

Background: The term malignant Lymphomas embrace a variable group of Proliferative diseases that originate in the Lymph node or extra nodal Lymphatic Tissue. It constitutes 3.69% of all Malignancies World Wide. The incidence of Lymphoma exhibits a marked Geographic variation in the World.

Methods: The study included 58 patients who were histologically diagnosed as Malignant lymphomas in our hospital, the paraffin embedded blocks of these cases were evaluated by a panel of immunohistochemistry markers by taking proper controls and using the standard protocol. Statistical analysis were performed by SPSS software.

Results: Out of the 58 cases of Malignant Lymphoma 47 were diagnosed as Non Hodgkins Lymphoma and 11 cases (19%) as Hodgkins Lymphoma. Of these 58 cases of Malignant Lymphoma, adults were 51 and paediatric cases were 7, male female ratio was 2.6:1 and Non Hodgkins Lymphoma was Commoner. B cell Lymphomas were the predominant type accounts for 74.5% of all Non Hodgkins Lymphoma cases of these B cell Lymphomas Diffuse large B cell Lymphoma was the Predominant type.

Among the T cell Lymphomas Anaplastic large cell Lymphoma was the commonest subtype. Nodular Sclerosis Cases were seen most commonly in the Hodgkins Category. Extra nodal Lymphomas were also seen in 35.6% cases with Tonsil being the commonest site.

Conclusion: Non Hodgkins Lymphoma was significantly more common in this region and diffuse large B cell Lymphoma was the predominant type. A combination of Histopathology and a Meticulous Immunohistochemistry helps in properly solving the diagnostic challenges.

Keywords: Malignant Lymphoma, Non Hodgkins Lymphoma, Hodgkins Lymphomas, Diffuse large B cell Lymphoma, Histopathology, Immunohistochemistry.

Introduction

Malignant Lymphoma are a diverse group of Malignancies arising from Band T Lymphocytes and are generally categorized as either Hodgkins Lymphoma or Non Hodgkins Lymphoma. There is abundant immunologic and Karyotypic evidence indicating these neoplasms contain clonal expansions of a single functional subpopulation.^[1] Non Hodgkin Lymphoma are a Heterogenous group of Lymphoproliferative disorders which originates from the different cells of the Lymphoid system (B, T or Natural Killer Cells).^[2] Hodgkins Lymphoma is an entity which was first described by Thomas Hodgkin in 1832 and is characterized by the presence of classic Reed-Stern-berg cells and its variants in an appropriate cellular background It is broadly classified into classic and Nodular Lymphocyte predominant Hodgkin Lymphoma.^[3,4] Malignant Lymphomas constitute 3.69% of all Malignancies World Wide.^[5,6]

The aims and objectives of our study was as follows:-

i) To identify and provide an account of malignant lymphomas.

ii) To classify the different types and subtypes using immunohistochemical markers.

Materials and Methods

This study included all the cases of Malignant Lymphoma diagnosed histologically during the period from November 2012 to July 2015 in the Department of Pathology of Assam Medical College and Hospital, Dibrugarh. This was a descriptive cross-sectional study done on 58 cases of Malignant Lymphomas diagnosed histologically during the period from November 2012 to July 2015 in the Pathology Department of AMCH Dibrugarh. The study included proper history, Clinical Examination, routine Haematological, Biochemical and Radiological investigations. A provisional diagnosis of Lymphoma was made and immunohistochemistry was performed from the paraffin embedded Tissue section using standard protocol. A panel of antibodies were decided based on morphologic differential diagnosis (no single marker is specific) which includes leukocyte common antigen (CD45), B-Cell markers (CD20 and CD79a), T-cell markers (CD3 and CD5) and other markers like CD23, bcl-2, CD10, cyclinD1, CD15, CD30, ALK-1, CD138 (based on cytoarchitectural pattern).

The antibodies used in each case was according to the histological diagnosis made. An attempt was made in each case to classify it according to the proposed WHO Classification and working formulation.

