Outcomes of DA R-EPOCH versus R-CHOP in treating patients diagnosed with Double-Expressor lymphoma

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Introduction

Diffuse Large B Cell Lymphoma (DLBCL) is a type of non-Hodgkin lymphoma. It is characterized as a cancer of white blood cell, specifically lymphocytes. The disease can be divided into subgroups based on cell of origins (COO) and protein expression patterns, which implicates prognosis. DLBCL can arise from germinal B cells (GCB) or activated B cells (ABC)[1]. They are found to be associated with expression of two proteins c-Myc and Bcl2. The concomitant overexpression of both proteins in the absence of translocation is categorized as double expressor lymphoma (DEL)[2]. Despite their heterogeneity, DLBCL is traditionally treated with a combination of rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP)[2]. Due to its aggressive nature, it is thought to be of benefit to treat DEL subtype with a more intense chemotherapy regimen – dose-adjusted R-EPOCH (DA-R-EPOCH) consisting of rituximab, etoposide phosphate, prednisone, vincristine, cyclophosphamide, and doxorubicin.

Aims and Objectives

In this research project, we seek to investigate the clinical outcomes of DEL patients treated with DA R-EPOCH compared to patients treated with standard R-CHOP regimen. The primary objective is to identify progression-free survival (PFS) and overall survival (OS) between two groups. The secondary objective is demographics of eligible patients.

Methods

Retrospective chart review was conducted. A total of 840 DLBCL patients treated at Beaumont Health system from 2014 to 2019 were identified, of which 44 was confirmed to have DEL phenotype. There were 24 patients treated with R-CHOP and 10 were treated with DA R-EPOCH; the other 10 patients either refused treatment or lacked survival information. Information about relapse date, date of death, disease stage, age, gender, race, and ethnicity were collected and analyzed.

Results

Table 1. Demographic information of patients by treatments.

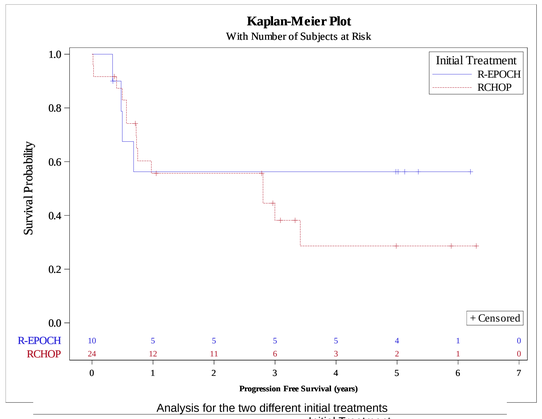
Comparison of initial treatment groups

	Initial Treatment R-EPOCH (N=10)	RCHOP (N=24)	P-value
Race, n (%)			0.6618[2]
Asian	0 (0.0%)	1 (4.2%)	
Other	1 (10.0%)	1 (4.2%)	
White or Caucasian	9 (90.0%)	22 (91.7%)	
Ethnicity, n (%)			0.5527[2]
Arab or Middle Eastern Descent	1 (10.0%)	0 (0.0%)	
Hispanic/Latino	0 (0.0%)	1 (4.2%)	
Non Hispanic/Latino	9 (90.0%)	21 (87.5%)	
Other	0 (0.0%)	2 (8.3%)	
Age (years)			0.0323[3]
N	10	24	
Mean (SD)	67.4 (8.1)	74.5 (8.6)	
Median	66.4	75.2	
Range	57.6, 79.8	51.6, 87.9	
Stage, n (%)			0.6641[2]
I	0 (0.0%)	3 (17.6%)	
II	1 (10.0%)	2 (11.8%)	
III	4 (40.0%)	6 (35.3%)	
IV	5 (50.0%)	6 (35.3%)	

[1]Logrank p-value; [2]Fisher Exact p-value; [3]Equal variance two sample t-test;

There were no significant difference in racial markup, ethnicity, stages, and overall outcomes between two groups. There was a difference in age with R-CHOP group to be about 9 years older than R-EPOCH group on average

Figure 1. Kaplan-Meier plot and detailed analysis of progression-free survival (PFS)



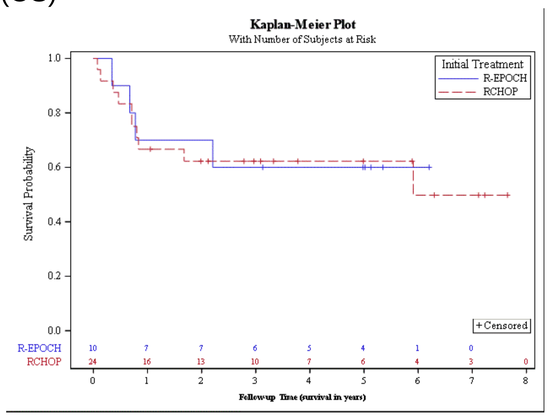
Analysis for the two different initial treatments

	Initial Treatment R-EPOCH (N=10)	RCHOP (N=24)	P-value
Progression Free Survival (years)			0.4569[1]
Events/N	4/10	14/24	
Median (95% CI)	NE (0.34 - NE)	2.80 (0.72 - NE)	
Hazard Ratio (95% CI)	0.66 (0.21 - 2.02)	Reference	
1 Years Est (95% CI)	0.56 (0.21 - 0.81)	0.56 (0.33 - 0.73)	
3 Years Est (95% CI)	0.56 (0.21 - 0.81)	0.38 (0.18 - 0.59)	
5 Years Est (95% CI)	0.56 (0.21 - 0.81)	0.29 (0.09 - 0.52)	

[1]Logrank p-value;

There was not a significant difference in the PFA rates between the two treatments (p-value=0.46). The median PFS for the R-EPOCH group is not calculated because more than half of them had not relapsed at the end of the follow-up time frame.

Figure 2. Kaplan-Meier plot and detailed analysis of overall survival (OS)



Comparison of initial treatment groups

	Initial Treatment R-EPOCH (N=10)	RCHOP (N=24)	P-value
Follow-up Time (survival in days)			0.9617
Events/N	4/10	10/24	
Median (95% CI)	NE (0.34 - NE)	5.91 (0.80 - NE)	
Hazard Ratio (95% CI)	1.03 (0.33 - 3.24)	Reference	
1 Years Est (95% CI)	0.70 (0.33 - 0.89)	0.67 (0.44 - 0.82)	
3 Years Est (95% CI)	0.60 (0.25 - 0.83)	0.62 (0.40 - 0.78)	
5 Years Est (95% CI)	0.60 (0.25 - 0.83)	0.62 (0.40 - 0.78)	

There was not a significant difference in the survival rates between the two treatments (p-value=0.94). The median survival for the R-EPOCH group is not calculated because more than half of them were still living at the end of the follow-up time frame.

Conclusions

- There was not a significant difference in overall survival and progression-free survival between DA R-EPOCH regimen versus standard R-CHOP approach.
- No generalized conclusion can be drawn from this study due to the small sample size. A larger sample size is needed to further examine the benefit of DA R-EPOCH.

References

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2. Reagan PM, Davies A. Current treatment of double hit and double expressor lymphoma. Hematology. 2017. doi:10.1182/asheducation-2017.1.295