Pattern of histological subtypes of Non-Hodgkin Lymphoma: A hospital-based study from Nepal

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Abstract: Non-Hodgkin lymphoma (NHL) represents a heterogeneous group of lymphoid neoplasms with diverse morphology, immunophenotypic characteristics, clinical behavior, and prognosis. The prevalence of NHL subtypes varies across different geographical regions and populations. Limited data are available regarding the histological distribution of NHL in Nepal. To evaluate the prevalence and distribution of histological subtypes of Non-Hodgkin lymphoma among patients diagnosed at a tertiary care center in Nepal , retrospective observational study was conducted at the Department of Hematology and Medical Oncology, Vayodha Hospital, Nepal, between January 2023 and December 2025. Patients diagnosed with NHL based on histopathological examination and immunohistochemistry (IHC) were included in the study. Demographic characteristics, disease sites, and histological subtypes were analyzed using descriptive statistics. A total of 130 patients with NHL were included. Among them, 84 (65%) were male and 46 (35%) were female, with a male-to-female ratio of 1.8:1. The mean age at diagnosis was 41.8 years. Most patients (72%) were above 40 years of age. Extra nodal involvement was slightly more common (51%) than nodal disease (49%). B-cell lymphoma was the predominant subtype accounting for 111 (86%) cases, while T-cell lymphoma constituted 19 (14%) cases. Diffuse large B-cell lymphoma (DLBCL) was the most common B-cell subtype observed in 78 (70%) patients. Among T-cell lymphomas, lymphoblastic lymphoma was the most common subtype accounting for 7 (37%) cases. The findings are comparable with regional and international studies. Larger multicenter studies are recommended to better understand the epidemiological pattern and treatment outcomes of NHL in Nepal.

Keywords: Non-Hodgkin lymphoma; Diffuse large B-cell lymphoma; Immunohistochemistry; Nepal: Lymphoma subtypes.

Introduction

Non-Hodgkin lymphoma (NHL) comprises a diverse group of lymphoid malignancies arising from B lymphocytes, T lymphocytes, or natural killer (NK) cells [1]. The disease demonstrates marked heterogeneity in morphology, immunophenotype, clinical presentation, treatment response, and prognosis [2]. According to the World Health Organization (WHO) classification, NHL includes numerous clinicopathological entities with distinct biological behavior.

Globally, Non-Hodgkin lymphoma represents one of the the incidence and distribution of NHL subtypes vary most common hematological malignancies and contributes substantially to cancer-related morbidity and mortality [3]. The incidence and distribution of NHL subtypes vary considerably among different geographic regions and ethnic populations. Environmental exposures, infectious agents, genetic predisposition, and socioeconomic factors may contribute to these variations [4].

B-cell lymphomas account for the majority of NHL cases worldwide, with diffuse large B-cell lymphoma (DLBCL) being the most frequently reported subtype. T-cell lymphomas are comparatively less common but generally

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demonstrate more aggressive clinical behavior. In South Asian countries, including Nepal, epidemiological data regarding the distribution of NHL subtypes remain limited [5].

Histopathological examination along with immunohistochemistry plays a crucial role in the accurate diagnosis and classification of NHL. Understanding the local distribution pattern of NHL subtypes is important for disease surveillance, resource allocation, and treatment planning [6].

The present study was conducted to evaluate the distribution of histological subtypes of NHL diagnosed at a tertiary care center in Nepal.

Methods

Study design and setting

This retrospective observational study was conducted at the Department of Hematology and Medical Oncology, Vayodha Hospital, Kathmandu, Nepal.

Study duration

The study included patients diagnosed between January 2023 and December 2025.

Study population

All patients diagnosed with Non-Hodgkin lymphoma during the study period were included.

Inclusion criteria

- Patients diagnosed with NHL based on histopathological examination and immunohistochemistry.
- Patients of all age groups and both sexes.
- Patients with complete diagnostic records.

Exclusion criteria

- Patients with incomplete histopathological or immunohistochemistry reports.
- Patients diagnosed with Hodgkins lymphoma.

Data collection

Clinical and pathological data were retrieved from hospital medical records and pathology reports. Demographic characteristics including age and sex, disease presentation site (nodal or extra nodal), and histological subtype were recorded.

Diagnostic criteria

Diagnosis and classification of NHL were performed using histomorphology and immunohistochemistry according to standard WHO classification criteria.

Statistical analysis

Data were entered and analyzed using descriptive statistical methods. Continuous variables were presented as mean values, whereas categorical variables were expressed as frequencies and percentages.

Ethical consideration

Confidentiality of patient information was maintained throughout the study. Institutional approval was obtained prior to data collection.

Results

A total of 130 patients diagnosed with Non- Hodgkin lymphoma was included in the study.

Table 1: Age distribution of patients with Non-Hodgkin lymphoma (n = 130).

Age Group (Years)	Number of Patients	Percentage (%)
<20	8	6
20–40	28	22
40–60	46	35
>60	48	37
Total	130	100

Age distribution

The mean age at diagnosis was 41.8 years. The majority of patients presented beyond fourth decade of life. Patients older than 60 years accounted for 37% of cases.

Gender Distribution

Among the total cases, males were predominant with 84 (65%) cases, while females accounted for 46 (35%) cases.

The male-to-female ratio was 1.8:1.

Table 2: Gender distribution of patients.

Gender	Number	Percentage (%)
Male	84	65
Female	46	35
Total	130	100

Site Distribution

Extra nodal presentation was slightly more common than nodal disease. Extra nodal involvement was observed in 66 (51%) patients.

Table 3: Site distribution of NHL patients.

