Hodgkin Lymphoma Post-Transplant Lymphoproliferative Disorder (HL-PTLD): A Comparative Analysis of Prognosis and Survival

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BACKGROUND

- HL-PTLD is an uncommon subtype of PTLD
- Little is known about survival, and there is limited prior data available regarding prognostication
- Treatment recommendations are based primarily on case series
- We present data here on survival and treatment of 192 patients with HL-PTLD, including survival outcomes, and a novel prognostic score

DATABASES

- Scientific Registry of Transplant Recipients (SRTR) curates prospectively collected patient level data on all solid organ transplant recipients in US
- The SEER Program collects information on patient demographics, tumor characteristics, stage at diagnosis, and date of death

METHODS

- HL-PTLD patients identified in the SRTR using standardized diagnosis HL-SEER controls identified in SEER using ICD-O-3 codes
- OS estimates calculated by Kaplan-Meier method
- OS of HL-PTLD and HL patients compared in cohorts matched by age, sex, year of diagnosis using the log-rank test, and Cox proportional hazards models used to adjust for extranodal status and race/ethnicity
- Effects of baseline characteristics on OS estimated using Cox proportional hazards models; analysis dichotomized using CART analysis, and used to derive a prognostic score
- Data missing in <30% of patients was multiply imputed

PATIENT/TREATMENT CHARACTERISTICS

- HBV and HCV uncommon (n=2 (1%) and 13 (7%) respectively
- Ann Arbor stage rarely documented; advanced stage recorded almost twice as often as early stage
- Tumors were frequently EBV positive (n=70, 74%), though recorded infrequently (n=94, 49%)
- 145 (76%) of patients received chemotherapy. Of these, 63 (43%) received a Hodgkin lymphoma targeted regimen such as ABVD (34, 23%), 35 (24%) received CHOP, and the remainder (47, 32%) received other chemotherapy regimens
- Most patients (130, 68%) underwent reduced immunosuppression, frequently in concert with chemotherapy or radiation therapy (XRT)

Patient Characteristic	HL-PTLD (n=192)	HL-SEER * (n= 12819)
Male	140 (73%)	6,955 (54%)
Age in years (IQR)	51 (25 – 61)	36 (24 – 53)
Caucasian (non-Hispanic white) †	156 (81%)	8,990 (70%)
Renal Allograft††	100 (52%)	
Prior PTLD	17 (9%)	
Months From SOT to PTLD (IQR)	83 (45 – 119)	
Stage		
I/II	22 (11%)	
III/IV	36 (19%)	
Unknown/missing	134 (70%)	
Extra-Nodal	80 (42%)	332 (3%)
Creatinine (median, IQR)	1.3 (1.0 – 1.7)	
NA	60 (31%)	
Karnofsky Performance Status 80-100	106 (55%)	
NA	70 (36%)	

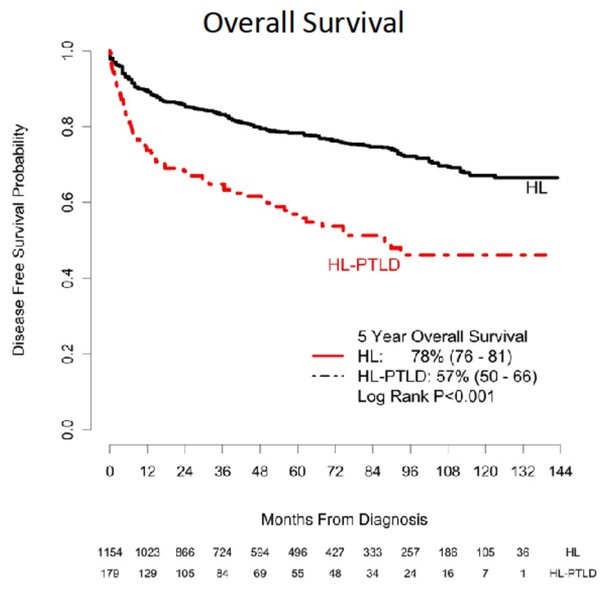
***includes patients without prior malignancies, and had age , survival time recorded**

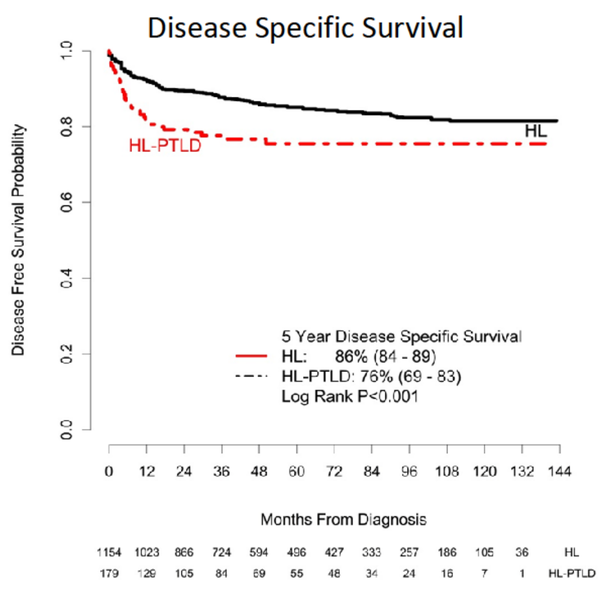
† Other races (HL-PTLD vs HL-SEER): African American 15 (8%) vs 1495 (12%); Hispanic 17 (9%) vs 1833 (14%); American Indian/Native Alaskan: 1 (1%) vs 33 (<1%); Asian 3 (2%) vs 353 (3%)

