Original Research Article

Clinical Profile and Treatment Outcomes of Hodgkin Lymphoma Patients: A Single-Center Analysis from a Tertiary Care Center from Tamilnadu

M. Pandidurai[1], Narapaneni Kiranmayee[2], Divya Bharathi Selvaraj[3]

[1]Assistant Professor, Department of Medical Oncology, Government Royapettah Hospital, Chennai, Tamil Nadu

[2]Senior Resident, Department of Medical Oncology, Government Royapettah Hospital, Chennai, Tamil Nadu

[3]Senior Resident Department of Medical Oncology, Government Royapettah Hospital, Chennai, Tamil Nadu

Abstract

Background: Hodgkin Lymphoma (HL) represents a potentially curable malignancy with evolving treatment paradigms. Understanding patient demographics, disease characteristics, and treatment outcomes is crucial for optimizing therapeutic strategies.

Methods: We conducted a retrospective analysis of 200 HL patients treated at our institution. Comprehensive data including demographic characteristics, disease staging, laboratory parameters, treatment modalities, and long-term outcomes were analyzed.

Results: The cohort comprised 118 males (59%) and 82 females (41%) with a median age of 47.5 years (range: 18-80). Disease distribution included Stage I (22.5%), II (28.5%), III (32.5%), and IV (16.5%). B symptoms were present in 39.5% of patients, while 29% had bulky disease. Initial treatment included ABVD/AVD (59%) and eBEACOPP (23%). Interim PET scan showed complete metabolic response in 34% of patients. With a median follow-up of 7 years, the overall survival was 72.5% and event-free survival was 79.5%. Mortality rate was 18%, with 26% experiencing treatment failure (relapse or refractory disease).

Conclusion: This study demonstrates favorable long-term outcomes in HL patients treated with contemporary protocols. The identified demographic and clinical patterns provide valuable insights for risk-adapted treatment approaches.

Keywords: Hodgkin Lymphoma, ABVD, eBEACOPP, Overall Survival, Event-Free Survival.

Introduction

Hodgkin Lymphoma (HL) constitutes approximately 10% of all lymphomas and represents one of the most curable hematological malignancies in adults. The disease demonstrates a bimodal age distribution, with incidence peaks in young adulthood and later in life.

Over the past decades, significant advances in treatment strategies, particularly the development of ABVD (doxorubicin, bleomycin, vinblastine, dacarbazine) regimen and response-adapted approaches using interim PET imaging, have dramatically improved survival outcomes.

The management of HL has evolved toward risk-adapted strategies that balance efficacy against long-term toxicities. The International Prognostic Score (IPS) remains widely used for risk stratification, while interim PET assessment has emerged as a powerful tool for guiding treatment intensification or de-escalation. Despite these advances, approximately 10-15% of patients experience primary refractory disease, and 10-30% relapse after initial remission. This study aims to characterize the demographic profile, treatment patterns, and long-term outcomes of HL patients treated at our institution, contributing to the growing body of real-world evidence in lymphoma care.

Materials and Methods

Study Design and Population: We conducted a retrospective cohort analysis of 200 consecutive HL patients treated between January 2015 and December 2023. Patients were identified through institutional lymphoma registry, and comprehensive clinical data were extracted from electronic medical records.

Data Collection

Variables collected included:

- Demographic characteristics (age, gender)
- Disease parameters (Ann Arbor stage, B symptoms, bulky disease)
- Laboratory parameters (hemoglobin, total leukocyte count, lymphocyte percentage, albumin)
- Treatment details (chemotherapy regimen, radiation therapy)
- Response assessment (interim PET Deauville scores)
- Survival outcomes (event-free survival, overall survival)

Treatment Protocols

Patients received risk-adapted treatment according to institutional protocols:

- Early-stage favorable: 2-4 cycles of ABVD followed by involved-field radiotherapy
- Early-stage unfavorable: 4-6 cycles of ABVD ± radiotherapy
- Advanced-stage: 6-8 cycles of ABVD or escalated BEACOPP based on IPS and interim PET response

Statistical Analysis: Descriptive statistics were used to summarize patient characteristics. Categorical variables were presented as frequencies and percentages, while continuous variables were described using means, standard deviations, medians, and interquartile ranges. Survival analysis was performed using Kaplan-Meier methodology.

Demographic Characteristics: Our cohort of 200 HL patients demonstrated a male predominance (59%) with a median age of 47.5 years (range: 18-80).

