POSTER
209
October 20, 2022

IDWeek

Epstein-Barr Virus Surveillance in Lung Transplantation: Post-transplant Lymphoproliferative Disorder and Impact on Survival

Kim A, BS[1], Goldberg HJ, MD[2], Thaniyavarn T, MD[2], Kennedy JC, MD[2], Coppolino A, MD[3], Mallidi HR, MD[3], Lee SF, MD[2], Joyce MR, MS[1], Kovac V, MD[1], Issa NC, MD[1], Harris, CE, MD[1], LaCasce AS, MD[4], Sharma NS, MD[2], Baden LR, MD[1], Woolley AE, MD[1]

[1]Division of Infectious Diseases, Brigham and Women's Hospital, Boston, MA, [2]Division of Pulmonary and Critical Care Medicine, Brigham and Women's Hospital, Boston, MA, [3]Division of Thoracic Surgery, Brigham and Women's Hospital, Boston, MA, [4]Department of Medical Oncology, Dana-Farber Cancer Institute, Boston, MA

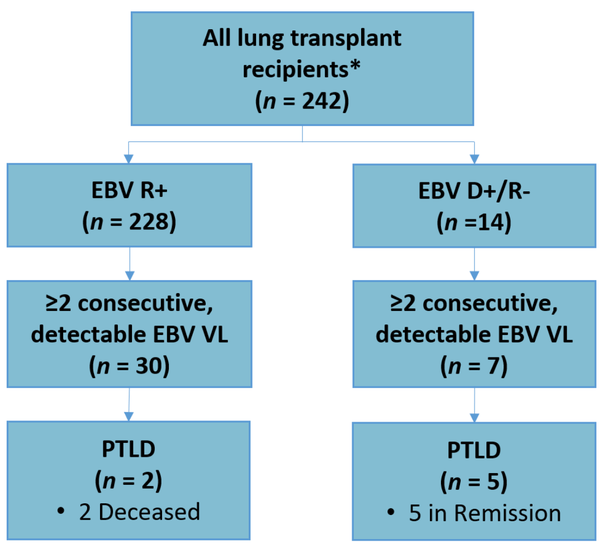
BACKGROUND

- EBV donor seropositive/recipient seronegative (D+/R-) status is a risk factor for PTLD
- The optimal surveillance strategy for PTLD post-lung transplant stratified by EBV serostatus for early diagnosis is unknown
- We assessed serial EBV viral loads (VL) for early diagnosis of PTLD and compared outcomes in EBV D+/R- and R+ lung transplant recipients

METHODS

- A single-center retrospective study of lung transplant recipients between Jan 2017 and Sept 2021, with a 6-month minimum follow-up
- Recipient characteristics, serial EBV VL (biweekly months 1-3, monthly 4-12; using the cobas quantitative PCR assay on serum), and clinical outcomes including PTLD, rejection, and all-cause mortality were assessed

STUDY COHORT



*7 recipients were excluded due to having died less than 1-month post-transplant and thus not having sufficient EBV VL testing.

BASELINE CHARACTERISTICS

Characteristic	EBV D+/R- (n = 14)	EBV R+ (n = 228)	P-value*
Median age, years [IQR]	61 [40, 66]	62 [55, 67]	0.428
Male, n (%)	9 (64)	129 (57)	0.782
White non-Hispanic, n (%)	13 (93)	194 (85)	0.699
Median lung allocation score [IQR]	41 [35, 73]	38 [34, 49]	0.312
Underlying disease, n (%)			
Restrictive lung disease	6 (43)	145 (64)	0.155
Obstructive lung disease	4 (29)	57 (25)	0.755
Cystic fibrosis	3 (21)	16 (7)	0.086
Pulmonary vascular disease	1 (7)	10 (4)	0.488
Bilateral transplant, n (%)	14 (100)	216 (95)	1.000
Cytomegalovirus D+/R- status, n (%)	3 (21)	82 (35)	0.390
Mean donor ischemic time, minutes (SD)	360 (119)	298 (90)	0.014
Mean cardiopulmonary bypass time, minutes (SD)	222 (49)	191 (58)	0.019
Pulmonary graft dysfunction, grade 3 at 72 hours, n (%)	2 (14)	17 (9)	0.628
Median length of stay, days [IQR]	21 [15, 30]	17 [12, 25]	0.234

CLIINICAL OUTCOMES

Outcome	EBV D+/R- (n = 14)	EBV R+ (n = 228)	P-value*
Chronic kidney disease stage 4 or 5 at 6 months, n (%)	2 (14)	39 (18)	1.000
Respiratory failure at 6 months, n (%)	0 (0)	26 (12)	0.379
Post-transplant lymphoproliferative disorder, n (%)	5 (36)	2 (1)	**<0.001**
Median weeks to PTLD diagnosis [IQR]	22 [17, 31]	17 [16, 17]	0.331
≥2 consecutive, detectable EBV VL, n (%)	7 (50)	30 (13)	**0.001**
Median weeks post-transplant** [IQR]	14 [7, 15]	10 [6, 24]	0.106
PTLD, n (%)	5/7 (71)	2/30 (7)	**0.001**
Median EBV VL, IU/mL [IQR]	255 [128,656]	739 [204,1239]	0.572
Rejection requiring treatment at 1 year, n (%)			
Acute cellular rejection	1/13 (7)	72/210 (34)	0.040
Antibody mediated rejection	1/13 (7)	16/210 (8)	1.000
Survival, n (%)			
6 months	14/14 (100)	213/228 (93)	1.000
1 year	13/13 (100)	188/205 (92)	0.608
2 years	12/13 (92)	140/163 (86)	1.000

*P-values are based on Fisher's two-sided exact test (for categorial variables) or the Wilcoxon rank-sum test (for continuous variables). **Time to ≥2 consecutive, detectable EBV VL was calculated based on the date of the second consecutive, detectable VL.

RESULTS

SURVEILLANCE

- 7 (50%) EBV D+/R- recipients had 2 consecutive, detectable EBV VL in the 1st year post-transplant vs. 30 (13%) R+ recipients (p=0.002)
  - Median weeks to 2 consecutive, detectable VL were 14 (IQR 7, 15) for D+/R- and 10 (IQR 6, 24) for R+
- 5 (71%) D+/R- recipients with 2 consecutive, detectable VL developed PTLD vs. 2 (7%) R+ recipients (p=0.001)
  - Median weeks to diagnosis of PTLD were 22 (IQR 17, 31) for D+/R- and 17 (IQR 16, 17) for R+
- Only recipients with 2 consecutive, detectable VL developed PTLD
- EBV VL level was not associated with development of PTLD

OUTCOMES

- 6-month outcomes were similar between D+/R- and R+
- There were no differences in mortality at 1 and 2-years stratified by serostatus
- All 5 D+/R- with PTLD were alive 2 years post-transplant, whereas both R+ PTLD recipients died <2 years post-transplant (p=0.048)

DISCUSSION

- Two consecutive, detectable EBV VL within the first-year post-lung transplant should prompt additional work-up for the early diagnosis of PTLD in all recipients regardless of the EBV VL level or serostatus
- Though the attack rate of PTLD was greater in EBV D+/R- recipients, survival outcomes were similar irrespective of serostatus

Andy Kim
Brigham and Women's Hospital, Boston, MA
jkim1@bwh.harvard.edu
(617) 899-5380