Autologous Stem Cell Transplantation for Lymphoma: A Single-Centre Experience in Malaysia

Gilbert W[1], Heng Chang Choo[1], Mohd Tarmizi AZ[1], Nur Aina D[1], Khaiteri R[1], Lily WLL[1]
[1]Hematology Unit, Department of Medicine, Queen Elizabeth Hospital Kota Kinabalu Sabah
Email address: *gil_obot@hotmail.com*

INTRODUCTION

The landscape of lymphoma treatment is characterized by the central role of chemotherapy, particularly in aggressive forms of the disease. Despite the efficacy of standard induction regimens like R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine and prednisolone), a significant proportion of non-Hodgkin lymphoma (NHL) patients fail to achieve complete remission[1]. For these individuals, salvage chemotherapy followed by autologous stem cell transplant emerges as a promising therapeutic avenue, offering the potential for cure[2 – 3]. Similarly, while frontline treatments have advanced, a subset of Hodgkin lymphoma (HL) patients experience primary refractoriness or relapse after achieving initial remission[4]. Notably, pre-transplant PET negativity emerges as a robust prognostic marker in relapsed and refractory HL, guiding treatment decisions in this challenging context[5]. However, the use of high-dose therapy followed by autologous stem cell transplant is tempered by significant treatment-related mortality, necessitating careful patient selection to optimize outcomes.

OBJECTIVE

To explore the role of ASCT for lymphoma patients

METHODOLOGY

The study data were sourced from patient medical records and the database of Queen Elizabeth Hospital, Malaysia. Inclusion criteria encompassed adult patients diagnosed with non-Hodgkin or Hodgkin Lymphoma who underwent autologous stem cell transplant (ASCT) between March 2016 and March 2024. Demographic profiles, clinical characteristics, and treatment outcomes were systematically collected and scrutinized using Statistical Package for the Social Sciences (SPSS) Version 26.

Table 1: Patient and disease characteristic

Characteristic	No. of patients	%
Age at ASCT, years		
Median	33	
Range	16 – 62	
Gender		
Male : Female ratio	1.6 : 1	
Histology		
DLBCL (including HGBCL)	9	25
Mantle cell lymphoma	2	6
Primary CNS lymphoma	3	8
Composite lymphoma#	1	3
Primary Mediastinal B cell lymphoma	1	3
NK/T cell lymphoma	1	3
Anaplastic large cell lymphoma	4	11
Subcutaneous Panniculitis like T cell lymphoma	1	3
Hodgkin lymphoma	14	38
Ann Arbour Stage		
Stage I	3	8
Stage II	6	17
Stage III	18	50
Stage IV	9	25
B symptoms	36	100
Bulky disease (>7.5cm)	20	56
BM involvement	5	14
CNS involvement	6	17
Therapy before ASCT		
< 3L	24	67
> 3L	12	33
Disease status at ASCT		
Residual disease present	24	66
Disease free	12	34
Disease status post ASCT		
Complete remission	11	30
Adjuvant therapy* post ASCT	13	36
Relapsed post ASCT	8	22

ASCT; autologous stem cell transplant, HGBCL; high grade B cell lymphoma, BM; bone marrow,3L; 3 lines of therapy
#composite lymphoma; mixture of Burkitt's and mantle cell lymphoma
**including radiotherapy with or without novel therapy (brentuximab, nivolumab)*

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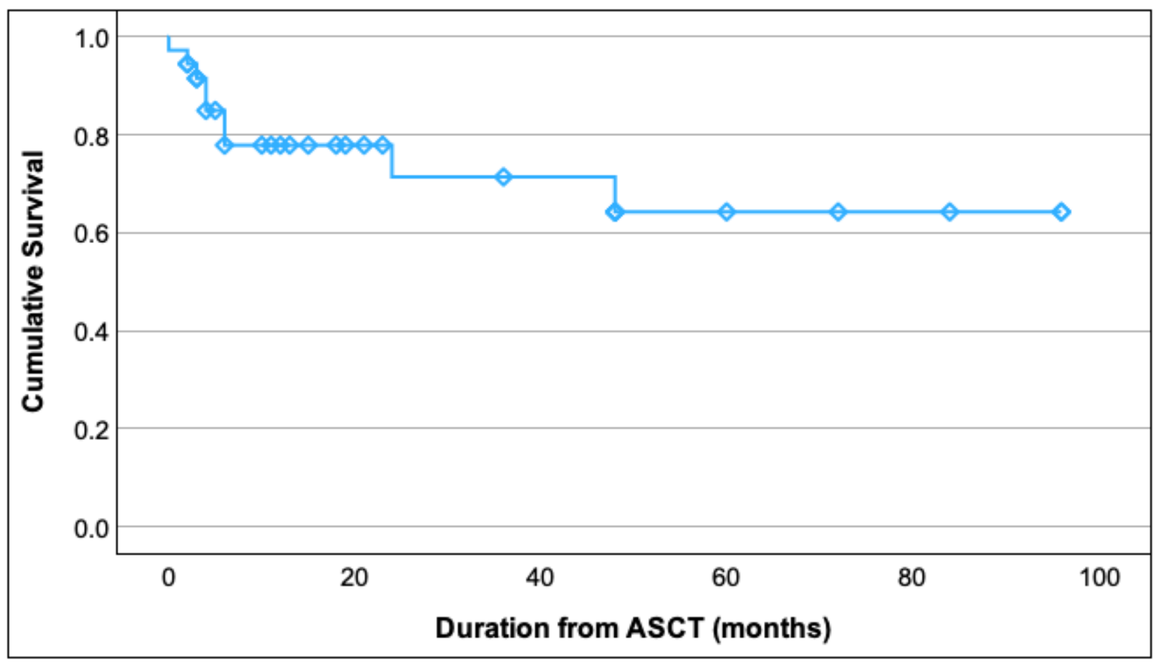
RESULTS