Site	Number of Patients	Percentage (%)
Nodal	64	49
Extra nodal	66	51
Total	130	100

Distribution of NHL Types

B-cell lymphoma constituted the majority of NHL cases accounting for 111 (86%) patients, while T-cell lymphoma accounted for 19 (14%) patients.

Table 4: Distribution of NHL types.

Type	Number of Patients	Percentage (%)
B-cell lymphoma	111	86
T-cell lymphoma	19	14
Total	130	100

Distribution of B-cell Lymphoma Subtypes

Diffuse large B-cell lymphoma (DLBCL) was the most common B-cell subtype comprising 78 (70%) cases. Follicular lymphoma was second most common type (9%) followed by mantle cell lymphoma (7%). MALT by mantle cell lymphoma (7%). MALT lymphoma, Burkitt's lymphoma are other sub types.

Distribution of T-cell Lymphoma Subtypes

Among T-cell lymphomas, lymphoblastic lymphoma was the most common subtype accounting for 37% of cases,

Table 5: Distribution of B-cell lymphoma subtypes.

Subtype	Number of Patients	Percentage (%)
DLBCL	78	70
MALT lymphoma	7	6
Follicular lymphoma	11	9
Mantle cell lymphoma	8	7
Burkitt lymphoma	4	4
Lymphoblastic lymphoma	1	1
Plasmablastic lymphoma	1	1
Splenic marginal zone lymphoma	1	1
Total	111	100

followed by anaplastic large cell lymphoma. Peripheral T cell lymphoma and NK/ T cell lymphoma are other sub types.

Table 6: Distribution of T-cell lymphoma subtypes.

Subtype	Number of Patients	Percentage (%)
Lymphoblastic lymphoma	7	37
Anaplastic large cell lymphoma	6	31
Peripheral T-cell lymphoma	4	21
NK-cell lymphoma	2	11
Total	19	100

Discussion

Incidence, prevalence and sub types of lymphoma may vary in various geographic region in developing countries (7). The present study evaluated the distribution of histological subtypes of Non-Hodgkin lymphoma among patients diagnosed at a tertiary care center in Nepal.

In this study, males were more commonly affected than females, with a male-to-female ratio of 1.8:1. Similar male predominance has been reported in studies from South Asia

and other international populations (3-4). The higher incidence among males may be related to environmental exposure, occupational risk factors, and genetic susceptibility.

The mean age at diagnosis in the present study was 41.8 years, and the majority of patients (72%) were above 40 years of age. Majority of the cases (56%) presented in more than fourth decades of life with male predominance was reported in the study by Mona Lisa et al from India (8). In the study by Hombegowda et al also reported median age in fourth decade of life with male preponderance (9). Increasing age is a well-recognized risk factor for NHL, particularly for aggressive B-cell lymphomas.

Extra nodal involvement was slightly more frequent (51%) than nodal in this study. Mondal et al in their series reported (72.3%) nodal and (27.7%) extra-nodal disease (10). Mona Lisa et al in their study reported 29% extra nodal disease. Hombegowda et al also reported extra nodal disease in the frequency of 27%(9-10). Extra nodal NHL may involve the gastrointestinal tract, central nervous system, skin, and other organs. Studies from the western countries have shown that extra nodal NHL are seen in 24 to 48% of all NHL (11-12). China and Japan have even higher incidence of extra nodal lymphoma ranging from 40 to 60% as mentioned in literature (11,12,13)

B-cell lymphoma constituted 86% of NHL cases in this study. DLBCL was identified as the most common histological subtype, accounting for 70% of B-cell lymphomas. Similar findings have been reported in study by Sarma et al in large series from India (14). In another study by Mondal et al also reported most common type B-NHL (74.1%) and DLBCL (35.2%) in their series (10). Follicular lymphoma was second common (19.3%) followed by Burkitt's in their series. Mona Lisa et al from India reported largest group (79%) belonging to B cell NHL and DLBCL as most common sub type (58.2%) (8). In the study by Hombegowda et al found most common was B cell lymphoma (95%) and DLBCL was most common sub-type (56%) (9).

Incidence of T cell NHL appears to increase worldwide as we move from West to East. 26% T cell NHL reported in China while in USA it was found in 7%. Present study found T-cell lymphoma accounted 14% and T cell lymphoblastic lymphoma being most common (37%) followed by ALCL (31%) (14). Mondal et al in their series reported T cell NHL (25.9%) and Anaplastic large cell lymphoma (12%) being common sub-type followed by Precursor lymphoblastic lymphoma (8.6%). T-cell lymphomas are generally less common than B-cell lymphomas but are often associated with aggressive clinical behavior and poorer prognosis.

The present study provides useful insight into the epidemiological pattern of NHL in Nepal. However, being a single-center retrospective study, it has certain limitations. The sample size was relatively small, and treatment outcomes were not evaluated. Larger multicenter prospective studies are needed to establish the national epidemiological profile of NHL and assess survival outcomes.

Conclusion

This retrospective study documents different types of lymphoma in Nepal. B-cell lymphoma is the predominant type of non-Hodgkin lymphoma in Nepalese patients, with DLBCL being the most common histological variant. Incidence of Follicular lymphoma is less common as compared to west. Extra nodal presentation was slightly more frequent than nodal disease. The findings contribute to the limited epidemiological data on NHL in Nepal and highlight the need for larger multicenter studies to better understand disease patterns and treatment outcomes.

Data Availability Statement

The data supporting the findings of this study are not publicly available because they contain information that could compromise patient privacy and confidentiality. De-identified data may be made available from the corresponding author upon reasonable request and with permission from the institutional authority of Vayodha Hospital, Kathmandu, Nepal.

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