Donor Specific Antibodies are Common in Renal Transplant Patients Screened for BK viremia

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Background

- Early detection of BK viremia (BKV) and donor specific antibodies (DSA) by prospective screening in renal transplant recipients may prevent BK nephropathy and rejection respectively; the effect of screening on long term outcomes is unclear.
- In 2008 our center instituted a screening protocol for BKV and DSA.

Purpose

- The purpose of this study was to determine the prevalence of *de novo* DSA in renal transplant recipients screened for BKV and to examine the relationship between BKV and DSA.

Methods

- Single center, retrospective cohort study, IRB approved
- Kidney recipients transplanted January 1, 2008 through December 31, 2011
- Patients were prospectively screened for BKV and DSA
- **BK Viremia**
  - Positive defined by ≥ 2.6 log copies/mL
  - Screened for at 3, 6 and 12 months; then yearly
- **DSA**
  - Screened for at 1, 3, 6 and 12 months; then yearly

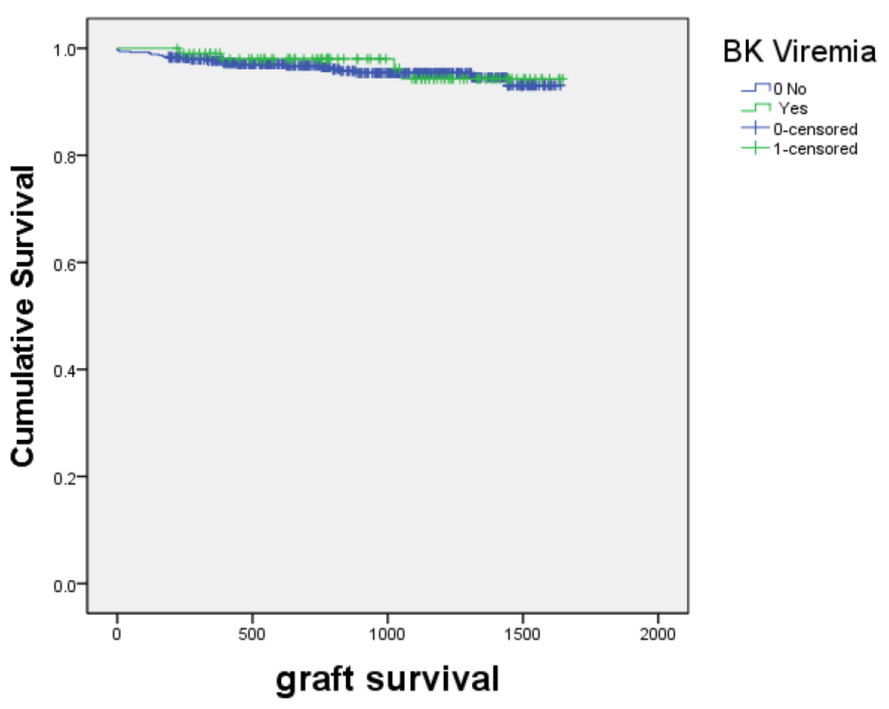
- Induction with rabbit anti-thymocyte globulin (rATG) or basiliximab
- Maintenance immunosuppression: tacrolimus, mycophenolate mofetil (MMF) and prednisone
- Detectable BKV was treated with MMF discontinuation, followed by tacrolimus reduction if BKV persisted
- Positive DSA was treated with an increase in MMF or tacrolimus

Results

- BKV was detectable at least once in 106/691 (16.7%) of patients
- Median number of days to first detectable BKV was 131 (94-224)
- Median duration of detectable BKV was 243 days (76-495)

- Class I DSA developed in 8% and Class II DSA in 12% of all patients
- Median number of days to first detectable Class I DSA was 373 (59-876)
- Median number of days to first detectable Class II DSA was 381 (187-739)

Graft Survival as a function of BK Viremia



Characteristics of Patients with BK Viremia

	BKV+ (n=106)	BKV- (n=585)	p value
Mean Age (yrs)	52.9 ± 12.2	50.4 ± 13.5	0.08
Male (%)	65.1	61.5	0.51
Deceased donor (%)	81.8	74.9	0.21
rATG induction (%)	86.7	84	0.55
HCV+ (%)	11.3	5.8	**0.05**
Prior Kidney Tx (%)	11.3	11.7	1.0
NODAT (%)	48.1	27.5	**>0.001**
Class I DSA (%)	10.9	7.4	0.29
Class II DSA (%)	17.9	10.4	**0.03**
Graft loss (%)	2.8	3.2	1.0
Patient Alive (%)	98.1	98.3	1.0

Characteristics of Patients with Class II DSA

	DSA + (n=76)	DSA- (n=615)	p value
Mean Age (yrs)	49.1 ± 14.3	51.3 ± 13.2	0.20
Male (%)	61.8%	62.6%	0.91
Deceased donor (%)	76.4%	74.4%	0.95
rATG induction (%)	80%	84.4%	0.32
HCV+ (%)	9.2%	6.8%	0.47
Prior Kidney Tx (%)	11.3%	11.7%	1.0
NODAT (%)	28.9%	30.1%	0.89
Class I DSA (%)	30.3%	4.9%	**>0.001**
BK Viremia (%)	25.7%	15.3%	**0.03**
Graft loss (%)	6.7%	3.9%	0.46
Patient Alive (%)	98.7%	96.4%	0.5

Risk Factors for BK Viremia (LR)

	p value	OR	95% CI
Class II DSA	0.023	1.9	1.1-3.5
NODAT	0.000	2.5	1.6-3.8
HCV+	0.045	2.1	1.0-4.2

Risk Factors for Graft Loss (Cox)

	p value	OR	95% CI
BK Viremia	0.35	0.4	0.9-2.4
Class II DSA	0.18	0.3	0.7-1.6
HCV+	0.08	3.7	0.8-16.3
Prior kidney Tx	0.05	3.3	0.9-11.3
Acute Rejection	0.09	3.2	0.8-12.7

Risk Factors for Class II DSA (LR)

	p value	OR	95% CI
BK Viremia	0.041	1.8	1.0-3.4
Class I DSA	0.000	8.3	4.3-16.1
HCV+	0.78	1.1	0.4-2.8

Conclusions

- Both BKV and DSA were commonly detected in our cohort.
- BKV was associated with DSA positivity but neither was a risk factor for graft loss in the short term.
- Longer follow up and further investigation are warranted.

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