Research Square

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Prognostic factors and an exploratory risk stratification model in newly diagnosed Pola-R-CHP-treated diffuse large B-cell lymphoma: A real-world retrospective cohort analysis

Yohei Sasaki

ysasaki@med.showa-u.ac.jp

Showa Medical University School of Medicine

Shotaro Shimada

Showa Medical University School of Medicine

Hirotaro Sakaki

Showa Medical University School of Medicine

Ayano Shirai

Showa Medical University School of Medicine

Hidenori Hayashi

Showa Medical University School of Medicine

Natsuki Kawamata

Showa Medical University School of Medicine

Kazuki Nagao

Showa Medical University School of Medicine

Kai Kuroiwa

Showa Medical University School of Medicine

Hinako Narita

Showa Medical University School of Medicine

Reiko Okamura

Showa Medical University School of Medicine

Megumi Watanuki

Showa Medical University School of Medicine

Nana Arai

Showa Medical University School of Medicine

Kouji Yanagisawa

Showa Medical University School of Medicine

Norimichi Hattori

Showa Medical University School of Medicine

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Abstract

Purpose

Polatuzumab vedotin-based therapy (Pola-R-CHP) is effective for patients newly diagnosed with diffuse large B-cell lymphoma (DLBCL). However, factors that indicate poor prognosis are unclear, and may differ from those included in the conventional International Prognostic Index (IPI) and National Comprehensive Cancer Network IPI (NCCN-IPI).

Methods

We analyzed clinical features and identified risk factors indicating poor prognosis in 129 patients newly diagnosed with DLBCL treated via Pola-R-CHP.

Results

The 2-year progression-free survival (PFS) and overall survival (OS) rates for patients were 71.5% and 89.9%, respectively. Age (< 81 or ≥ 81 years), performance status (PS) (0–1 or ≥ 2), and stage (I–II or III–IV) were significant clinical factors for PFS. However, only age (< 81 or ≥ 81 years) was a significant clinical factor for OS. We defined “Pola-3 score” as an exploratory score for which one point is added for each of the following categories: age (≥ 81 years), PS (≥ 2), and stage (III–IV), and classified patients with scores of 0, 1, and 2–3 as low, intermediate, and high risk in terms of Pola-3 score, respectively. The Kaplan–Meier curves for PFS and OS of patients exhibited clear stratification with the Pola-3 score (2-year PFS, low: 97.2%, intermediate: 70.4%, high: 44.3%; 2-year OS, low: 100%, intermediate: 91.3%, high: 76.8%).

Conclusion

The prognostic factors for newly diagnosed DLBCL patients treated with Pola-R-CHP may differ from those constituting the conventional IPI and NCCN-IPI.

Introduction

Diffuse large B-cell lymphoma (DLBCL) is the most common type of B-cell lymphoma, accounting for approximately 30–60% of cases [1]. The POLARIX study demonstrated that polatuzumab vedotin, an antibody–drug conjugate targeting CD79b, in combination with rituximab, cyclophosphamide, doxorubicin, and prednisolone (Pola-R-CHP), significantly improved outcomes when compared with chemotherapy consisting of cyclophosphamide, doxorubicin, vincristine, and prednisolone combined with rituximab (R-CHOP) [2]. Furthermore, Pola-R-CHP is an effective standard of care for patients with newly diagnosed DLBCL in real-world settings, including those with localized disease and elderly patients [3–5].

The International Prognostic Index (IPI) has historically been used as a prognostic indicator for aggressive non-Hodgkin’s lymphoma [6]. In addition, the National Comprehensive Cancer Network IPI (NCCN-IPI) has recently

been proposed as a prognostic model specifically for DLBCL [7]. However, these indices were based on prognostic factors identified in patients with newly diagnosed DLBCL who had been treated with CHOP, R-CHOP, or R-CHOP–like chemotherapy. Pola-R-CHP is effective in patients with R-CHOP–refractory DLBCL, including those with the activated B-cell–like (ABC) subtype defined by the cell of origin (COO), age ≥ 61 years, elevated lactate dehydrogenase level (LDH), and extranodal sites, suggesting that poor prognostic factors in patients with newly diagnosed DLBCL treated with Pola-R-CHP may differ from those in patients treated with R-CHOP [2]. Therefore, poor prognostic factors associated with Pola-R-CHP therapy may also differ from those included in the conventional IPI and NCCN-IPI. Furthermore, whether Pola-R-CHP treatment is appropriate for patients with newly diagnosed DLBCL aged ≥ 81 years remains controversial because of non-relapse mortality (NRM) [8].

Hence, in this study, we aimed to analyze the clinical features of patients with newly diagnosed Pola-R-CHP-treated DLBCL to identify poor prognostic risk factors.

