IDWeek

Poster 2105

Early-onset and Late-onset BK Polyomavirus-associated Nephropathy: A 10-year Retrospective Analysis

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INTRODUCTION

- Polyomavirus-associated nephropathy (BKVAN) is one of the serious causes of allograft dysfunction and allograft loss in kidney transplant (KT) patients.
- Most of the patients were diagnosed with BKVAN within the first year after transplantation but some more cases of BKVAN occur later.
- A study focused on the differentiation between early and late-onset BKVAN is needed.

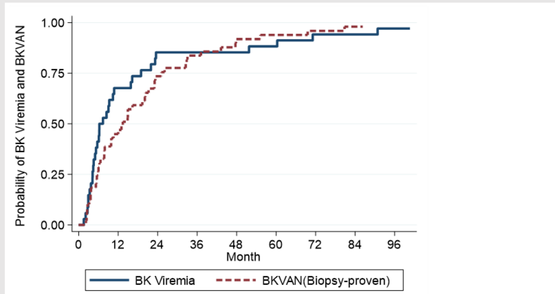
METHODS

- A retrospective cohort study
- Ramathibodi Hospital, Bangkok, Thailand
- January 2010 – December 2020
- The incidence of early-onset (diagnosed within 1 year) and late-onset (diagnosed after 1 year) BKVAN, as well as composite kidney allograft outcomes, were compared.
- Definitions
- **Probable BKVAN:** BK viremia > 10^3 copies/mL sustained in < 3 weeks
- **Presumptive BKVAN:** BK viremia > 10^4 copies/mL.
- **Biopsy-proven BKVAN:** viral cytopathic change, interstitial infiltration, tubulitis with positive SV40 staining on kidney allograft biopsy.

RESULTS

- From 1032 KT recipients, 645 (62.5%) were screened for BK viral infection. BKVAN was diagnosed in 83 (12.8%) patients.
- Of those, 46 (55.4%) and 37 (44.6%) were diagnosed with early-onset and late-onset BKVAN, respectively.
- Composite kidney allograft outcomes of GFR decline≥ 40% from baseline, graft loss or death were greater in early-onset BKVAN compared to late-onset BKVAN (7.5 vs 5.52 per 1000 person-months; hazard ratio 0.47; 95%CI, 0.23-0.95; P=0.037).
- In multivariate analysis, female gender and living-related kidney transplantation (LRKT) were independently associated with late-onset BKVAN compared to early-onset BKVAN.
- The more advanced the BKVAN diagnosis, the worse the allograft outcome occurs, even with optimizing immunosuppressive drugs and adjunctive therapy.

Figure Kaplan-Meier estimated of BKVAN



Time(month)	0	12	24	36	48	60
BK Viremia	0	0.6765	0.8529	0.8529	0.8529	0.8824
BKVAN	0	0.4694	0.7347	0.8367	0.9184	0.9388

CONCLUSIONS

- ❖ BKVAN could occur late after one-year post-transplantation, although relatively better composite kidney outcomes were observed compared to early-onset BKVAN.
- ❖ Female individuals who underwent living-related KT should be considered for BK virus preemptive monitoring beyond one year to detect this late-onset BK virus infection.

Table Baseline Characteristics

Variables	Early-onset BKVAN (N=46)	Late- onset BKVAN (N=37)	P-value
Age, year, mean± SD	44.9 ± 12.1	42.1 ± 14.8	0.350
Gender, n (%)			
• Female	8 (17.4)	13 (35.1)	0.065
Episodes of transplantation, n(%)			
• First episode	43 (93.5)	36 (97.3)	0.625
• Retransplantation	3 (6.5)	1 (2.7)	
Type of transplantation, n(%)			
• DDKT	35 (76.1)	16 (43.2)	0.002
• LRKT	11 (23.9)	21 (56.8)	
Donor age, year, mean ± SD	40.9 ± 16.6	36.8 ± 11.0	0.208
AKI donor, n (%)	21 ± 45.7	16 ± 43.2	0.826
HLA Mismatch, n(%)			
• 0-3 MM	37 (80.3)	28 (75.7)	0.601
• 4-6 MM	9 (19.57)	9 (24.3)	
PRA, n (%)			
• 0-10%	39 (84.8)	31 (83.8)	0.297
• 11-50%	3 (6.5)	0 (0)	
• >50%	4 (8.7)	6 (16.2)	
Cold ischemic time, min, median (IQR)	945 (303 - 1173)	40 (20- 1045)	0.021
Delayed graft function, n(%)	15 (32.6)	6 (16.2)	0.088
Induction, n (%)			
• No	12 (26.1)	17 (46.0)	0.189
• ATG	5 (10.9)	3 (8.1)	
• Anti IL2	29 (63.0)	17 (46.0)	
Type of BKVAN, n (%)			
• Probable/Presumptive	23 (50.0)	11 (29.7)	0.062
• Biopsy-proven	23 (50.0)	26 (70.3)	
Time from KT to BKVAN diagnosis, month, median (IQR)	5.4 (3.3, 7.8)	23.5 (19.3, 47.8)	< 0.001
Immunosuppressive drug level, ng/mL, mean ± SD	6.8 ± 1.9	6.13 ± 1.98	0.169
• Tacrolimus	150.1 ± 69.2	118.7 ± 38.8	0.468
• Cyclosporin A			
Peak plasma BK VL at diagnosis, cps/ml, median (IQR)	144,134 (32,613 - 10^6)	424.577 (93,517-848,816)	0.545

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