



## The 65th ASH Annual Meeting Abstracts

## POSTER ABSTRACTS

## 624.HODGKIN LYMPHOMAS AND T/NK CELL LYMPHOMAS: CLINICAL AND EPIDEMIOLOGICAL

**Patterns of Care and Impact of Initial Treatment in Peripheral T-Cell Lymphoma: Outcome Analysis from the Lymphoma Epidemiology of Outcomes (LEO) and Molecular Epidemiology Resource (MER) Prospective Cohort Study**

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### Background

Peripheral T-cell lymphomas (PTCLs) comprise a rare, heterogeneous group of non-Hodgkin lymphomas of mature T-cell origin. Most systemic (s) PTCL subtypes typically have poor outcomes with conventional anthracycline-based chemotherapy. Biomarker-driven and subtype-specific treatments are promising but unmet needs. Few benchmark studies exist to characterize the current real-world landscape of clinical and pathologic practice. We report the patterns of care and updated outcome data for PTCL patients enrolled in the LEO-MER multi-center prospective cohort study (ClinicalTrials.gov NCT02736357).

### Methods

Patients aged 18 years or older with newly diagnosed PTCL were prospectively enrolled in the University of Iowa/Mayo Clinic MER cohort (2002-2015) or the expanded LEO cohort (2015-2020). Clinical, pathology, treatment, and outcome data were abstracted from medical records using a standard protocol in both cohorts. Pathology underwent expert re-review based on WHO criteria. Overall survival (OS) was calculated from date of diagnosis to date of death or last follow-up. Event-free survival (EFS) was calculated from date of diagnosis to disease progression, initiation of 2<sup>nd</sup> line therapy, or death from any cause. EFS and OS were evaluated using Cox model and Kaplan-Meier estimator. Log-rank test was used to test the significance of difference between groups.

### Results

LEO-MER enrolled 1132 PTCL patients during the study period (462 MER and 670 LEO). Of these, 722 were sPTCLs (281 MER and 441 LEO), including PTCL-NOS (N=253, 35%), anaplastic large cell lymphoma (ALCL; N=180, 24.9% [74

ALK+, 106 ALK-), angioimmunoblastic T-cell lymphoma (AITL, N=164, 22.7%), extranodal NK-TCL (N=50, 6.9%), adult T-cell leukemia/lymphoma (N=33, 4.6%), enteropathy-associated TCL (N=19, 2.6%), and hepatosplenic TCL (N=13, 1.8%) ( **Table 1**). Median age at diagnosis was 60 years. M:F ratio was 1.5. Comparing LEO to MER, African American population was 15.4% vs 0.7%, and Hispanic was 10% vs 2.2%. Clinical characteristics were comparable between MER and LEO overall: PS $\geq$ 2, 20.9%; elevated LDH, 50.7%; stage III-IV, 67.6%; and IPI 2-5, 65.7%.

The most common 1<sup>st</sup> line chemotherapy regimens overall were CHOP-based (N=506, 70%), including 60% receiving CHOP-like chemotherapy in both MER and LEO cohorts (CHOP [N=268, 37%], CHOEP [N=91, 13%] or EPOCH [N=75, 10%]), and 16% with CHOP-like in combination with novel agents in LEO cohort (BV+ [N=41, 9.3%], azacitidine+ [N=11, 2.5%], pralatrexate+ [N=10, 2.3%], lenalidomide+ [N=8, 1.9%]) ( **Table 1**). More patients received etoposide in LEO (40.3%) than in MER (20.3%). 74 patients (10.3%) underwent consolidative SCT following induction chemotherapy (71 auto and 3 allo). 65 patients (11.2%) received frontline therapy on clinical trials. At a median follow-up of 9.4 years in MER and 4 years in LEO, 177 (MER) and 269 (LEO) events, and 150 (MER) and 206 (LEO) deaths were observed, respectively. The 3-year EFS and 4-year OS estimates for sPTCL were 46.3% and 59.1% in MER, and 40.4% and 51.3% in LEO. EFS and OS correlated with IPI scores and differed by sPTCL subtypes ( **Figure 1**). ALCL had superior survival, with 3-year EFS and 4-year OS of 78.2% and 90.5% for ALK+, and 65.9% and 76.9% for ALK-. Non-ALCL subtypes including PTCL-NOS and AITL had inferior outcomes, with 3-year EFS and 4-year OS of 31.4% and 42.8% for PTCL-NOS, and 33.4% and 50.7% for AITL. In subset analysis, the addition of etoposide to CHOP chemotherapy as either CHOEP or EPOCH was associated with improved OS for ALK- ALCL (p=0.038, log-rank), but not for ALK+ ALCL (p=0.75) or non-ALCL subtypes of PTCL-NOS and AITL (p=0.88).