Methods

Patients

This retrospective study included 129 patients newly diagnosed with DLBCL who received Pola-R-CHP or Pola-R-CHP-like chemotherapy (doxorubicin was substituted with pirarubicin, considering the risk of complications due to cardiotoxicity, based on the physician's judgment [9, 10]) at Showa Medical University Hospital and Showa Medical University Northern Yokohama Hospital between September 2022 and December 2025. The patients were diagnosed based on the 2022 World Health Organization (WHO) classification criteria [1]. We excluded patients with primary central nervous system lymphoma.

Clinical stage was defined using the Ann Arbor staging system [11], which included clinical history, diagnostic biopsy, bone marrow aspiration and biopsy, computed tomography (CT), and F-fluorodeoxyglucose positron emission tomography/CT. Clinical characteristics included age, sex, LDH, performance status (PS) [12], Ann Arbor stage, IPI, and NCCN-IPI [6, 7].

Data on the use of granulocyte-colony stimulating factor (G-CSF) prophylaxis and adverse events (AEs) were obtained from medical records. Hematological and non-hematological AEs were graded according to the Common Terminology Criteria for Adverse Events version 6.0.

This study was approved by the Institutional Review Board of Showa Medical University (approval number: 2026 – 0154), which waived the requirement for informed consent due to the retrospective analysis of clinical data from our institutional database. All patient data were fully anonymized and handled in accordance with the Declaration of Helsinki and the hospital's data management policies.

Immunohistochemical features

Morphological findings were assessed via hematoxylin and eosin staining of formalin-fixed paraffin-embedded specimens. The antibodies used for immunohistochemistry were as previously described [5]. Cut-off values for BCL2 and MYC overexpression were defined as ≥ 50% and ≥ 40%, respectively, and those for BCL6, CD10, and

MUM-1 were ≥ 30%. [13, 14]. Patients were classified into the germinal center B-cell-like (GCB) and non-GCB groups in accordance with the COO subtype based on the Hans algorithm [13]. Patients with high MYC and BCL2 expression were considered to have double-expressor lymphoma (DEL) [14]. Two expert hematopathologists diagnosed and evaluated the immunohistochemical characteristics of DLBCL. *MYC* and *BCL2* rearrangements were detected in the biopsy specimens by fluorescence in situ hybridization using dual-color break-apart probes. Patients with co-rearrangements in *MYC* with *BCL2* were defined as having double-hit lymphoma (DHL) [1].

Statistical analyses

The primary endpoint was progression-free survival (PFS), defined as the time from the date of diagnosis to the date of disease progression, relapse, last follow-up, or death, and the secondary endpoint was overall survival (OS), defined as the time from the date of diagnosis to the date of the last follow-up or death. Patients who never achieved partial remission were categorized as relapsed cases at day 0. PFS and OS were compared using the log-rank test and analyzed using the Cox proportional hazards model. The concordance index was used to evaluate the performance of prognostic models. Statistical analyses were performed using EZR, a graphical user interface for R (version 4.3.1; R Foundation for Statistical Computing, Vienna, Austria) [15]. Statistical significance was set at $P < 0.05$.

Declaration of generative AI use

During the preparation of this work, the authors used Claude Sonnet 4.6 to enhance readability and language. The authors subsequently reviewed and edited the content as necessary and take full responsibility for the final publication.

Results

Patient characteristics

Table 1 presents the characteristics of 129 patients with DLBCL treated via Pola-R-CHP. The median age at diagnosis was 74 (range, 20–95) years. Of them, 32 (24.8%) were aged ≥81 years, and 24 (18.6%) had a PS ≥2. DHL and DEL were identified in 5 (3.9%) and 16 patients (12.4%), respectively. During follow-up, 27 patients (20.9%) relapsed and 12 (9.3%) died, including 6 (4.7%) non-relapse death. In patients aged ≥81 years or with PS ≥2, 3 (9.4%) and 2 (8.3%) had non-relapse deaths, respectively. The causes of non-relapse deaths were infection (3 patients), cerebral infarction (1), and unknown (2). The dose needed to be reduced in 102 (79.1%) patients, including patients aged ≥81 years (31, 96.9%) and those with PS ≥2 (20, 83.3%).

Table 2 lists the hematological and non-hematological AEs. Hematological AEs, particularly anemia, neutropenia, and thrombocytopenia at grade 3–4 were observed in 23.3%, 48.1%, and 14.0% of patients, respectively. All patients received G-CSF prophylaxis during the treatment. Among non-hematological AEs at grade 3–4, febrile neutropenia (FN) was the most common (11.6%), followed by infection (8.5%). In patients aged ≥81 years or with PS ≥2, grade 3–4 neutropenia was observed in 43.8% and 58.3% of patients,

respectively. In addition, the frequencies of FN and grade 3–4 infection were 3.1% and 21.9% in patients aged ≥81 years, and 20.8% and 29.2% in patients with PS ≥2, respectively (Supplementary Table 1).

