946. Epidemiology and Long-term Outcomes of BK Polyomavirus Nephropathy in Kidney Solid Organ Transplant Recipients at Texas Children's Hospital

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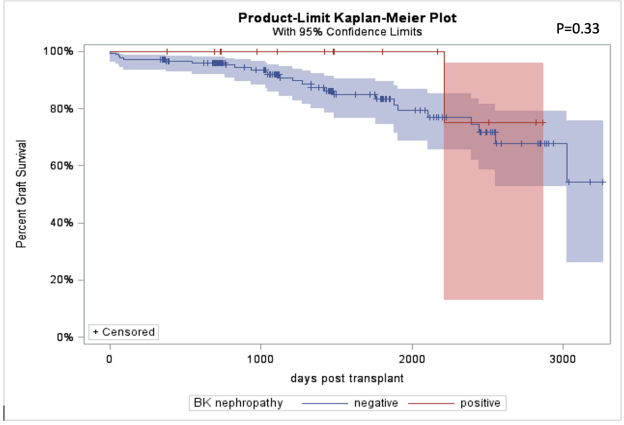
Session: P-53. Infections in Immunocompromised Individuals

Background. BK Polyomavirus (BKPyV) is an important cause of graft dysfunction and premature graft failure in pediatric kidney transplant recipients (PKTR). Contemporary data on BK viral associated nephropathy (BKVAN) in PKTR are limited. We sought to determine the frequency, associations with, and long-term outcomes of BKVAN in PKTR.

Methods. A retrospective cohort study of PKTR ≤21 years of age transplanted from 2011-2018 was completed. Primary outcome was BKVAN and secondary outcomes included graft dysfunction and failure. Associations with BKVAN were measured using chi square and Fisher exact tests. Time to BKVAN and graft failure were assessed using Kaplan-Meier plots.

Results. Among 200 PKTR, 16 (8%) developed BKVAN at a median of 228 days post-transplant. Median (IQR) age at time of transplant for patients with BKVAN was 14 (7-17) years of age. Of those who developed BKVAN, 13/16 (81%) were biopsy proven, 2/16 (13%) were probable and 1/16 (6%) was presumptive. Treatment of BKVAN included reduced immunosuppression (12, 75%), ciprofloxacin (11, 69%), intravenous immunoglobulin (7, 44%), and leflunomide (4, 25%). Simultaneous rejection therapy occurred in two patients (13%). Notably, three patients with BKVAN had negative BKPyV plasma viral loads. Median (IQR) BKPyV viral load in those with positive PCRs was 82,000 (19,315 – 1,106,283) copies/milliliter. Median (IQR) time to clearance of BKPyV from the plasma was 425 (261 – 858) days. There was no association between age at time of transplant, repeat kidney transplant, donor type, underlying diagnosis at time of transplant, HLA mismatch, mode of dialysis, or steroid free immunosuppression and the development of BKVAN. Mean percent change in eGFR yearly post-transplant was -0.066 for those with BKVAN versus -0.091 for those without BKVAN (p=0.35). Graft failure was experienced in 1/16 (6%) PKTR with BKVAN but was not related to BKVAN. There was no difference in time to graft failure (Figure 1, p=0.64) in those who developed BKVAN versus those who did not.

Figure 1: Time to graft failure



Kapan Meier curve of time to graft failure by those with BK nephropathy versus those without BK nephropathy

Conclusion. BKVAN continues to occur in PKTR. No associations were found with the development of BKVAN in our cohort. PKTR with BKVAN did not have an increased rate of eGFR decline nor did they develop graft failure more quickly than those without BKVAN.

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947. Nocardiosis in Renal Transplant Recipients Linked to Decreased Utilization of Trimethoprim/Sulfamethoxazole During COVID-19

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Background. The renal transplant population is at increased risk of Nocardiosis due to impaired T-cell mediated immunity with immunosuppression. *Pneumocystis jirovecii* (PJP) prophylaxis with trimethoprim/sulfamethoxazole (TMP/SMX) provides coverage against *Nocardia* spp. unlike alternative agents such as atovaquone (ATQ), aerosolized pentamidine (AP), and dapsone. During the COVID-19 pandemic, patients receiving AP were transitioned to ATQ to avoid the use of nebulized medication. This, in turn, led to decreased use of TMP/SMX as patients on oral ATQ were not reassessed for the use of TMP/SMX as would have occurred while on AP. Additionally, an increased incidence of *Nocardia* infections was observed during this time. The objective of this study was to determine the association between the incidence of *Nocardia* infections and number of TMP/SMX prophylaxis-days in pre- versus COVID-19 cohorts.