**Conclusion**

The LEO-MER study is the largest prospective cohort study of PTCL to date. Patterns of care in the LEO cohort begin to incorporate novel agents in frontline therapy. Outcomes continue to mature with longitudinal follow-up and ongoing accrual, which poise to shape benchmarks in the contemporary era. The lack of benefit of etoposide adding to CHOP induction and poor overall survival of non-ALCL subtypes underscores the unmet need of therapeutic breakthrough for non-ALCL frontline treatment, particularly through clinical trials with biomarker-guided approaches incorporating novel agents.

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Table 1. LEO-MER PTCL Cohort Baseline Characteristics and Patterns of Care

Characteristic	LEO (2015-2020)		MER (2001-2015)		Total	
	No. of Patients	Percent	No. of Patients	Percent	No. of Patients	Percent
No. of Patients	441	100%	281	100%	722	100%
<b>PTCL Subtypes</b>						
<b>Nodal</b>						
PTCL-NOS	150	34.0%	103	36.7%	253	35.0%
AITL	98	22.2%	66	23.5%	164	22.7%
ALCL ALK-	66	15.0%	40	14.2%	106	14.7%
ALCL ALK+	41	9.3%	33	11.7%	74	10.2%
ENK-TCL	33	7.5%	17	6.0%	50	6.9%
EATL/METL	6	1.4%	15	5.3%	21	2.9%
HSTCL	10	2.3%	3	1.1%	13	1.8%
ATLL	29	6.6%	4	1.4%	33	4.6%
<b>Gender</b>						
Male	263	59.6%	173	61.6%	436	60.4%
Female	178	40.4%	108	38.4%	286	39.6%
<b>Age, years</b>						
Median (range)	60 (18-91)		58 (18-88)		60 (18-91)	
<b>Race</b>						
White	335	76.0%	247	91.5%	582	81.9%
African American	68	15.4%	2	0.7%	70	9.8%
Asian	16	3.6%	3	1.1%	19	2.7%
<b>Ethnicity</b>						
Hispanic	44	10.0%	6	2.2%	50	7.0%
Non-Hispanic	381	86.4%	224	83.0%	605	85.1%
<b>ECOG Performance Status</b>						
0-1	315	78.6%	222	79.9%	537	79.1%
≥2	86	21.4%	56	20.1%	142	20.9%
<b>Ann Arbor Stage</b>						
I-II	124	30.4%	97	35.4%	221	32.4%
III-IV	284	69.6%	177	64.6%	461	67.6%
<b>LDH</b>						
Normal	168	48.0%	124	51.2%	292	49.3%
Elevated	182	52.0%	118	48.8%	300	50.7%
