

# Prospective study of BKV infection and nephropathy in the first year post-renal transplantation

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## OBJECTIVES

BK virus nephropathy (BKN) has recognized as an emerging cause of allograft dysfunction in renal transplant recipients.

In this longitudinal prospective study of thirty two consecutive renal transplant recipients, we intended to assess the prevalence and severity of BKV infection, BKV nephritis and related risk factors in our center.

## METHODS

BK virus (BKV) viremia during the first year of renal transplantation was assessed prospectively in 32 successive recipients. Blood samples of patients were taken during the first 4 (2 samples), 8 and 12 months post transplantation. BKV DNA after extraction was determined in all samples by real time PCR according to manufacturer's instruction.

Table 1. Characteristics of the 32 renal transplant recipients in total, without and with BK viremia

	Total patients	Patients with negative BK viremia	Patients with positive BK viremia
Patient number	32	24 (75%)	8 (25%)
Sex (%)			
Male	17 (53.1%)	13 (54.2%)	4 (50%)
Female	15 (46.9%)	11 (45.8%)	4 (50%)
Age (year)	33.28 ± 15.29	34.46 ± 17.04	29.75 ± 7.87
Donor type			
Living related	5 (15.6%)	3 (12.5%)	2 (25%)
Living unrelated	19 (59.4%)	14 (58.3%)	5 (62.5%)
Deceased	8 (25%)	7 (29.2%)	1 (12.5%)
Induction therapy			
Antithymocyte globulin	16 (50%)	13 (54.2%)	3 (37.5%)
Basiliximab	2 (6.3%)	1 (4.2%)	1 (12.5%)
Maintenance therapy			
Ciclosporine A	27 (84.4%)	20 (83.7%)	7 (87.5%)
Tacrolimus	5 (15.6%)	4 (16.7%)	1 (12.5%)
Delayed graft function (%)	4 (12.5%)	3 (12.5%)	1 (12.5%)
Methylprednisolone therapy	16 (50%)	9 (37.5%)	7 (87.5%)
Serum creatinine (mg/dl)			p: 0.013
1 <sup>st</sup> month	1.21 ± 0.17 (0.80 – 1.50)	1.19 ± 0.18 (0.80 – 1.50)	1.25 ± 0.14 (1.10 – 1.50)
4 <sup>th</sup> month	1.26 ± 0.25 (0.70 – 2.10)	1.26 ± 0.26 (0.70 – 2.10)	1.26 ± 0.18 (0.93 – 1.50)
8 <sup>th</sup> month	1.25 ± 0.24 (0.50 – 1.68)	1.25 ± 0.25 (0.50 – 1.68)	1.24 ± 0.18 (1.05 – 1.54)
12 <sup>th</sup> month	1.35 ± 0.32 (0.50 – 2)	1.31 ± 0.31 (0.50 – 1.80)	1.44 ± 0.36 (1.06 – 2)

## RESULTS

Mean age of the patients was 33.28±15.29 years. Seventeen (53.1%) patients were male. Sixteen patients (50%) were received antithymocyte globulin (ATG) for induction therapy. Living donor transplant consisted of 75% of kidney donations. Maintenance immunosuppressive therapy covered ciclosporine A in 27 (84.4%) of the patients plus tapering prednisolone and mycophenolate mofetil. BK virus viremia was detected in 8 (25%) patients. The highest detected plasma viral load was less than 4 log<sub>10</sub> copies/ml. BK virus was respectively positive in 5 (62.5%), 2 (25%) and one (12.5%) patient during the first 4, 8 and 12 Biopsy-proven rejection and antirejection therapy by methylprednisolone pulses were respectively 5 and 2.3 times more common in patients with BKV infection (p:months after transplantation. 0.012 and p: 0.013).

## CONCLUSIONS

Despite occurrence of BKV infection in 25% of our patients, neither developed BKV nephropathy. Routine screening of BKV infection particularly in centers with low prevalence of BKV nephritis may not be cost-effective in predicting this disease.

## References

1. Hirsch HH. Polyomavirus BK nephropathy: a (re-)emerging complication in renal transplantation. *Am J Transplant* 2002; 2: 25–30.
2. Hirsch HH, Knowles W, Dickenmann M, et al. Prospective study of polyomavirus type BK replication and nephropathy in renal-transplant recipients. *N Engl J Med* 2002; 347: 488.
3. Soleymanian T, Rasolzadegan MH, Sotoudeh M et al. Low prevalence of BK virus nephropathy on non-protocol renal biopsies in Iranian kidney transplant recipients: one center's experience and review of the literature. *Exp Clin Transplant* 2010; 4: 297–302
4. Bressollette-Bodina C, Coste-Burel M, Hourmant M et al. Prospective longitudinal study of BK virus infection in 104 renal transplant recipients. *Am J Transplant* 2005; 5: 1926–1933