Methods. This was a single center retrospective chart review of all renal transplant recipients between September 2018 – August 2019 (pre-COVID-19 cohort) and April 2020 – March 2021 (COVID-19 cohort). Patients were included if they were at least 18 years of age and a recipient of a cadaveric or living donor kidney transplant. Exclusion criteria included multi-organ transplant, pediatric patients, and repeat transplants. The primary outcome was incidence of Nocardiosis within the first 6 months post-transplant in the pre- and COVID-19 cohorts.

Results. A total of 218 patients were included (Table 1). Induction therapy and initial immunosuppression did not differ significantly between groups, nor did rates of rejection within 180 days of transplant (Table 2). Although the pre-COVID-19 cohort had a higher rate of neutropenia, there was no difference in median absolute lymphocyte count between the two groups. The COVID-19 cohort had a decreased percentage of TMP/SMX prophylaxis-days (59.2% vs. 72.5%, p < 0.0001) and an increased incidence of *Nocardia* infections in the first 6 months post-transplant (4% vs. 0%, p=0.0292). All 4 cases of *Nocardia* infections occurred in patients receiving ATQ.

Table 1. Patient Demographics

	Cohort 1 (n=127)	Cohort 2 (n=91)	p
Male, n (%)	63 (49.6%)	54 (59.3%)	0.1993
Age at transplant, median (IQR)	54 (41-63)	55 (42-65)	0.4687
Race			0.0511
White, n (%)	47 (37.0%)	48 (52.7%)	
Black, n (%)	43 (33.9%)	30 (33.0%)	
Hispanic, n (%)	23 (18.1%)	7 (7.7%)	
Asian, n (%)	8 (6.3%)	5 (5.5%)	
Other, n (%)	6 (4.7%)	1 (1.1%)	
Donor Type			0.0200
Living, n (%)	45 (35.4%)	19 (20.9%)	
Deceased, n (%)	82 (64.6%)	72 (79.1%)	
Induction			0.6847
Alemtuzumab, n (%)	76 (59.8%)	51 (56.0%)	
Thymoglobulin, n (%)	31 (24.4%)	27 (29.7%)	
Basiliximab, n (%)	20 (15.7%)	13 (14.3%)	
Initial Immunosuppression			0.4373
Tacrolimus/mycophenolate mofetil/prednisone	99 (78.0%)	74 (81.3%)	
Tacrolimus/mycophenolate	20 (15.7%)	15 (16.5%)	
Tacrolimus/azathioprine/prednisone	3 (2.4%)	0	
Tacrolimus/azathioprine	0	1 (1.1%)	
Belatacept/everolimus/prednisone	2 (1.6%)	1 (1.1%)	
Belatacept/mycophenolate mofetil/prednisone	2 (1.6%)	0	
Belatacept/prednisone	1 (0.8%)	0	
ANC < 1000/ µL, n (%)	34 (26.8%)	17 (18.7%)	0.0098
ALC Nadir / µL, median (IQR)			
Month 1	0 (0-100)	0 (0-100)	0.8334
Month 2	100 (0-300)	100 (0-300)	0.5220
Month 3	200 (100-400)	100 (0-400)	0.5769
Month 4	300 (100-600)	200 (100-600)	0.4671
Month 5	300 (200-500)	300 (200-675)	0.9880
Month 6	400 (200-700)	400 (200-825)	0.4250

Table 2. Transplant Related Outcomes

	Cohort 1 (n=127)	Cohort 2 (n=91)	p
Nocardia cases, n (%)	0	4 (4.4%)	0.0292
Nocardia cases per 10,000 patient days	0	2.4	
Rejection within 180 days, n (%)	16 (12.6%)	14 (15.4%)	0.5559
Percentage of Prophylaxis Days By Drug			
TMP/SMX	72.5	59.2	<0.0001
Pentamidine	26.1	0	
Atovaquone	0.8	40.8	
Dapsone	0.6	0	

Statistical tests used: For continuous data, unpaired t-test for parametric data and Mann-Whitney test for non-parametric data. For categorical data, chi-squared test and for small samples, Fisher's exact test.

Conclusion. The increased incidence of Nocardiosis was associated with a decreased use of TMP/SMX for PJP prophylaxis which may have been an unintended consequence of increased use of ATQ in lieu of AP during COVID-19.

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