Clinical outcomes

The median duration of observation was 654 (range, 11–1362) days. The 2-year PFS and OS rates for patients were 71.5% and 89.9%, respectively (Figures 1A and 1B). In the univariate analysis, the IPI (*P*=0.00017) and NCCN-IPI (*P*=0.000096) scores, and factors included in these scores, namely stage (III–IV, *P*=0.00030), extranodal site involvement in bone marrow, central nervous system (CNS), liver, gastrointestinal tract, or lung (*P*=0.010), LDH (normal or elevated, *P*=0.010), and PS (0–1 or ≥2, P=0.0000040), emerged as significant prognostic indicators. Although age ≥81 years was a significant predictor of PFS (*P*=0.040), age (<61 or ≥61 years, *P*=0.17, <76 or ≥76 years, *P*=0.13) and the number of extranodal sites (≥2, *P*=0.056), as included in the IPI and NCCN-IPI, did not affect PFS. Figures 2A and 2B show the Kaplan–Meier curves for PFS stratified by IPI and NCCN-IPI scores.

The results of univariate analysis revealed that OS was significantly associated with stage (III–IV, *P*=0.014), PS (≥2, *P*=0.011), and age (≥81 years, *P*=0.0029), whereas no association was observed when stratified by IPI (*P*=0.055) and NCCN-IPI (*P*=0.091) (Supplementary Figures 1A and 1B). PFS and OS showed no significant associations with dose reduction (*P*=0.53, *P*=0.076, respectively), COO subtype (*P*=0.28, *P*=0.14, respectively), DEL (*P*=0.21, *P*=0.27, respectively), and DHL (*P*=0.82, *P*=0.40, respectively). Further multivariate analysis revealed significant associations between PFS and age ≥81 years (hazard ratio (HR), 2.96; 95% confidence interval (CI), 1.35–6.50; *P*=0.0069), PS ≥2 (HR, 3.23; 95% CI, 1.45–7.22; *P*=0.0043), and stage III–IV (HR, 2.97; 95% CI, 1.06–8.34; *P*=0.039). In contrast, OS showed a significant association only with age ≥81 years (HR, 5.84; 95% CI, 1.67–20.40; *P*=0.0057) (Table 3).

Based on these findings, we defined the “Pola-3 score,” assigning one point each for age ≥81 years, PS ≥2, and stage III–IV based on each HR value. Patients with a Pola-3 score of 0, 1, or 2–3 were classified as low (n=39), intermediate (n=54), and high risk (n=36), respectively. A comparison of the IPI, NCCN-IPI, and Pola-3 scores showed that the Pola-3 score showed a numerically higher concordance index for PFS and OS compared with IPI and NCCN-IPI (concordance index, 0.74 and 0.78; standard error, 0.037 and 0.044, respectively) (Table 4). Based on the Pola-3 score, the three risk groups showed clear stratification for PFS (*P*=0.0000092; Figure 3) and OS (*P*=0.0016; Supplementary Figure 2).

Discussion

In this study, we identified age ≥ 81 years, PS ≥ 2, and stage III–IV as independent poor prognostic factors in Pola-R-CHP-treated patients with DLBCL. By integrating these variables into the Pola-3 score, we demonstrated that patient prognosis could be stratified in a manner that differed from the conventional IPI and NCCN-IPI. In our previous comparative study between Pola-R-CHP and R-CHOP [5], prognostic analyses within the Pola-R-CHP-treated patients did not yield statistically significant results, likely due to the limited number of patients and shorter follow-up duration at that time. This study, which enrolled a larger Pola-R-CHP cohort with a longer observation period, enabled the identification of independent prognostic factors and development of the Pola-3 score.

Subgroup analyses in the POLARIX study demonstrated specific subgroups that responded better to Pola-R-CHP therapy than to R-CHOP [2]. Although elevated LDH, extranodal sites (≥ 2), and age (≥ 61 years) are recognized as poor prognostic factors in the IPI and NCCN-IPI, patients in these subgroups treated with Pola-R-CHP exhibited significantly improved outcomes compared with those treated with R-CHOP. The robust therapeutic potential of Pola-R-CHP may have overcome these traditional risks, which likely explains why they were no longer extracted as poor prognostic factors in our cohort.