Result

In this study we had diagnosed 58 cases of malignant lymphomas. Of these 47cases (81%) were Non Hodgkins Lymphoma and 11cases (19%) were Hodgkins Lymphoma. Out of these 58 cases of Malignant Lymphoma, adult cases were 51 and Paediatric cases were 7. The sex ratio male: female was 2.6:1 and NH:HL ratio was 4.3:1. Among 47cases of Non Hodgkins Lymphoma 35 patients were Males (74.5%) and 12 were female (25.5%) with M:F ratio of 2.8:1. The age range was 2-76yrs. Among the Non Hodgkins Lymphoma B-Cell Lymphomas were the predominant type (35 cases) accounting for 74.5% and T-Cell Lymphomas constituted 12 cases (25.5%). In our study out of the Non Hodgkins Lymphoma Diffuse large B-Cell Lymphoma (DLBCL) was 15cases (42.86%) followed by Follicular Centre Cell Lymphomas which accounted for 10 cases (28.57%) and Mantle Cell Lymphoma comprises 5 cases (14.29%). Extranodal marginal zone B-Cell Lymphomas

(MALT) which accounted for 3 cases (8.57%) and Nodal marginal zone B-Cell Lymphoma which accounted for 2cases (5.71%). Among the T-cell lymphomas, anaplastic large cell lymphoma (ALCL) was the most common subtype forming 5 cases (41.67%), T-cell lymphoblastic lymphoma accounted for 3cases (25%), peripheral T-cell lymphomas (NOS) accounted for 3 cases (25%) and Angioimmunoblastic lymphoma accounted for 1 case (8.33%) of all T-cell Lymphoma cases respectively. In our study, Hodgkin lymphoma comprised of 11 cases, out of which Nodular sclerosis Hodgkin's lymphoma-4 cases forming 36.3% of all HL. Nodular lymphocyte predominance Hodgkin's lymphoma-3 cases (27.3%), Mixed cellularity -2 cases (18.2%), lymphocyte rich and lymphocyte depleted comprises One case each (9.1%). The lymphoma cases were also classified according to the site, Nodal and Extra-Nodal. Extra-Nodal cases were 16 which accounted for 35.6%. The most frequently affected site was tonsil (5 cases, 31.25%) followed by small and large intestine (4 cases, 25%). Other sites were stomach (1case, 6.25%), appendix (1case, 6.25%), parotid (1 cases, 6.25%), as nasal mass (1 cases, 6.25%), brain (1case, 6.25%), bone(2 cases, 12.5%).

Table 1: Distribution of Cases According to Different Parameters.

Parameters		Total Number	Percentage
Age	Adult Cases	51	87.93%
	Paediatric Cases (< 18years)	7	12.07%
Gender	Male	43	74.14%
	Female	15	25.86%

Table 2: Malignant Lymphoma Diagnosis

Type	Total Number	Percentage
Non Hodgkins Lymphoma	47	81.03%
Hodgkins Lymphoma	11	18.97%

Table 3: Distribution of The Types of Nhl According to The Who Classification

NHL Type	Total Number	Percentage
B-Cell Lymphomas		
Diffuse large cell B-cell	15	42.86%
Follicular lymphoma	10	28.57%
Mantle Cell lymphoma	5	14.29%
Extranodal marginal (MALT) lymphoma	3	8.57%
Nodal marginal Zone lymphoma	2	5.71%
T-Cell Lymphomas		
ALCL	5	41.67%
Precursor	3	25%
Peripheral T-cell	3	25%
Angioimmunoblastic	1	8.33%

Table 4: Hodgkins Lymphoma Diagnosis

Type	Total Number	Percentage
Nodular Sclerosis Hodgkins Lymphoma	4	36.36%
Nodular Lymphocyte predominance Hodgkins Lymphoma	3	27.27%
Mixed Cellularity	2	18.18%
Lymphocyte rich	1	9.09%
Lymphocyte depleted	1	9.09%

Table 5: Extranodal NHL Distribution According to The Primary Site

Extranodal site of NHL	Total Number	Percentage
Tonsil	5	31.25%
Intestine (small and large)	4	25%
Bone	2	12.50%
Stomach	1	6.25%
Parotid	1	6.25%
Nose	1	6.25%
Brain	1	6.25%
Appendix	1	6.25%

