# Clinico-Pathological Profile of Hodgkin's Lymphoma: A Single-Center Study from Nepal

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## Abstract

### Background

Hodgkin's lymphoma (HL) is a highly curable lymphoid malignancy with excellent outcomes when diagnosed early and treated with standardized multimodal therapy. However, data from low- and middle-income countries (LMICs) remain limited and are largely derived from single-center experiences.

### Objective

To describe the clinico-pathological characteristics, staging, treatment patterns, and outcomes of patients diagnosed with Hodgkin's lymphoma at a tertiary care center in Nepal.

### Methods

This retrospective observational study included consecutive patients diagnosed with Hodgkin's lymphoma at Vayodha Hospital, Nepal, between July 2022 and June 2025. Diagnosis was established using histomorphology and confirmed by immunohistochemistry. Disease staging was performed using contrast-enhanced computed tomography (CECT) according to the Ann Arbor staging system. Clinical, pathological, treatment, and outcome data were analyzed descriptively.

### Results

A total of 35 patients were included. The mean age at diagnosis was 33.3 years (range: 4–74 years), with a predominance of young patients aged 10–30 years (46%). The male-to-female ratio was 1.3:1. Cervical lymphadenopathy was the most common presentation (57%). Mixed cellularity was the predominant histological subtype (68%). Advanced-stage disease (Stage III–IV) was observed in 54% of patients. Majority (89%) patients received chemotherapy, predominantly ABVD. One treatment-related mortality and one relapse were observed during a median follow-up of 36 months.

### Conclusion

Patients with Hodgkin's lymphoma in Nepal commonly present at a younger age and with advanced-stage disease. Despite resource limitations, outcomes remain favorable with standard chemotherapy regimens. Strengthening early diagnosis and referral systems may further improve survival outcomes in LMIC settings.

## Introduction

Hodgkin's lymphoma (HL) is a distinct lymphoid malignancy characterized by the presence of Reed–Sternberg cells within an inflammatory background. It accounts for approximately 10% of all lymphomas worldwide and is considered one of the most curable adult malignancies, particularly with modern combination chemotherapy and radiotherapy strategies [1,2].

The disease demonstrates a bimodal age distribution in high-income countries, with a peak in young adults and a second peak in older individuals. In contrast, studies from low- and middle-income countries (LMICs) report a higher burden among children and young adults, often presenting with advanced disease and mixed cellularity histology [3,4].

Improved outcomes in HL are attributed to accurate staging, risk-adapted therapy, and the availability of

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salvage strategies such as high-dose chemotherapy with autologous stem cell transplantation for relapsed or refractory disease [5]. However, access to advanced diagnostics and treatment modalities remains uneven in resource-limited settings.

In Nepal, data on Hodgkin's lymphoma are scarce and largely limited to institutional experiences. This study aims to describe the clinico-pathological profile, staging, treatment patterns, and outcomes of patients with HL treated at a single tertiary care center, contributing to the limited literature from South Asia.

## Materials and Methods

### Study Design and Setting

This was a retrospective, observational, single-center study conducted at Vayodha Hospital, a tertiary care referral center in Nepal.

### Study Population

Consecutive patients diagnosed with Hodgkin's lymphoma between July 2022 and June 2025 were included. Patients of all ages and both sexes were eligible. Patients with incomplete diagnostics or treatment defaulters were excluded.

### Diagnostic Evaluation

Initial evaluation included detailed clinical history and physical examination. Fine needle aspiration cytology (FNAC) was performed in selected cases; however, all patients underwent core or excisional lymph node biopsy for definitive diagnosis. Histomorphological examination was followed by immunohistochemistry for confirmation and subtyping.

### Staging

Disease staging was performed using contrast-enhanced computed tomography (CECT) of the neck, chest, abdomen, and pelvis, and classified according to the Ann Arbor staging system. Presence of B symptoms (fever, night sweats, weight loss) was documented.

### Treatment and Follow-up

Patients were treated according to institutional protocols. The standard first-line chemotherapy regimen was ABVD (Doxorubicin, Bleomycin, Vinblastine, Dacarbazine). Dose modifications were made when clinically indicated. Involved-site radiotherapy (ISRT) was used selectively. Patients were followed up clinically and radiologically for response assessment and survival outcomes.

### Statistical Analysis

Data were analyzed descriptively using frequencies, percentages, means, and ranges. Due to the small sample size, no inferential statistical analyses were performed.

### Ethical Considerations

The study was conducted in accordance with institutional ethical guidelines. Patient confidentiality was maintained, and identifiable information was anonymized.

## Results

### Demographic Characteristics

A total of 35 patients were diagnosed and treated during the study period. The mean age was 33.3 years (range: 4–74 years). Nearly half of the patients (46%) were aged between 10 and 30 years. Males constituted 57% of cases, with a male-to-female ratio of 1.3:1.