Conversely, among the identified poor prognostic factors, age and PS represent host-related factors. The POLARIX study reported that Pola-R-CHP did not increase the incidence of grade ≥ 3 AEs compared with R-CHOP and had a 3% NRM rate, but it excluded patients aged ≥ 81 years, and the PS ≥ 2 subgroup in the POLARIX study was not specifically analyzed for NRM risk. Our study demonstrated a higher NRM in patients aged ≥ 81 years or with PS ≥ 2 than in the POLARIX study. Furthermore, while the incidence of grade 3–4 neutropenia and FN was high in the entire cohort, that of grade 3–4 infection was higher in patients aged ≥ 81 years or with PS ≥ 2. Previous studies have reported an increased incidence of neutropenia in older adults and an elevated NRM in patients aged ≥ 81 years treated with Pola-R-CHP [8, 16]. Similarly, even with R-CHOP, increased NRM has been observed in patients aged ≥ 81 years and frail individuals [17, 18]. Therefore, in these vulnerable subgroups, the superior tumor control with Pola-R-CHP over R-CHOP was likely offset by its treatment-related toxicities, resulting in their extraction as poor prognostic factors. The POLAR BEAR trial is currently underway, comparing Pola-R-miniCHP with R-miniCHOP—the current standard of care for elderly and frail patients with DLBCL—as first-line therapy [19]. Despite this progress, reducing NRM in this vulnerable population remains a critical challenge. In our cohort, although the dose was reduced for most patients aged ≥ 81 years or with PS ≥ 2, NRM in these subgroups remained higher than the overall rate reported in the POLARIX study. Dose reduction did not prevent grade 3–4 neutropenia or FN in patients with PS ≥ 2. Conversely, the incidence of grade 3–4 neutropenia and FN was not significantly higher in patients aged ≥ 81 years than in the entire cohort. Although these specific AEs were controlled with dose reduction and G-CSF prophylaxis, dose reduction alone did not prevent other NRM-related AEs, suggesting that it may be insufficient, and alternative treatment strategies are needed for frail patients. Given our small sample size, further large-scale studies are warranted to validate our findings.

Our study has some limitations. First, it was a retrospective study conducted at two institutions with no external validation, and the Pola-3 score served as an exploratory risk stratification tool. Large-scale multicenter studies are required to confirm the prognostic potential of the Pola-3 score across all Pola-R-CHP-treated patients with DLBCL, rather than being limited to this specific cohort. Second, poor prognostic immunological and genetic factors of DLBCL, such as DEL and DHL [20–23], were not sufficiently investigated. Although stage III–IV is included in the Pola-3 score, and patients with DHL frequently present with advanced-stage disease at diagnosis [24], the efficacy of Pola-R-CHP for patients with DHL has not been established in the POLARIX study. DHL was not identified as a poor prognostic factor in our analysis, possibly due to the extremely small number of patients with DHL in our cohort.

Furthermore, recent reports have categorized DLBCL into genetic subtypes, demonstrating associations between clinical stage at diagnosis and specific genetic profiles [25, 26], and the efficacy of Pola-R-CHP varies across DLBCL genetic subtypes [27, 28]. Our study lacks data regarding these genetic subtypes. The identification of stage III–IV as a tumor-related factor in the Pola-3 score may be driven by these underlying

high-risk genetic backgrounds, and further research is necessary to elucidate this relationship. Third, although the Pola-3 score was shown to be a sensitive prognostic model for OS, the limited number of OS events may have impacted the statistical accuracy of our analysis.

In conclusion, age ≥ 81 years, PS ≥ 2, and stage III–IV were identified as independent prognostic factors for patients with newly diagnosed DLBCL treated via Pola-R-CHP in a real-world setting. Although these prognostic factors differ from those constituting the conventional IPI and NCCN-IPI, external validation in independent cohorts is warranted. In addition, further studies are warranted to develop strategies for NRM prevention in frail patients, such as those aged ≥ 81 years or with PS ≥ 2, following Pola-R-CHP treatment.

Declarations

Norimichi Hattori, Shotaro Shimada, and Kouji Yanagisawa contributed to the study conception and design. Material preparation was performed by Yohei Sasaki, Hirotaro Sakaki, Hidenori Hayashi, and Natsuki Kawamata. Data collection was performed by Yohei Sasaki, Ayano Shirai, Kazuki Nagao, Kai Kuroiwa, Hinako Narita, and Reiko Okamura. Analysis was performed by Yohei Sasaki, Megumi Watanuki, and Nana Arai. The first draft of the manuscript was written by Yohei Sasaki, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability statement: The data that support the findings of this study are openly available from Zenodo at https://doi.org/10.5281/zenodo.21019865.

Ethics statement: This study was approved by the Institutional Review Board of Showa Medical University (approval number: 2026-0154), which waived the requirement for informed consent due to the retrospective analysis of clinical data from our institutional database.

