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A RETROSPECTIVE STUDY OF DIFFUSE LARGE B CELL LYMPHOMA (DLBCL) FROM A TERTIARY CANCER HOSPITAL IN SOUTH INDIA

Oncology

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ABSTRACT

Introduction: Diffuse large B cell lymphoma (DLBCL) is the most common lymphoid neoplasm in adults. It accounts for 30% of Non-Hodgkin's lymphomas (NHLs) diagnosed annually [1].The present study aims to evaluate the outcome of the patients who received CHOP(Cyclophosphamide, Adriamycin, Vincristine, Prednisolone) and R(Rituximab)-CHOP treatment and also correlates the different patient characteristics. **Materials & Methods:** This was a retrospective analysis carried out on 65 patients, diagnosed with DLBCL treated from December 2013 to July 2019. **Results:** A total of 65 cases were studied and their different clinical characteristics are presented in (Table 1). The median age of the study population was 44 years (19–75 years). The male-to-female ratio was 1:0.5. 3year OS (overall survival) was 32% and 43% in CHOP and R-CHOP group and statistically, a significant difference was seen in both the groups p<0.001. **Conclusion:** Rituximab based chemoimmunotherapy showed better response rate irrespective of cell of origin.

KEYWORDS

Diffuse Large B cell Lymphoma, CHOP, R-CHOP

INTRODUCTION

Diffuse large B cell lymphoma (DLBCL) is the most common lymphoid neoplasm in adults. It accounts for 30% of Non-Hodgkin's lymphomas (NHL) diagnosed annually [1]. It is fatal if left untreated, but with timely and appropriate treatment, approximately two-thirds of all people can be cured [1,2,3]. A combination of chemotherapy and a monoclonal antibody targeting CD20 remains the backbone of treatment. The introduction of Rituximab has improved the outcomes, and R-CHOP is the most widely used standard regimen [3, 4]. We conducted a retrospective analysis to describe the clinical profile and outcomes of DLBCL patients who received CHOP and R-CHOP [5,6].

MATERIALS AND METHODS

This was a retrospective analysis carried out on 65 patients, diagnosed with DLBCL treated from December 2013 to July 2019. Pathologically confirmed DLBCL patients were included. A thorough history taking and complete clinical assessment was done. Complete blood count, blood biochemistry, bone marrow (BM) biopsy and histopathological examination (HPE) were done. Immunohistochemistry was done on the biopsy blocks to confirm the diagnosis. Neck, Chest, Abdominal and Pelvic computed tomography (CT) scans or positron emission tomography (PETCT) scan was done on all patients for staging workup. Staging was done by Ann Arbor staging system. All patients received chemotherapy with or without Rituximab. We analysed the data on clinical characteristics, IPI score, treatment and treatment response. The outcomes were studied based on the risk and the addition of rituximab to chemotherapy. Surveillance was done based on the standard criteria.

Table 1: Characteristics Of Diffuse Large B Cell Lymphoma (DLBCL).

