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Conference Abstract A27

Autologous Hematopoietic Stem Cell Transplantation in Lymphoma Treatment: Efficacy, Challenges, and Possibilities in Uzbekistan

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Introduction

The coexistence of two hematologic malignancies in a single patient is extremely rare. Of particular interest is the development of acute lymphoblastic leukemia of the T-cell early precursor variant (ETP-ALL) in a patient who had been in strict complete remission of multiple myeloma after autologous bone marrow transplantation. Such cases require a comprehensive diagnostic approach and individualized therapy planning.

Autologous hematopoietic stem cell transplantation (auto-HSCT) is the standard of care for relapsed or refractory aggressive lymphomas such as diffuse large B-cell lymphoma (DLBCL), Burkitt lymphoma, mantle cell lymphoma, Hodgkin lymphoma, and lymphoblastic lymphoma. The procedure involves collecting the patient's stem cells, administering high-dose chemotherapy, and reinfusing cells to restore bone marrow function. In Uzbekistan, lymphoma patients receive chemotherapy at the Republican Specialized Scientific-Practical Medical Center of Oncology and Radiology (RSSPMCO&R), while auto-HSCT is performed at the Republican Specialized Scientific-Practical Medical Center of Hematology (RSSPMCH), the only facility specializing in transfusiology and oncohematological diseases. RSSPMCH is equipped with modern technology and serves as a base for research and training. Despite progress, implementation of HSCT is limited by infrastructural and financial barriers. This abstract reviews the efficacy of HSCT, previous chemotherapy lines, challenges and opportunities based on RSSPMCH, RSSPMCO&R, and international research data.

Materials and Methods

From 2016 to 2024, RSSPMCH performed 13 autologous HSCTs in lymphoma patients. Cohort characteristics are presented in Table 1:

Characteristic	Value
Number of patients	13
Sex, n (%)	Male: 10 (76.9%), Female: 3 (23.0%)
Median age (range)	39 years (18–61)
Diagnosis, n (%)	DLBCL: 6 (46.1%), Burkitt lymphoma: 1 (7.7%), Mantle cell lymphoma: 2 (15.4%), Hodgkin lymphoma: 2 (15.4%), Lymphoblastic lymphoma: 2 (15.4%)
Disease status, n (%)	CR1: 2 (15.4%), CR2+: 11 (84.6%)
Conditioning regimen	BEAM: 13 (100%)
Transplant type	Autologous HSCT: 13 (100%)
Median cell dose (range)	4.41×10^6/kg (1.84–7.6)

All patients received BEAM conditioning (carmustine 300 mg/m², etoposide 200 mg/m², cytarabine 200 mg/m² bid, melphalan 140 mg/m²) at RSSPMCH. Efficacy was assessed by 5-year overall survival (OS), progression-free survival (PFS), and meta-analysis (Ahmed et al., 2025).

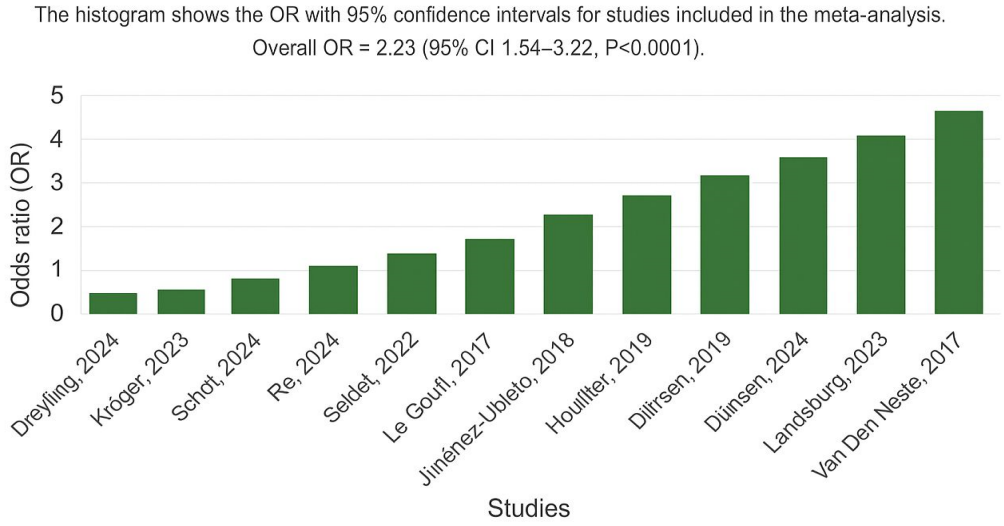
Previous Chemotherapy Lines

Lymphoma patients received chemotherapy at RSSPMCO&R under the supervision of oncologists and hematologists. Therapy lines depended on lymphoma type and stage (Ann Arbor classification). For DLBCL (6 patients, 46.1%), the first line was R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, prednisolone). Upon relapse or refractoriness (5 patients), salvage regimens were R-DHAP (rituximab, dexamethasone, high-dose cytarabine, cisplatin) or R-ICE (rituximab, ifosfamide, carboplatin, etoposide). For Hodgkin lymphoma (2 patients), first-line was ABVD (doxorubicin, bleomycin, vinblastine, dacarbazine), with DHAP for relapse. Mantle cell lymphoma (2) received R-CHOP or R-B (rituximab, bendamustine); for refractoriness, regimens with ibrutinib were used. Lymphoblastic lymphoma (2) followed hyper-CVAD protocols (cyclophosphamide, vincristine, doxorubicin, dexamethasone). All auto-HSCT recipients had at least one prior therapy line; 84.6% were in CR2+.