Table 1. Age distribution of patients with Hodgkin's lymphoma (n = 35).

| Age group (years) | Number of patients | Percentage (%) |
|---|---|---|
| <10 | 5 | 14 |
| 10–30 | 16 | 46 |
| 30–50 | 7 | 20 |
| 50–70 | 4 | 11 |
| >70 | 3 | 9 |
| Total | 35 | 100 |

Table 2. Gender distribution of patients.

| Gender | Number | Percentage (%) |
|---|---|---|
| Male | 20 | 57 |
| Female | 15 | 43 |
| Total | 35 | 100 |

Table 3. Duration of symptoms before diagnosis.

| Duration | Number of patients | Percentage (%) |
|---|---|---|
| <4 weeks | 2 | 6 |
| 4–12 weeks | 18 | 51 |
| >12 weeks | 15 | 43 |
| Total | 35 | 100 |

Table 4. Distribution of lymphadenopathy sites.

| Site | Number of patients | Percentage (%) |
|---|---|---|
| Cervical | 20 | 57 |
| Inguinal | 1 | 3 |
| Generalized | 13 | 37 |
| Extranodal | 1 | 3 |

Table 5. Histological subtypes.

| Subtype | Number | Percentage (%) |
|---|---|---|
| Mixed cellularity | 23 | 68 |
| Nodular sclerosis | 09 | 26 |
| Lymphocyte rich | 2 | 6 |
| Nodular lymphocyte predominant Hodgkins Lymphoma (NLPHL) | 1 | 3 |

Table 6. Ann Arbor stage at diagnosis.

| Stage | Number | Percentage (%) |
|---|---|---|
| Stage I | 2 | 6 |
| Stage II | 14 | 40 |
| Stage III | 17 | 48 |
| Stage IV | 2 | 6 |

**Clinical Presentation**

The duration of symptoms prior to diagnosis ranged from less than 4 weeks to more than 12 weeks. Most patients (51%) presented within 4–12 weeks of symptoms onset. Cervical lymphadenopathy was the most common site of involvement (57%), followed by generalized lymphadenopathy (37%). Mediastinal involvement was noted in 11% of patients, and B symptoms were present in 34%.

**Pathological Findings**

Out of 35 cases, 34 were classical Hodgkins's lymphoma and one case was Nodular lymphocyte predominant Hodgkins's lymphoma (NLPHL). Among classical Hodgkins's lymphoma, Mixed cellularity was the predominant histological subtype (68%), followed by nodular sclerosis (26%) and lymphocyte-rich HL (6%). Immunohistochemistry confirmed the diagnosis in all cases.

**Disease Stage**

Early-stage disease (Stage I–II) was observed in 46% of patients, while advanced-stage disease (Stage III–IV) accounted for 54%.

**Treatment and Outcomes**

Majority (89%) patients received standard dose chemotherapy, predominantly ABVD. Bleomycin was omitted in 4(11%) patients who had chronic obstructive pulmonary disease with frequent exacerbation and further dose adjusted chemotherapy.

Two patients (6%) also received involved-site radiotherapy including patient diagnosed with NLPHL. One patient died during treatment due to neutropenic sepsis, and one patient experienced relapse nine months after completion of therapy. Duration of follow-up was 36 months (range: 3–36 months).

**Discussion**

This single-center study provides insight into the clinical and pathological spectrum of Hodgkin's lymphoma in Nepal. In our study 60% of patients were less than 30 years of age, similar findings of third decade preponderance were also observed by Maddi et al. and Bhurani et al. from India (7). No second peak was identified after fifty years of age in present study as trend noted in western countries. This may be due to unwillingness of older people to be brought into notice for illness. The predominance of young patients and mixed cellularity histology mirrors findings from other LMICs, suggesting possible differences in epidemiology compared to high-income countries [3,6]. Similar histology pattern was also reported by Bhurani et al. (60.6%), Maddi et al. (74.4%) and Sharma et al. (35%, more common in elderly than young) from India (8,9).

More than half of the patients (54%) presented with advanced-stage disease, reflecting delays in diagnosis and referral, a common challenge in resource-limited settings. Study by Bhurani et al. also demonstrated higher stage at diagnosis (53.24%) in their cohort attributing referral delay and unawareness about disease at primary care physician.

B symptoms were recorded in almost 50% of patients in the study by Bhurani et al. in contrast only to our study (33%). Despite this, treatment outcomes were favorable, with low relapse and mortality rates, highlighting the effectiveness of ABVD chemotherapy even in constrained healthcare environments.

Treatment for early stage was 4 cycles of chemotherapy with or without Radiotherapy. Baseline PETCT was not done in majority of cases because of financial constraint. Because of limited scope of PET guided treatment approach, majority of the time treatment response was guided by CECT and trend to complete 6 cycles of chemotherapy to reduce the chance of relapse was kept in mind.

The study is limited by its retrospective design, small sample size, and lack of long-term survival

analysis. Nonetheless, it contributes valuable data to the limited literature on HL from Nepal and similar settings.

## Conclusion

Hodgkin's lymphoma in Nepal predominantly affects young individuals and often presents at an advanced stage. Mixed cellularity is the most common histological subtype. Standard chemotherapy regimens yield satisfactory outcomes low resource set up.

Increasing awareness to primary care physicians, appropriate timely referral, improving in financial situation will definitely add to early-stage diagnosis and more precision in treatment approach. By collaborating with other centers and following uniform treatment approach will help us in generating more data on survival outcome from resource poor country.

## Ethics Approval and Consent to Participate

This study was reviewed and approved by the Institutional Review Committee (IRC) of Vayodha Hospital, Kathmandu, Nepal. As this was a retrospective observational study using anonymized medical records, the requirement for informed consent was waived by the Institutional Review Committee in accordance with institutional and national ethical guidelines.

The study was conducted in accordance with the Declaration of Helsinki. Patient confidentiality was maintained by anonymizing all data. As this was a retrospective review of existing records, informed consent was waived according to institutional policy. All the participative consent are kept in their respective records to the hospital. This study was retrospective study so consent for participants are kept in hospital record during his visit in hospital.

## Author Contributions

Ajaya Kumar Jha: Conceptualization, clinical management, data interpretation, manuscript drafting. Prakash Shrestha: Data collection, literature review, manuscript editing. Garima Subedi: Data collection, literature review, manuscript editing.

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## Competing Interests

The authors declare no competing interests.

## Data Availability

All relevant data are within the manuscript.

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