Author Contribution

Norimichi Hattori, Shotaro Shimada, and Kouji Yanagisawa contributed to the study conception and design. Material preparation was performed by Yohei Sasaki, Hirotaro Sakaki, Hidenori Hayashi, and Natsuki Kawamata. Data collection was performed by Yohei Sasaki, Ayano Shirai, Kazuki Nagao, Kai Kuroiwa, Hinako Narita, and Reiko Okamura. Analysis was performed by Yohei Sasaki, Megumi Watanuki, and Nana Arai. The first draft of the manuscript was written by Yohei Sasaki, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1 Characteristics of newly diagnosed patients with DLBCL treated with Pola-R-CHP

	Pola-R-CHP
Variable	n=129 (%)
Age, years, median at diagnosis (range)	74 (20–95)
Age category	
<41	5 (3.9)
41–60	13 (10.1)
61–75	53 (41.1)
76–80	26 (20.2)
≥81	32 (24.8)
Sex	
Male	72 (55.8)
Female	57 (44.2)
Stage	
I–II	54 (41.9)
III–IV	75 (58.1)
IPI	
Low	34 (26.4)
Low-Intermediate	31 (24.0)
High-Intermediate	32 (24.8)
High	32 (24.8)
NCCN-IPI	
Low	10 (7.8)
Low-Intermediate	41 (31.8)
High-Intermediate	55 (42.6)
High	23 (17.8)
LDH ratio	
≤1	61 (47.3)
>1–3	53 (41.1)
≥3	15 (11.6)
Performance status	

0–1	105 (81.4)
≥2	24 (18.6)
Number of extranodal sites	
0–1	86 (66.7)
≥2	43 (33.3)
Involvement in bone marrow, CNS, liver/GI tract, or lung	35 (27.1)
Dose intensity	
Full dose	27 (20.9)
Reduced dose	102 (79.1)
THP administered instead of DXR	
Yes	94 (72.9)
No	35 (27.1)
Primary CNS infiltration	
Yes	2 (1.6)
No	127 (98.4)
DLBCL type	
De novo	125 (96.9)
Transformed	4 (3.1)
COO evaluable	
GCB	49 (38.0)
Non-GCB	77 (59.7)
Unknown	3 (2.3)
MYC/BCL2 double hit	
Yes	5 (3.9)
No	73 (56.6)
Unknown	51 (39.5)
Double protein expression	
Yes	16 (12.4)
No	59 (45.7)
Unknown	54 (41.9)

DLBCL, diffuse large B-cell lymphoma; Pola-R-CHP, polatuzumab vedotin, rituximab, cyclophosphamide, doxorubicin, prednisolone; IPI, international prognosis index; NCCN, National Comprehensive Cancer Network; COO, cell of origin; GCB, germinal center B-cell-like; LDH, lactate dehydrogenase; CNS, central nervous system; GI, gastrointestinal tract; THP, pirarubicin; DXR, doxorubicin.

Data are presented as n (%).

Table 2 Adverse events during Pola-R-CHP treatment in 129 patients with DLBCL

	All grades		Grade 3–4	
	n	%	n	%
Hematological toxicity				
Anemia	100	77.5	30	23.3
Neutropenia	100	77.5	62	48.1
Thrombocytopenia	73	56.6	18	14.0
Non-hematological toxicity				
Alopecia	45	34.9	0	0.0
Constipation	43	33.3	1	0.8
Dysgeusia	27	20.9	0	0.0
Dermatopathy	26	20.2	1	0.8
Peripheral neuropathy	26	20.2	0	0.0
Anorexia	25	19.4	2	1.6
Infection	17	13.2	11	8.5
Febrile neutropenia	15	11.6	15	11.6
Hepatopathy	8	6.2	2	1.6
Coronavirus disease 2019	8	6.2	1	0.8
Thrombosis	7	5.4	2	1.6
Diarrhea	7	5.4	1	0.8
Heart failure	4	3.1	4	3.1
Renal dysfunction	6	4.7	5	3.9
Infusion reaction	5	3.9	0	0.0
Gastric ulcer	2	1.6	0	0.0
Gastrointestinal bleeding	2	1.6	1	0.8
Cephalalgia	1	0.8	0	0.0
Insomnia	1	0.8	0	0.0
Hyperglycemia	1	0.8	1	0.8
Osteoporosis	1	0.8	0	0.0
Dizziness	1	0.8	0	0.0
Lumbago	1	0.8	0	0.0

Hypothyroidism	1	0.8	0	0.0
Hearing loss	1	0.8	1	0.8
Atrial fibrillation	1	0.8	0	0.0
Pancreatitis	1	0.8	0	0.0

