

EBV PCR titer correlates with metabolic tumor volume in PTLD post solid organ transplant (SOT)

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Background

- Tumor burden at the time of diagnosis of post-transplantation lymphoproliferative disorder (PTLD) post solid organ transplant (SOT) is an adverse prognostic factor
- PET scan is routinely used in diagnostic work up for PTLT. PET scan has high sensitivity and specificity for detecting both nodal and extra-nodal involvement

Objective

To determine whether quantitative EBV PCR titer at the time of diagnosis of PTLT post SOT correlates with metabolic tumor volume (MTV) calculated by PET scan

Methods

- Design: Retrospective review of 18 patients with PTLT post SOT who presented to Houston Methodist Cancer Center from July 2005 to June 2017
- Setting: Large quaternary hospital located in Texas medical center
- Participants: All patients >18 years were eligible for study
- Baseline characteristics, type of SOT, histology peripheral serum EBV PCR titer at diagnosis and MTV calculated by PET scan at diagnosis were collected
- MTV calculation was performed on a standard image display workstation (Siemens Syngo via) using lesion segmentation and volumetric calculation using a threshold of 40% maximum lesional SUV
- Serum EBV PCR was correlated with MTV calculated by PET scan at time of PTLT diagnosis

Baseline Characteristics

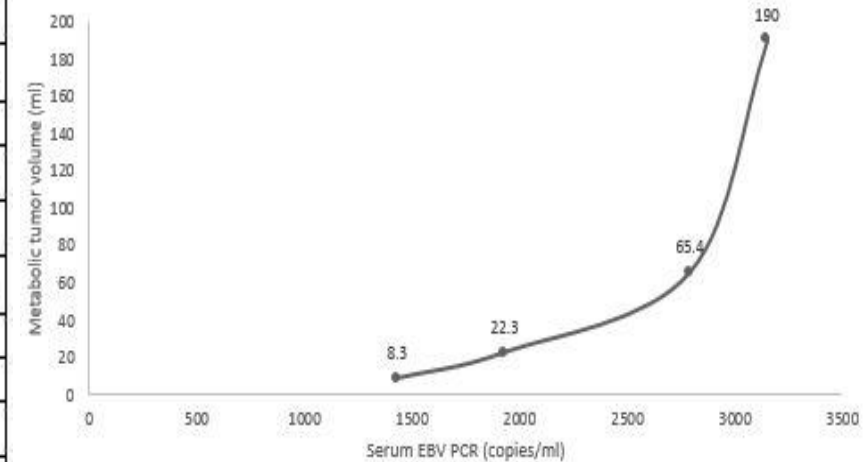
Characteristic	Value
Total patients	18
Sex	
Male	13 (72%)
Female	5 (28%)
Race	
White	14
African American	2
Asian	2
Median age	63.3 years (24-78 years)
Type of SOT	
Renal	5
Lung	5
Liver	4
Cardiac	3
Pancreas-Renal	1
Median time for PTLT post SOT	4.3 years (0.25-23 years)
Timing of PTLT	
<1 year post SOT	3 (2 lung & 1 liver)
>1 year post SOT	15
Histology of PTLT	
B-cell monomorphic	13
Polymorphic	3
T-cell monomorphic	1
Hodgkin	1
Peripheral EBV PCR performed	16
Detectable	11
Not-detectable	5

EBV PCR (copies/ml)	Histology	Treatment	Post treatment	
			Response	EBV PCR
4917	Monomorphic	RCHOPx1>Rx4+IFRT	CR	ND
7998	Monomorphic	Rx4	CR	ND
ND	Hodgkin	BvAVdx6	CR	ND
3150	Monomorphic	RCHOPx4>Rx4	Not available	Not available
2791	Monomorphic	RCHOPx6	Deceased	Not available
884	Polymorphic	Surgical resection	CR	ND
Not available	Polymorphic	Surgical resection+XRT>Rx4	CR	Not available
397	Monomorphic	Surgical resection+XRT>Rx4	CR	ND
Not available	Monomorphic	RCHOPx6>RESHAPx6	CR	Not available
187	Monomorphic	EBV CTLX2	CR	ND
ND	Monomorphic	Rx4	CR	ND
17400	Monomorphic (T-cell)	Etoposide>Bv	Deceased	ND
ND	Polymorphic	Rx4	CR	ND
ND	Monomorphic	RCHOPx3	CR	ND
ND	Monomorphic	RCHOPx2>Rx4	CR	ND
1931	Monomorphic	Rx4	CR	ND
1413	Monomorphic	Rx4	CR	ND
2865	Monomorphic	Rx4	CR	Not available

Results/Implications

- Patient characteristics are shown in Table 1
- Out of whole cohort only 3 patients had PTLT before 1 year post-transplant (2 lung transplant & 1 liver transplant recipient) vs 15 patients who had PTLT post 1 year of transplant.
- Data on serum EBV PCR was available on 16/18 patients.
- EBV PCR was detectable at time of diagnosis in 11/16 patients; most of them had monomorphic PTLT (Table 2)
- Out of whole cohort only 4 patients had EBV PCR titer along with PET scan at time of diagnosis of PTLT post SOT (Figure 1)

Figure 1. Correlation between MTV and EBV PCR at PTLT diagnosis



Conclusion

- EBV PCR has linear correlation with metabolic tumor volume at time of diagnosis in PTLT post SOT
- This correlation should be studied in a larger prospective setting for clinical outcome analysis

References

-Nijland M et al Transplant Direct 2016

-Ghobrial IM et al JCO 2005