Parameters	Attributes	Group				Total	Chi-square value	P-value	Hz risk ratio
		CHOP		R-CHOP					
Sex	Male	12	63%	33	72%	45	0.46	0.49	<1
	Female	7	37%	13	28%	20			
Residence	West Bengal	12	63%	32	70%	44	0.81	0.66	<1
	Karnataka	7	37%	13	28%	20			
	AP and TN	0	0%	1	2%	1			
Imaging	PET-CT	6	32%	37	80%	43	14.33	0.0001	>1
	CECT	13	68%	9	20%	22			
BM_PET	Involved on PET	1	5%	6	13%	7	0.74	0.38	<1
	Not involved on PET	17	89%	40	87%	57			
BM_PSIS (posterior superior iliac spine)	Involved	4	21%	4	9%	8	1.902	0.16	<1
	Not Involved	15	79%	42	91%	57			
Stage	I	3	16%	3	7%	6	2.45	0.0016	>1
	II	6	32%	14	30%	20			
	III	1	5%	6	13%	7			
	IV	9	47%	23	50%	32			
HPE	GCB	1	5%	13	28%	14	10.03	0.018	>1
	Non GCB	4	21%	16	35%	20			
	DLBCL-NOS	14	74%	15	33%	29			
	Others	0	0%	2	4%	2			
B symptoms	Yes	9	47%	30	65%	39	1.78	0.18	<1
	No	10	53%	16	35%	26			
Bulky	Yes	4	21%	10	22%	14	0.004	0.95	<1
	No	15	79%	36	78%	51			
Site_Bulky		15	79%	36	78%	51			
	Mediastinum	0	0%	1	2%	1			
	Cervical LN	1	5%	0	0%	1			
	Colon	0	0%	1	2%	1			
	Common iliac	0	0%	1	2%	1			
	Gastrohepatic node	0	0%	1	2%	1			
	Inguinal	0	0%	1	2%	1			
	Ingunal	0	0%	1	2%	1			
	Mediastinum	2	11%	1	2%	3			
	Neck node	0	0%	1	2%	1			
	Rectum	0	0%	1	2%	1			
	Tonsil	1	5%	0	0%	1			
	Tonsil and neck node	0	0%	1	2%	1			

Extra nodal _Site	Yes	13	68%	28	61%	41	0.32	0.56	<1
	No	6	32%	18	39%	24			
IPI Score	0-1	9	47%	13	28%	22	5.66	0.00012	>1
	2	4	21%	12	26%	16			
	3	4	21%	14	30%	18			
	4-5	2	11%	7	15%	9			
HDM TX	Yes	0	0%	8	17%	8	3.76	0.09	>1
	No	19	100%	38	83%	57			
RT(radiotherapy)	Yes	0	0%	8	18%	8	3.86	0.04	>1
	No	19	100%	37	82%	56			
Response_Imaging	PET	8	42%	36	86%	44	12.39	0.00	>1
	No Imaging	4	21%	2	5%	6			
	CECT	7	37%	4	10%	11			
Response	CR	11	65%	30	75%	41	1.82	0.40	<1
	PR	2	12%	6	15%	8			
	PD	4	24%	4	10%	8			
Alive	Lost to follow up	3	16%	3	7%	6	3.85	0.01	<1
	No	10	53%	23	50%	33			
	Yes	6	32%	20	43%	26			
RTX_ILD	Yes	0	0%	3	7%	3	1.29	0.25	<1
	No	19	100%	43	93%	62			
RTX_Rash	Yes	0	0%	1	2%	1	0.41	0.51	<1
	No	19	100%	45	98%	64			
VCR_PRES	Yes	0	0%	1	2%	1	0.41	0.51	<1
	No	19	100%	45	98%	64			
VCR_Neuropathy	Yes	0	0%	3	7%	3	1.29	0.25	<1
	No	19	100%	43	93%	62			

Mean age of the CHOP Was 43.53 with SD 13.33 years; R-CHOP was 45.02 with SD 16.09 years