Over the preceding eight years, a cohort of fifty-two patients underwent successful peripheral blood stem cell harvest for autologous transplantation. Among these, 69% (n=36) met the inclusion criteria for this study. The median age of the lymphoma patients who underwent autologous stem cell transplant (ASCT) was 33 years, ranging from 16 to 62 years. Detailed patient and disease characteristics are presented in **Table 1**.
Notably, the majority of cases consisted of non-Hodgkin Lymphomas (n=22, 61%), with only two instances involving T-cell NHL. A significant proportion of patients presented with advanced disease stages (Ann Arbor Stage > 2, 75%) and bulky disease. ASCT was performed in various disease statuses: 6 patients (17%) in first complete remission (CR), another 6 (17%) in second or third CR, and the remaining 24 (66%) in partial remission. Conditioning regimens included BEAM in 31 patients and Thiotepa-based regimens in 5. Among those autografted in partial remission, 25% (n=6) achieved complete remission, while 14 patients required additional treatments, including brentuximab maintenance (n=11) and radiotherapy (n=2) for Hodgkin and non-Hodgkin lymphoma, respectively; the remaining received chemotherapy-based treatment for relapsed disease.

Figure 1: Kaplan-Meier overall survival post ASCT



Following a median follow-up period of 13 months, the cohort exhibited a 2-year overall survival (OS) rate of 75% **(Figure 1)**. The primary causes of mortality predominantly included disease progression and relapse within six months, with only two patients experiencing late relapse.

CONCLUSION

The limited number of autologous stem cell transplants in this study is attributed to the small size of the transplant unit, which serves only the Sabah state. Our experience in conducting autologous transplants underscores the need for ongoing improvement. From our observations, autologous stem cell transplantation plays a pivotal role in managing clinically aggressive lymphomas. Strategies to enhance post-transplant outcomes should focus on identifying high-risk lymphoma patients, initiating upfront stem cell collection, and integrating novel therapies, particularly in specific subsets of lymphoma patients. Adjunctive post-transplant therapies, such as novel treatments or radiotherapy, hold promise for improving outcomes in patients who do not achieve complete remission pre-ASCT. Emerging therapies like bispecific antibodies and chimeric antigen receptor T-cell therapy may revolutionize treatment options for relapsed or refractory lymphomas, although further long-term studies are imperative to assess their efficacy thoroughly.

REFERENCE

1. Coiffier B, Lepage E, Briere J, Herbrecht R, Tilly H, Bouabdallah R, et al. CHOP chemotherapy plus rituximab compared with CHOP alone in elderly patients with diffuse large-B-cell lymphoma. N Engl J Med. 2002; 346(4):235–42.
2. Philip T, Guglielmi C, Hagenbeek A, Somers R, Van der Lelie H, Bron D, et al. Autologous bone marrow transplantation as compared with salvage chemotherapy in relapses of chemotherapy- sensitive non-Hodgkin's lymphoma. N Engl J Med. 1995; 333(23):1540–5.
3. Schmitz N, Pfistner B, Sextro M, Sieber M, Carella AM, Haenel M, et al. Aggressive conventional chemotherapy compared with high-dose chemotherapy with autologous haemopoietic stem-cell transplantation for relapsed chemosensitive Hodgkin's disease: a randomised trial. Lancet. 2002; 359(9323):2065–71
4. Ansell SM. Hodgkin lymphoma: 2016 update on diagnosis, risk-stratification, and management. Am J Hematol. 2016; 91(4):434–42.
5. Moskowitz AJ, Yahalom J, Kewalramani T, Maragulia JC, Vanak JM, Zelenetz AD, et al. Pretransplantation functional imaging predicts outcome following autologous stem cell transplantation for relapsed and refractory Hodgkin lymphoma. Blood. 2010; 116(23):4934–7