Efficacy and Safety of Polatuzumab Vedotin Combined with Bendamustine and Rituximab for Relapsed/Refractory Diffuse Large B-Cell Lymphoma: A Systematic Review and Meta-Analysis

B. Al Zoubi[1], H. Albaoni2, Z. Al Zu'bi3, M. Jazazi4

1 Faculty of Medicine, The Hashemite University, Zarqa, Jordan
2 Jordan University of Science and Technology, Irbid, Jordan
3 Traditional Medicine University, Yerevan, Armenia
4 Senior pediatric hematology oncology queen Rania children hospital/RMS, Al-salt, Jordan

Introduction

Diffuse large B-cell lymphoma (DLBCL) is the most common and aggressive subtype of non-Hodgkin lymphoma. Despite effective first-line treatments, 30–40% of patients relapse or develop refractory disease. Polatuzumab vedotin, in combination with bendamustine and rituximab (Pola-BR), is a recently approved regimen for relapsed/refractory (R/R) DLBCL, offering a promising alternative. However, a comprehensive evaluation of its efficacy and safety is still lacking.

Aim

To assess the efficacy and safety of polatuzumab vedotin combined with bendamustine and rituximab (Pola-BR) in patients with relapsed or refractory diffuse large B-cell lymphoma. The primary outcomes were overall response rate (ORR), complete response (CR), and partial response (PR). Safety outcomes, including treatment-related adverse events such as neutropenia and thrombocytopenia, were also analyzed.

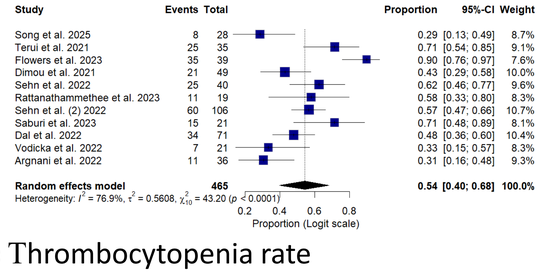
Methods

We followed the PRISMA 2020 guidelines for conducting this systematic review and meta-analysis. A comprehensive literature search was performed from inception to May 2025 across PubMed, Web of Science, Cochrane Library, and ClinicalTrials.gov. Eligible studies included randomized controlled trials, observational studies, and single-arm studies evaluating Pola-BR in R/R DLBCL patients. Statistical analysis was performed using R software version 4.3.2.

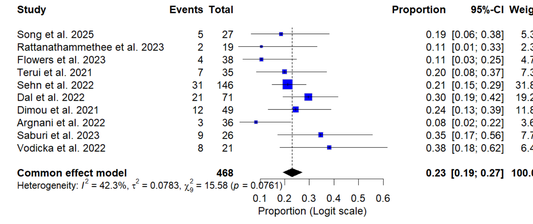
Results

A total of 10 studies involving 465 patients with relapsed/refractory DLBCL treated with Pola-BR were included. The studies were of high quality. Pooled analysis demonstrated an overall response rate (ORR) of 54% (95% CI: 40–68%), with a complete response (CR) rate of 37% (95% CI: 24–52%) and a partial response (PR) rate of 15% (95% CI: 9–23%). Among hematologic toxicities, neutropenia was the most common, occurring in 37% (95% CI: 33–42%) of patients, followed by thrombocytopenia in 23% (95% CI: 19–27%). All outcomes were derived from single-arm meta-analyses, reported as pooled proportions with corresponding 95% confidence intervals.

A) overall response rate



B) Thrombocytopenia rate



Summary

This systematic review and meta-analysis suggests that Pola-BR demonstrates promising efficacy in patients with relapsed or refractory DLBCL, with a meaningful overall and complete response rate. However, hematologic toxicities, particularly neutropenia and thrombocytopenia, are common and should be closely monitored. These findings support the clinical utility of Pola-BR as a viable treatment option in this high-risk population, warranting further validation through randomized controlled trials.

The authors declare no competing interests