<b>IPI Risk Category</b>						
0-1	95	31.1%	94	38.1%	189	34.2%
2	96	31.5%	57	23.1%	153	27.7%
3	75	24.6%	51	20.6%	126	22.6%
4-5	39	12.8%	45	18.2%	84	15.2%
<b>Treatment</b>						
CHOP-like chemo	238	54%	195	70%	434	60%
CHOP	103	23%	165	59%	268	37%
CHOEP	81	18%	10	3.6%	91	13%
EPOCH	54	12%	21	7.5%	75	10%
CHOP-like + Novel	71	16%	1	0.4%	72	10%
BV+CHP / CHEP	41	9.3%	0	0	41	5.7%
Aza+CHOP	11	2.5%	0	0	11	1.5%
PDX+CHOP	10	2.3%	0	0	10	1.4%
Len+CHOP/CHOEP/EPOCH	8	1.9%	1	0.4%	9	1.3%
<b>Other</b>						
ICE	9	2.2%	4	1.6%	13	1.8%
CEOP	6	1.4%	4	1.6%	10	1.4%
HyperCVAD	4	1.0%	5	2.0%	9	1.2%
SMILE	9	2.2%	0	0	9	1.2%
<b>Survival</b>						
Median follow-up (months)	47.8		112.1		70.6	
Events	209		177		446	
Deaths	206		150		356	
<b>3-year EFS</b>						
All			42.7% (95% CI: 39.2%, 46.6%)			
ALCL ALK+			78.2% (95% CI: 69.3%, 88.2%)			
ALCL ALK-			65.9% (95% CI: 57.2%, 78.0%)			
PTCL-NOS			31.4% (95% CI: 26.0%, 37.9%)			
AITL			33.4% (95% CI: 26.0%, 41.5%)			
<b>4-year OS</b>						
All			54.8% (95% CI: 51.1%, 58.7%)			
ALCL ALK+			90.5% (95% CI: 84.0%, 97.4%)			
ALCL ALK-			76.9% (95% CI: 68.8%, 86.0%)			
PTCL-NOS			42.8% (95% CI: 38.9%, 49.8%)			
AITL			50.7% (95% CI: 43.4%, 59.2%)			
Abbreviations: PTCL-NOS – peripheral T-cell lymphoma, not otherwise specified; AITL – angioimmunoblastic T-cell lymphoma; ALCL – anaplastic large cell lymphoma; ENK-TCL – extranodal NK/T cell lymphoma; HSTCL – hepatosplenic T cell lymphoma; EATL – enteropathy-associated T cell lymphoma; METL – monomorphic epithelioid intestinal T-cell lymphoma; ATLL – adult T-cell lymphoma/leukemia; ECOG – Eastern Clinical Oncology Group; LDH – lactate dehydrogenase; IPI – international prognostic index; BV – brentuximab vedotin; Aza – azacitidine; PDX – pralatrexate; EFS – event-free survival; OS – overall survival.						

Figure 1. LEO-MER PTCL Cohort Overall Survival by Classification

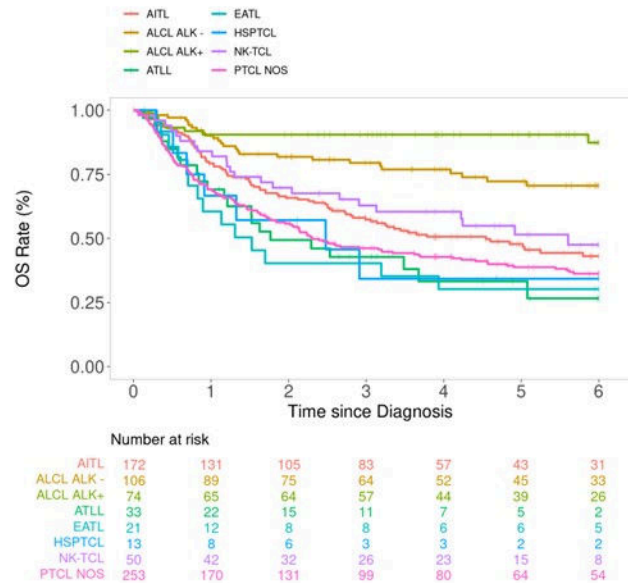


Figure 1