DLBCL, diffuse large B-cell lymphoma; Pola-R-CHP, polatuzumab vedotin, rituximab, cyclophosphamide, doxorubicin, prednisolone

Table 3 Multivariate analysis of PFS and OS in 129 patients with newly diagnosed DLBCL treated with Pola-R-CHP

	PFS				OS			
	HR	95% CI		*p*	HR	95% CI		*p*
Age, <81 or ≥81 years	2.96	1.35	6.50	0.0069	5.84	1.67	20.40	0.0057
LDH level, normal or elevated	1.60	0.68	3.73	0.28	1.17	0.30	4.59	0.83
Performance status, 0–1 or ≥2	3.23	1.45	7.22	0.0043	3.49	0.92	13.29	0.067
Extranodal sites (bone marrow, CNS, liver/GI tract, or lung), No or Yes	1.44	0.66	3.15	0.36	0.96	0.26	3.53	0.95
Stage, I–II or III–IV	2.97	1.06	8.34	0.039	6.25	0.75	52.01	0.090

PFS, progression-free survival; OS, overall survival; DLBCL, diffuse large B-cell lymphoma;

Pola-R-CHP, polatuzumab vedotin, rituximab, cyclophosphamide, doxorubicin, prednisolone; LDH, lactate dehydrogenase;

CNS, central nervous system; GI, gastrointestinal tract; HR, hazard ratio; CI, confidence interval

Table 4 Concordance index of PFS and OS in 129 patients with newly diagnosed DLBCL treated with Pola-R-CHP

	PFS			OS		
	Concordance index	SE	HR	Concordance index	SE	HR
IPI	0.71	0.038	2.09	0.72	0.059	2.12
NCCN-IPI	0.71	0.038	2.77	0.71	0.053	2.59
Pola-3 score	0.74	0.037	3.30	0.78	0.044	4.90

PFS, progression-free survival; OS, overall survival; DLBCL, diffuse large B-cell lymphoma; Pola-R-CHP, polatuzumab vedotin, rituximab, cyclophosphamide, doxorubicin, prednisolone; IPI, international prognosis index; NCCN, National Comprehensive Cancer Network; SE, standard error; HR, hazard ratio