Results

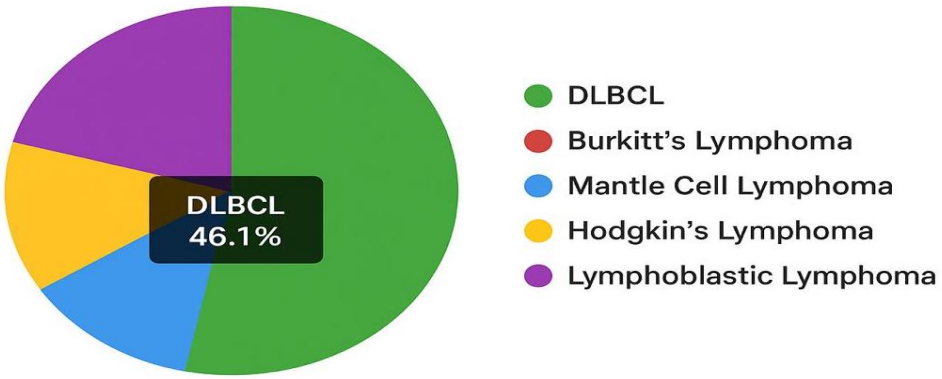
Meta-analysis (Ahmed et al., 2025) showed auto-HSCT efficacy with odds ratio (OR) 2.23 (95% CI 1.54–3.22, P<0.0001). Data presented in **Figure 1:**

Figure 1. Efficacy of autologous ATCT in the treatment of lymphoma (Ahmed et al., 2025)

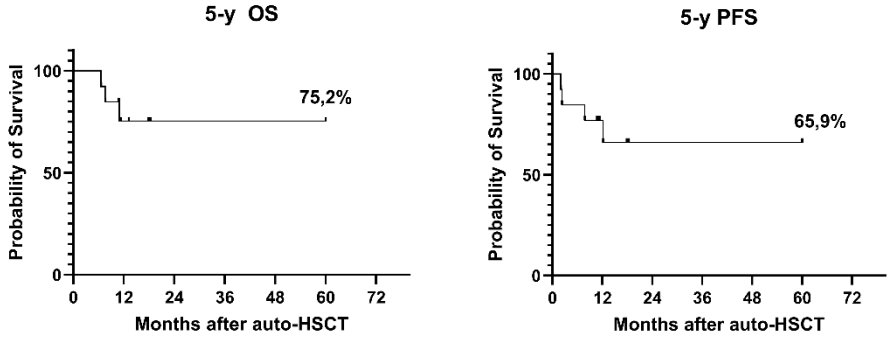


Distribution of patients' diagnoses at RSSPMCH is presented in **Figure 2:**

Figure 2. Distribution of Diagnoses among Patients with Autologous HSCT at the Republican Scientific Center for Transplantation (2016–2024)



At RSSPMCH, the 5-year overall survival (OS) rate was 75.2% and progression-free survival (PFS) was 65.9%.



Key predictors of success: complete remission status (CR > non-CR) and low/intermediate International Prognostic Index (IPI). Relapses remain a problem: relapse rate in T-cell lymphoblastic lymphoma reached 30.7%. At RSSPMCH, 5-year overall survival (OS) and progression-free survival (PFS) results are limited by high chemoresistance and systemic barriers: lack of HEPA-filtered rooms, limited insurance coverage, low patient awareness.

Discussion

Autologous HSCT conducted at RSSPMCH confirms efficacy in treating aggressive lymphomas, achieving durable remission. Chemotherapy at RSSPMCO&R (R-CHOP, ABVD, R-DHAP, R-ICE, hyper-CVAD) prepares patients for HSCT, but high chemoresistance, especially in Burkitt lymphoma, and infrastructure limitations reduce outcomes. Promising approaches include combining HSCT with CAR T-cell therapy (anti-CD19/CD22) and maintenance anti-PD-1 antibody therapy (tislelizumab), demonstrating synergistic effects (Luo et al., 2024). International cooperation, including specialist training in Russia, Turkey, and India, and infrastructure investments such as RSSPMCH expansion, are essential to improved outcomes.

Conclusion

Autologous HSCT at RSSPMCH remains an effective treatment for aggressive lymphomas, with prior chemotherapy at RSSPMCO&R (R-CHOP, ABVD, R-DHAP, R-ICE, hyper-CVAD). Integration of immunotherapy and international collaboration will help overcome barriers and improve clinical outcomes.