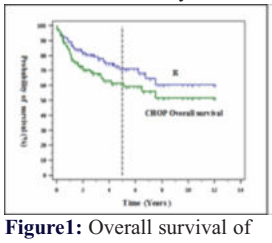

Figure1: Overall survival of R-CHOP and CHOP

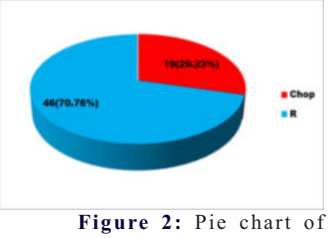

Figure 2: Pie chart of Treatment received CHOP and R-CHOP

RESULTS

A total of 65 patients were studied, and their clinical characteristics are depicted in Table 1. The median age of the cohort was 44 years (19–75 years). The male-to-female ratio was 1:0.5. Thirty-nine (60%) patients presented with B symptoms. Fourteen (21.5%) patients presented with bulky disease. Forty- one patients (63%) presented with extra-nodal disease. Bone marrow involvement was seen in 15 patients (23.18%) in our study. Positron Emission Tomography was used in 43(66%) patients for baseline imaging and response evaluation. CECT was used in 22(34%) patients for baseline imaging and response evaluation. The information regarding cell of origin (based of Hans algorithm) was available for 34 patients, out of which,14 (21%) were GCB (Geminal centre B-cell like), and 20 (30%) were NON-GCB. The distribution of patients presenting with low, low-intermediate, high-intermediate, and high risk as per the IPI score were 22(33.8%), 16(24.61%), 18 (27.5%), and 9 (13.8%), respectively. Treatment included CHOP chemotherapy or chemoimmunotherapy with R-CHOP. The number of cycles administered was 6 in number. The number of patients who received CHOP chemotherapy alone was 19 (29.2%), and those receiving R-CHOP were 46(70.8%) in our study[Figure 2]. 8(17.3%) patients in R-CHOP group received High dose methotrexate (HDMTX) after chemoimmunotherapy as CNS prophylaxis. Those presenting with bulky disease and/ or extra-nodal disease received radiation as per the guidelines. Six patients were lost to follow-up before response evaluation, and four patients died of toxicity. The CR rate was better with R-CHOP compared to CHOP (75% vs. 65%; P = 0.001) and good-risk international prognostic index (IPI) versus intermediate- and high-risk IPI (83.5% vs. 65.2%, P < 0.001). Of the total 65 patients, six patients were lost to follow up, 33 patients expired and 26 patients were alive. The median disease-free interval (DFI) in CHOP group was 23 months compared to R-CHOP group was 44months ($p<0.01$) which was statistically significant. Survival comparing those who received R-CHOP versus CHOP showed a significantly better survival in the arm containing rituximab – 43% versus 32% ($p<0.001$) respectively [Figure 1].

DISCUSSION

DLBCL accounts for 30% of all NHLs in western studies, and constitutes 60%–70% of all B cell lymphomas in Asia[2]. In India, the incidence has been documented to be 38%, similar to or slightly lesser than other Asian countries.[3] The median age in our study was 44years, which is almost a decade and a half lower than most western studies. The younger average age of Indian patients is consistent with the pattern seen in most other malignancies in India, due to the effect of a younger population in our country or due to the referral bias toward younger patients for treatment at higher centre. Male-to-female ratio was 1:0.5, with a male predominance. This is in concordance with all studies that have documented a higher incidence in males. 60% of patients in our study had B symptoms at presentation, which is higher than the expected 30% incidence[7]. The extra-nodal involvement in our presenting population is approximately 63%, which is double than what is documented in other studies[8]. Stomach is the most common extra-nodal site in our study which is consistent with other studies. Bone marrow involvement is seen in 23% in our study which is slightly higher than expected 10-20%incidence[9]. Most patients in this study belonged to the intermediate IPI risk group, more in the lower than the higher risk group. This is because most people presented at an earlier stage of the disease. Survival analysis comparing those who received R-CHOP versus CHOP showed a significantly better survival in the arm containing Rituximab 43% versus 32% respectively. Good response to Rituximab-based therapy improved the CR in our patients and also significantly affects EFS. Patients with high and intermediate IPI had low CR as compared to patients with low IPI. This reiterates the benefit seen with Rituximab reported in various studies.

CONCLUSION

The present study shows key differences in the presentation as compared to the west, which include median age of 49 years (almost a decade and half less), higher male-to-female ratio, more B symptoms, and extra-nodal disease. In-spite of administration of the standard therapeutic protocols, outcomes are significantly inferior in comparison to western countries. The biological factors such as non-GCB subtype, higher extra-nodal involvement, and patient-related factors such as socio-economic status, poor tolerability to treatment could contribute to inferior outcomes.

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