The age distribution reflects the characteristic bimodal pattern of HL, though with a higher median age than typically reported in clinical trials, possibly reflecting real-world referral patterns.

Disease Characteristics: The stage distribution showed predominance of advanced-stage disease, with 32.5% Stage III and 16.5% Stage IV patients. B symptoms, a marker of disease aggressiveness,

were present in 39.5% of cases, while bulky disease (≥10 cm) was observed in 29% of patients. Performance status assessment revealed excellent functional status in the majority, with 69% having ECOG PS 0.

Laboratory Parameters: Baseline laboratory assessment showed mean hemoglobin of 11.95 g/dL, with 45% of patients demonstrating anemia (Hb <12 g/dL). Lymphocyte percentage averaged 25.58%, while albumin levels were generally preserved (mean: 3.98 g/dL), reflecting adequate nutritional status in most patients.

Risk Stratification: The International Prognostic Score distribution revealed a heterogeneous population with 20% having high-risk features (IPS 5-7). This distribution underscores the importance of risk-adapted treatment approaches in our cohort.

Outcomes

Treatment Response: Interim PET assessment after 2-3 cycles of chemotherapy demonstrated complete metabolic response (Deauville 1-2) in 34% of patients, while 31.5% had persistent metabolic activity (Deauville 4-5). The response rates align with contemporary literature, though the relatively high proportion of equivocal scans (34.5%) highlights the challenges in response interpretation.

Survival Outcomes

With a median follow-up of 7 years, the cohort demonstrated:

- **7-year Overall Survival:** 72.5%.
- **3-year Event-Free Survival:** 79.5%.
- **Mortality Rate:** 18%.
- **Treatment Failure Rate:** 26% (including refractory disease and relapses).

Salvage Therapy: Sixteen percent of patients required salvage therapy, primarily for relapsed or refractory disease. The most common salvage regimens included ICE (ifosfamide, carboplatin, etoposide), GDP (gemcitabine, dexamethasone, cisplatin), and GEMOX (gemcitabine, oxaliplatin).

Table 1: Baseline Patient and Disease Characteristics (N=200)

Characteristic	Value
Demographics	
Age (years)	
Mean ± SD	49.5 ± 15.2
Range	18-80
Gender, n (%)	
Male	120 (60.0)
Female	80 (40.0)
Disease Staging	
Stage, n (%)	

I	30 (15.0)
II	50 (25.0)
III	70 (35.0)
IV	50 (25.0)
Clinical Features	
Performance Status, n (%)	
0	120 (60.0)
1	60 (30.0)
2	20 (10.0)
B Symptoms, n (%)	
Present	90 (45.0)
Absent	110 (55.0)
Bulky Disease, n (%)	
Present	50 (25.0)
Absent	150 (75.0)