Figures

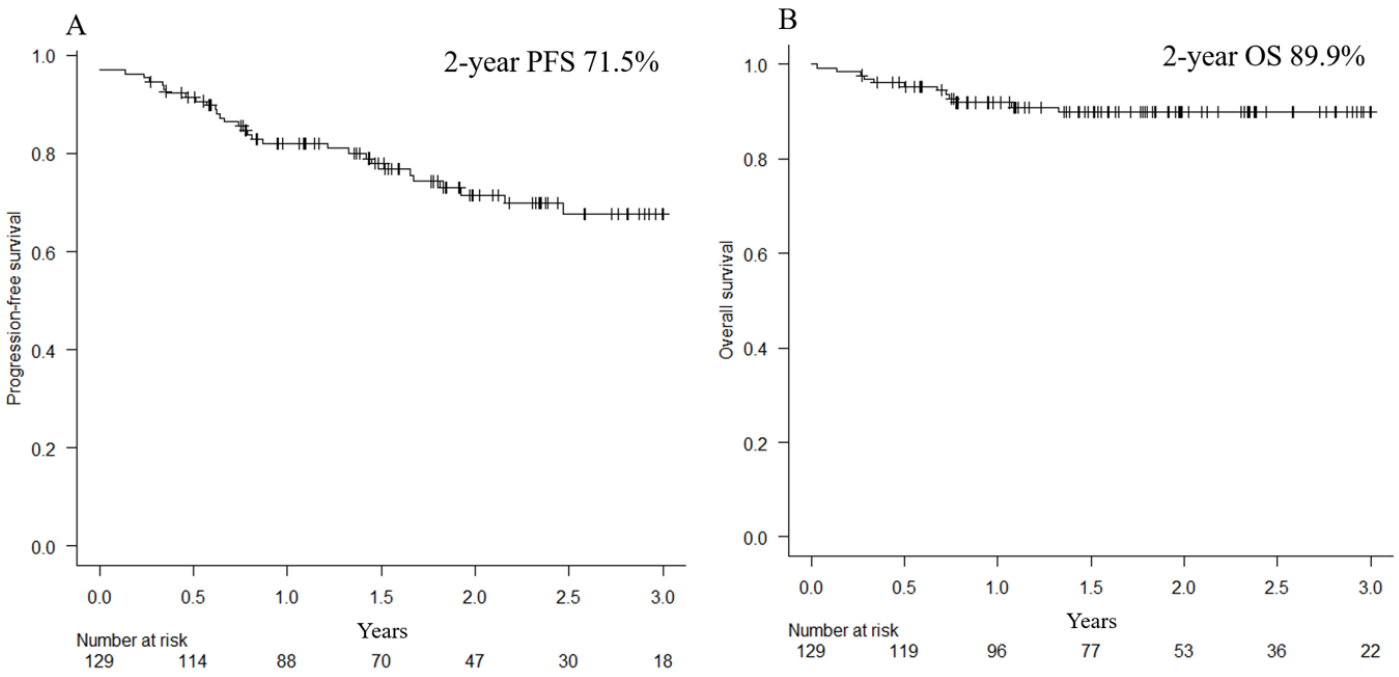


Figure 1

(A) Progression-free survival (PFS) and (B) overall survival (OS) in patients with diffuse large B-cell lymphoma treated with polatuzumab vedotin, rituximab, cyclophosphamide, doxorubicin, and prednisolone

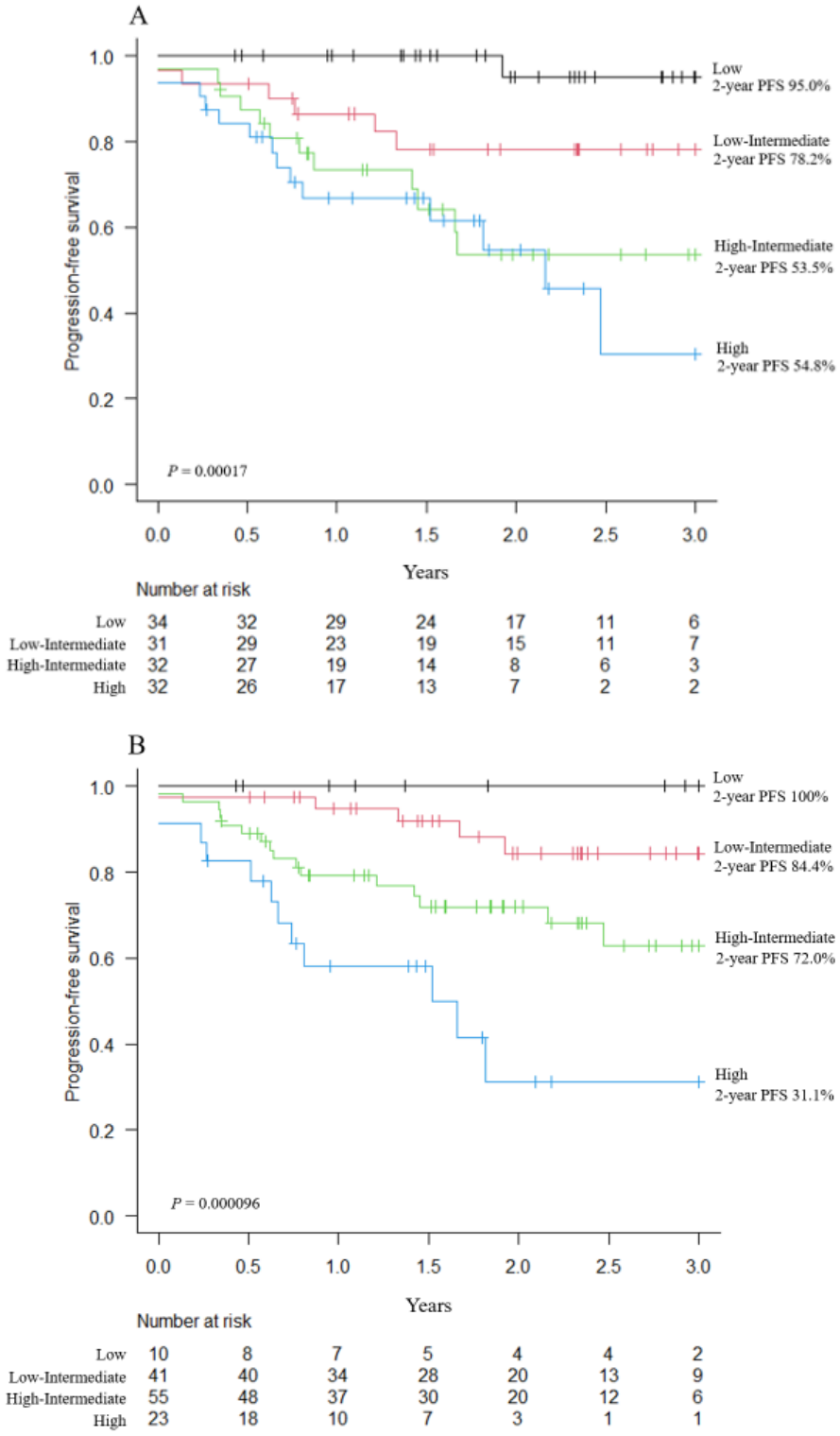


Figure 2

Progression-free survival (PFS) in patients with diffuse large B-cell lymphoma treated with polatuzumab vedotin, rituximab, cyclophosphamide, doxorubicin, and prednisolone stratified according to the (A) International Prognostic Index and (B) National Comprehensive Cancer Network International Prognostic Index