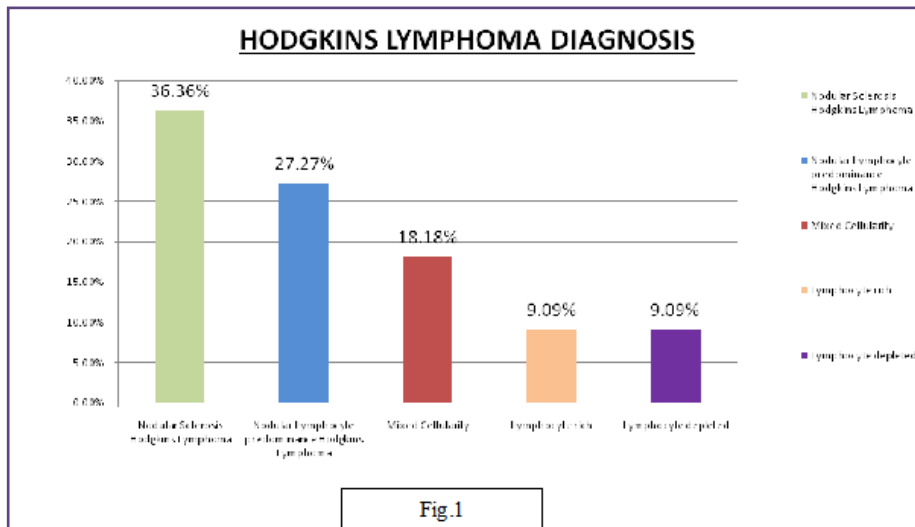


Fig.1

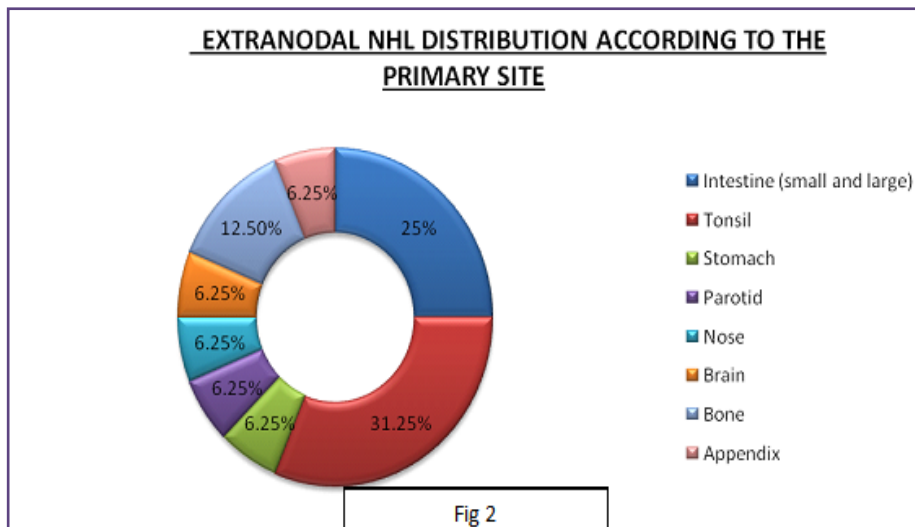


Fig 2

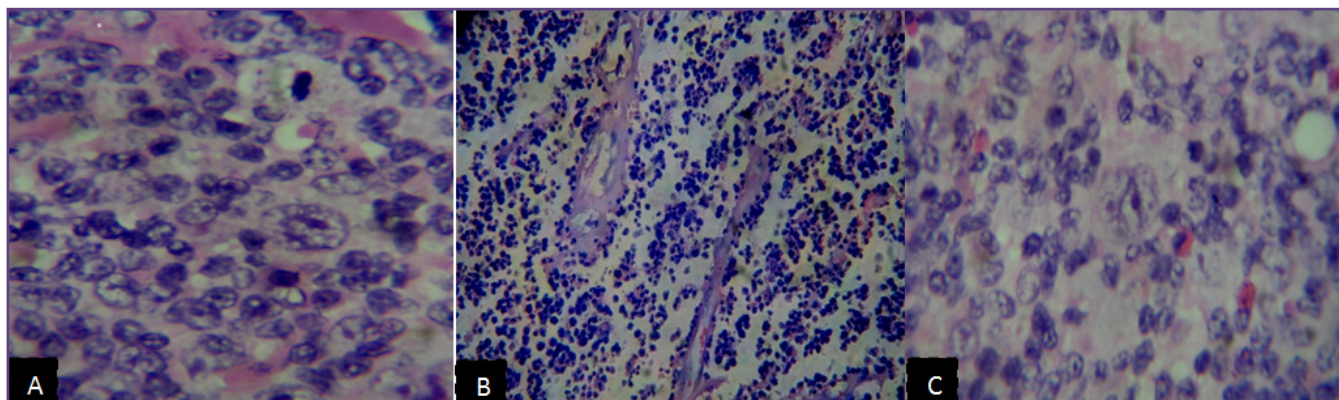


Fig. 1: Photomicroscopic picture showing (A) Diffuse Large B Cell Lymphoma (B) Mantle Cell Lymphoma (C) Hodgkins Lymphoma (Mixed Cellularity).