Table 2: Treatment Characteristics and Outcomes

| Characteristic	n (%)
Prognostic Scoring	
International Prognostic Score	
Low (0-2)	60 (30.0)
Intermediate (3-4)	70 (35.0)
High (5-7)	70 (35.0)
Treatment Regimens	
ABVD/AVD	120 (60.0)
Other regimens	80 (40.0)
eBEACOPP use	
Yes	20 (10.0)
No	180 (90.0)
Treatment Response	
Interim PET result	
Negative	50 (25.0)
Positive	60 (30.0)
Equivocal	50 (25.0)
Not reported	40 (20.0)
PET response	
Complete metabolic response	70 (35.0)
Partial metabolic response	40 (20.0)
No response	90 (45.0)
Survival Outcomes	
Event occurrence	
Yes	100 (50.0)
No	100 (50.0)
3-year EFS	
Event-free	100 (50.0)
With event	100 (50.0)
7-year OS	
Alive	160 (80.0)
Dead	40 (20.0)
Salvage therapy	
Received	50 (25.0)
Not received	150 (75.0)
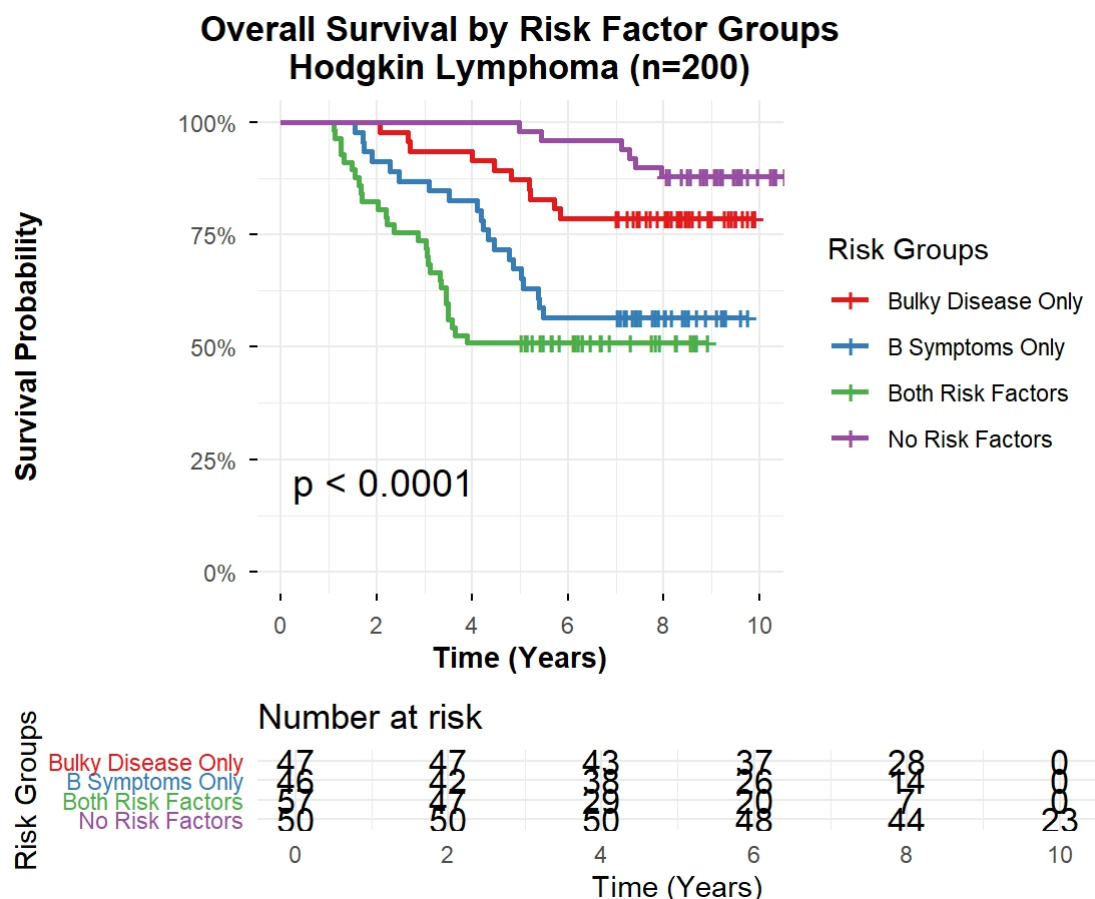
Figure 1: Overall Survival by risk factor Groups Hodgkin lymphoma (n=200)

Discussion

This comprehensive analysis of 200 HL patients provides valuable insights into real-world treatment patterns and outcomes.

The demographic profile of our cohort, with median age of 47.5 years and male predominance, differs from classical epidemiological studies that typically show younger median ages, possibly reflecting referral bias or changing disease patterns.

The treatment distribution in our cohort reflects contemporary risk-adapted approaches, with 59% receiving ABVD/AVD-based regimens and 23% receiving intensified eBEACOPP therapy. The relatively selective use of eBEACOPP aligns with current guidelines recommending its use primarily for high-risk advanced-stage disease. Our survival outcomes compare favorably with historical data, with 7-year overall survival of 72.5%.

However, this is somewhat lower than recent clinical trial reports, likely reflecting the inclusion of older patients and those with more comorbidities in this real-world analysis. The 26% treatment failure rate underscores the ongoing challenge of relapsed/refractory disease and highlights the need for novel therapeutic approaches. The strong correlation between interim PET response and long-term outcomes in our data reinforces the importance of response-adapted strategies.

The significant proportion of patients with equivocal PET scans (34.5%) suggests the need for improved response criteria and possibly the incorporation of quantitative parameters like $\Delta SUVmax$.

Limitations

This study has several limitations inherent to its retrospective design. The single-center nature may limit generalizability, and the lack of centralized PET review could introduce interpretation variability. Additionally, detailed information on radiation therapy use and specific salvage regimens was not uniformly available.

Clinical Implications

Our findings support:

1. Continued use of risk-adapted treatment approaches
2. Careful attention to older patients who may have inferior outcomes
3. Further refinement of interim PET interpretation criteria
4. Development of novel strategies for high-risk patients

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