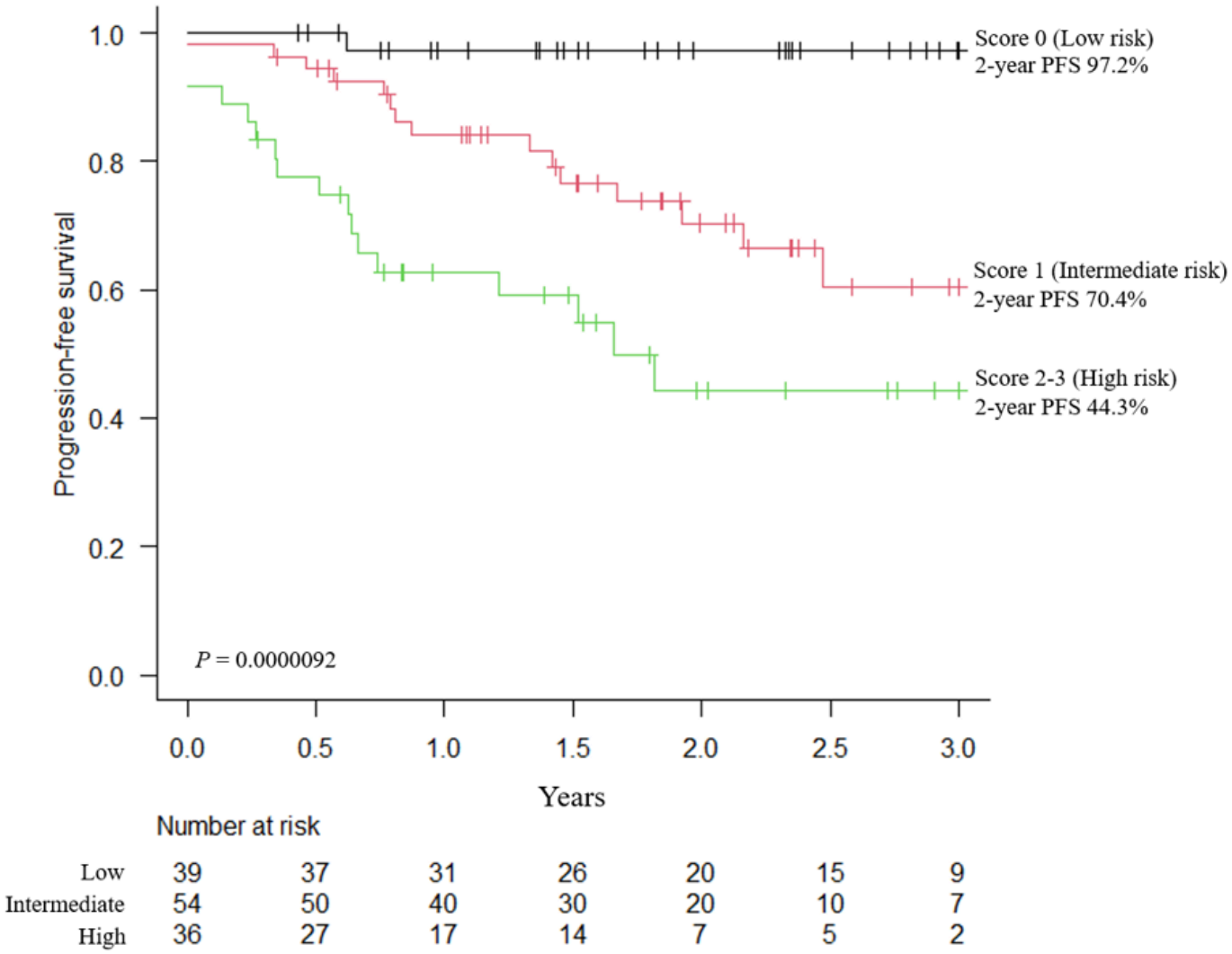


Figure 3

Progression-free survival (PFS) in patients with diffuse large B-cell lymphoma treated with polatuzumab vedotin, rituximab, cyclophosphamide, doxorubicin, and prednisolone stratified by the Pola-3 score

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryTable1.docx
- SupplementaryFig.2.docx
- SupplementaryFig.1.docx