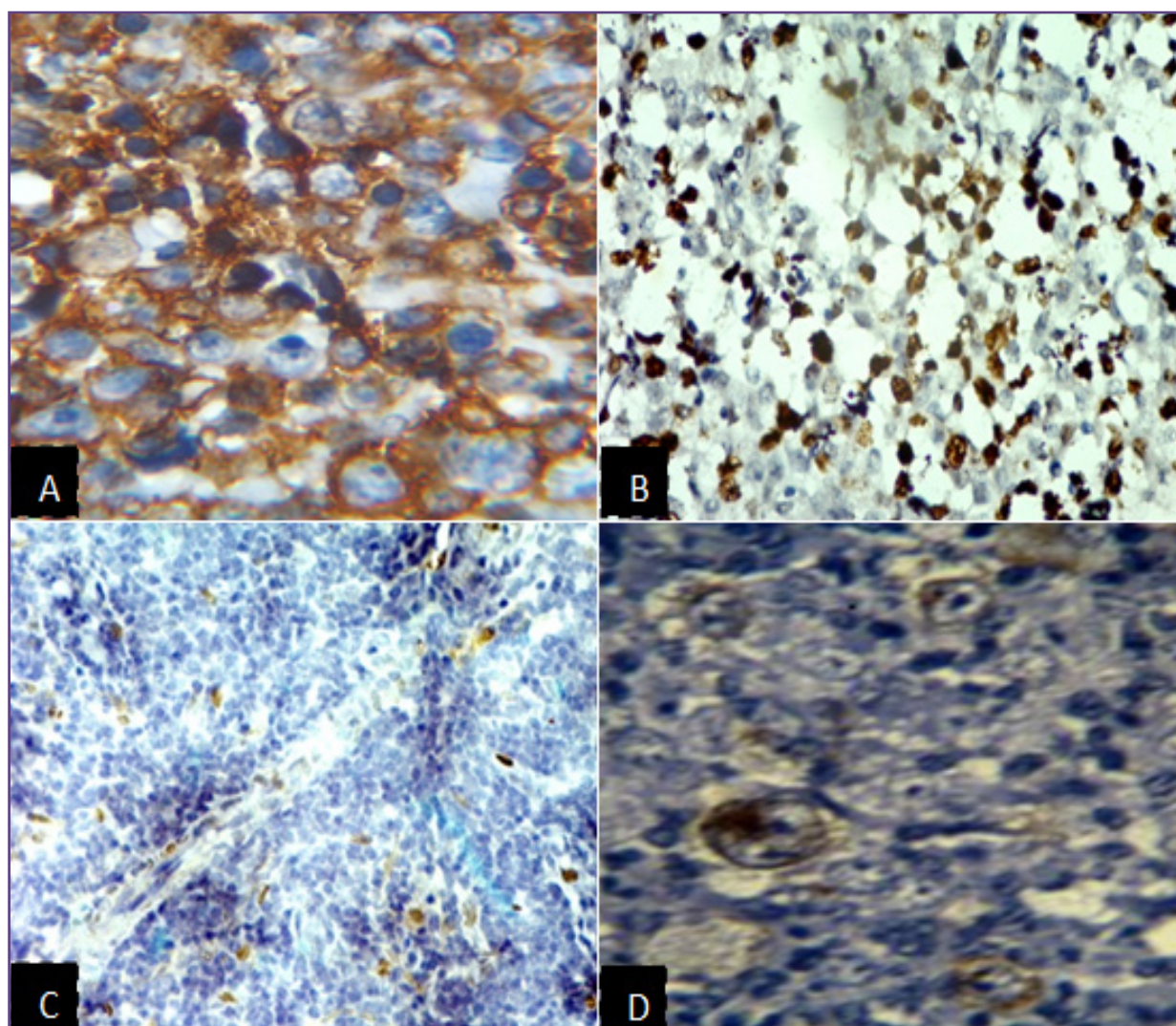


Fig. 2: Photomicroscopic picture showing (A) CD20 (+)ve in Diffuse Large B Cell Lymphoma (B) Ki67 (+)ve in Diffuse Large B Cell Lymphoma (C) Cyclin D1 (+)ve in Mantle Cell Lymphoma (D) CD30 (+)ve in Reed Sternberg Cell.

