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BK Virus Associated Urothelial Carcinoma – A Regional Cohort of Kidney Transplant Recipients

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Abstract Submission

Objectives

To investigate the clinical features, pathological characteristics, and outcomes of BK virus (BKV)-associated urothelial carcinoma (UC) in kidney transplant recipients (KTRs).

Patients and Methods

We conducted a retrospective cohort of KTRs with histologically confirmed UC managed at a UK supra-regional transplant urology centre between November 2006 and January 2026. BKV status was determined using PCR testing, and tumour samples were assessed for SV40 large T antigen. Patients were stratified by BKV and SV40 status to enable comparison of tumour grade, stage, and other clinicopathological features. Tumours were classified as low-risk (Ta G1/G2 + T1 G1/G2) or high-risk (T1G3 + T2 + T3).

Results

24 KTRs met the inclusion criteria, 11 of whom were BKV+. The mean follow-up time post UC diagnosis was 7.3 $\pm$ 6.1 years. Mean age at UC diagnosis was 59.9 $\pm$ 14.6 years. 90.9 % of BKV+ patients had high-risk UC compared to 30.8% of the BKV- group (*p=0.005*). Tumour grade at diagnosis was higher in BKV+ patients compared to BKV- patients, 10/11 (91%) vs 5/13 (39%) were G3 respectively (*p=0.013*). 6 patients died during the follow up, 3/11 (27.2%) in the BKV cohort and 3/13 (23.1%) in the BKV- cohort. The mean survival for BKV+ patients post-UC diagnosis was 138.7 months (95% CI:89.2, 188.3) compared to 170.4 (95% CI: 125.6, 215.1) for BKV- KTRs (*p=0.639*). Evidence of genomic infiltration (SV40 Large T antigen) was detected in 4/12 (33.3%) cases, all with a previous history of BKV infection. These tumours were all high grade (G3) and presented with a higher stage at diagnosis than SV40- tumours (*p=0.050*). UC in BKV+ patients was not diagnosed earlier post-transplant compared to BKV- patients (*p=0.616).* KTRs with BKV infection were not diagnosed at an younger age *(p=0.238).*

Conclusion

BKV infection in KTRs was associated with aggressive, high-grade UC. These findings support heightened clinical vigilance and timely immunosuppression adjustment in this at-risk population. Further studies are required to clarify the oncogenic potential of BKV and optimise management strategies.