†† Non-renal allografts: Heart 40 (21%);liver 42 (22%); lung 8 (4%); pancreas 2 (1%)

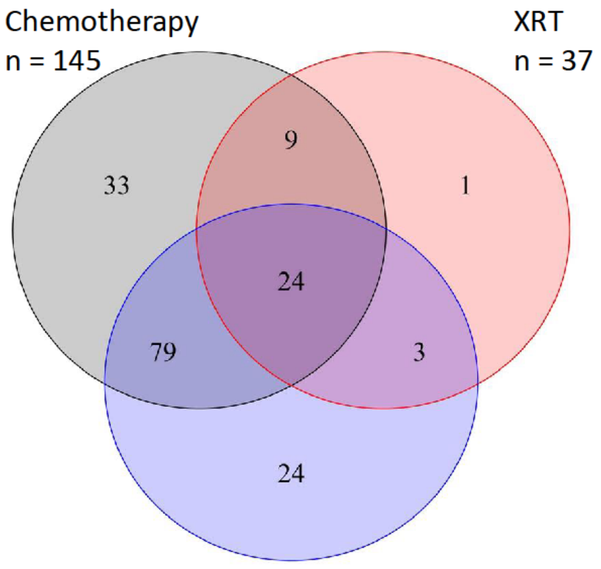
Abbreviations: HBV: Hepatitis B virus; HCV: Hepatitis C Virus; HL-PTLD: Hodgkin lymphoma post-transplant lymphoproliferative disorder; HL-SEER: Hodgkin lymphoma controls derived from SEER; IQR: Intraquartile range; NA: not available; SOT: solid organ transplant

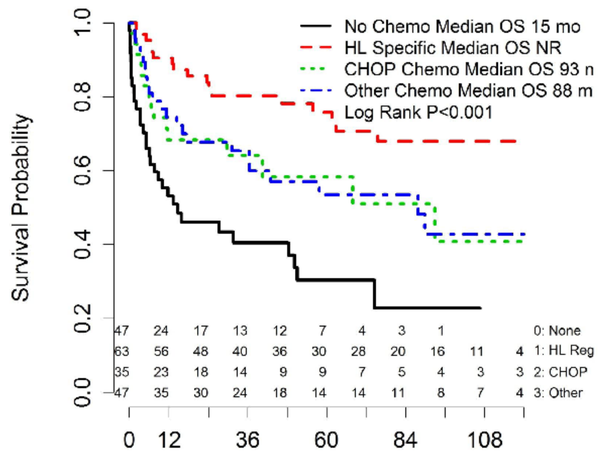
OVERALL AND DISEASE SPECIFIC SURVIVAL





TREATMENT



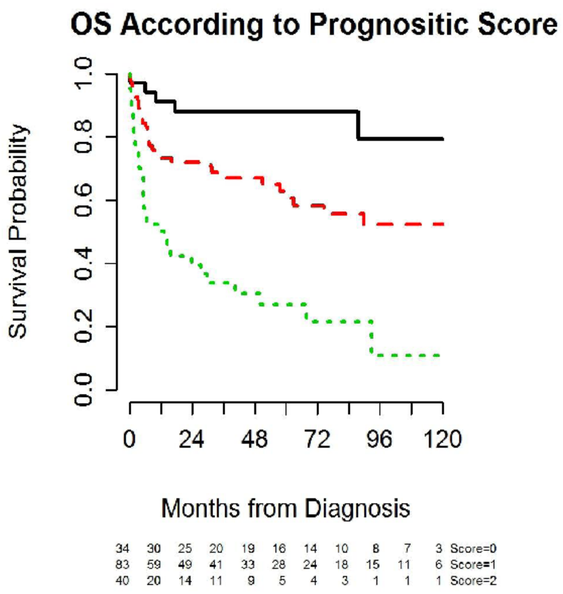


- Chemotherapy improved OS compared to no chemotherapy (HR 0.36 (0.23-0.57)
- Effects of XRT and reduced immunosuppression on overall survival were not significant (HR: 0.88 (0.52-1.5) and 0.75 (0.46-1.23) respectively)

PROGNOSTIC SCORE

Multivariable Model Including Chemotherapy		
Variable	**aHR (95% CI)**	**P-Value**
Age	**1.19 (1.05 - 1.34)**	**0.007**
Heart SOT	**1.32 (0.74 - 2.36)**	**0.34**
KPS<80	**1.11 (0.62 - 1.98)**	**0.73**
Serum creatinine	**1.62 (1.07 - 2.46)**	**0.03**
Chemotherapy		
HL Specific	**1**	**Ref**
CHOP	**1.62 (0.78 - 3.37)**	**0.19**
Other	**2.01 (1.04 - 3.89)**	**0.04**
None	**2.94 (1.56 - 5.55)**	**0.001**

Abbreviations: aHR: adjusted hazard ratio; CHOP: cyclophosphamide, doxorubicin, vincristine, prednisone; HL specific: Hodgkin lymphoma specific regimen; KPS: Karnofsky performance status



Prognostic Score: pts receive 1 point each for age ≥ 55 and creatinine ≥ 1.2

CONCLUSIONS

- HL-PTLD is associated with shorter survival than HL-SEER. Survival is affected by baseline patient characteristics, and can be used to identify patients at highest risk of death
- Treatment with chemotherapy is associated with longer survival, and regimens specific for Hodgkin lymphoma appear to be the most effective

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Hodgkin lymphoma

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