Discussion

Malignant Lymphomas have been classified according to the latest classification of WHO 2016.^[7] Although there are limited alterations in the classification compared with 2008, the revised monograph will incorporate a large body of information published over the last 8 years relating to existing entities with some important diagnostic, prognostic, and therapeutic implications. The classification maintains the goals of helping to identify homogeneous groups of well-defined entities and facilitating the recognition of uncommon diseases that require further clarification.^[7] The revision clarifies the diagnosis and management of lesions at the very early stages of lymphomagenesis, refines the diagnostic criteria for some entities, details the expanding genetic/molecular landscape of numerous lymphoid neoplasms and their clinical correlates, and refers to investigations leading to more targeted therapeutic strategies.^[6, 7] The WHO classification in combination with IHC evaluation the lymphomas are classified as Non Hodgkins and Hodgkins lymphoma with further sub typing.^[8,9] According to the cell type the Non Hodgkins Lymphoma can be B and T-Cell Type and this classification has prognostic significance to the Oncologist^[10]. Our study showed 81% of Non Hodgkins Lymphoma and 19% of Hodgkins Lymphoma which was similar to the findings of (Manoj et al & mandal et al) 76.3% and 23.7% respectively.^[11,12] The incidence of Hodgkins lymphoma was more lower in some Asian countries like Japan (7%), Thailand (8.5%) and china (6.6%).^[13,14] The proportion of Non Hodgkin Lymphoma was higher in the western world than in India which may be explained due to racial and genetic factors.^[15] Adults were more frequently involved than the Paediatric population and the male female ratio was 2.6:1 according to our study. In this study 47 cases were diagnosed as Non Hodgkins Lymphoma of which the male female ratio was 2.8:1 which was consistent with the findings of Bhardwaj et al.^[16] In this study out of the 47 cases of Non-Hodgkins Lymphomas, B Cell lymphoma were the predominant type accounting to 74.5% and T Cell type were 25.5% which was consistent with the findings of Naresh et al in Mumbai (2000) which was 79.1% and 20.9% respectively.^[17] In our study out of the Non Hodgkins Lymphoma cases Diffuse large B-Cell Lymphoma (DLBCL) was 15 cases (42.86%) followed by Follicular Centre Cell Lymphomas which accounted for 10 cases (28.57%) and Mantle Cell Lymphoma comprises 5 cases (14.29%). Extranodal marginal zone B-Cell Lymphomas (MALT) which accounted for 3 cases (8.57%) and Nodal marginal zone B-Cell Lymphoma which accounted for 2 cases (5.71%). These findings were similar with the

findings of mandel et al & Roy et al.^[12,18] Among the T-cell lymphomas, anaplastic large cell lymphoma (ALCL) was the most common subtype forming 5 cases (41.67%) of all NHL. T-cell lymphoblastic lymphoma accounted for 3 cases (25%), peripheral T-cell lymphomas (NOS) accounted for 3 cases (25%) and Angioimmunoblastic lymphoma accounted for 1 case (8.33%) of all NHL cases respectively.^[9,19] In our study, Hodgkin lymphoma comprising of 11 cases, out of which Nodular sclerosis Hodgkin's lymphoma-4 cases forming 36.3% of all HL. Nodular lymphocyte predominance Hodgkin's lymphoma-3 cases (27.3%), Mixed cellularity -2 cases (18.2%), lymphocyte rich and lymphocyte depleted comprises One cases (9.1%) each which was similar to the findings of Bhardwaj et al & Naresh et al.^[16,17]

Conclusion

The present study tried to document the relative frequency of various types of Malignant lymphoma in this part of North East India. It has been seen that Non Hodgkins lymphoma was more prevalent than Hodgkins lymphoma. B-cell lymphomas were the predominant type with diffuse large B-cell lymphoma being more commoner among the different subtypes. While Anaplastic large cell lymphoma was more frequently encountered among the T-cell lymphomas. In studying the Hodgkins lymphoma Nodular Sclerosis was diagnosed more frequently. Extranodal lymphoma were also diagnosed with tonsil being the commonest site. A number of studies conducted in India and Worldwide suggests that the disease exhibits similar pattern with contrasting regional variations. An understanding of these patterns and differences may provide an insight into the Etiological factors and Pathogenesis of disease.

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