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Differential impact of acute rejection & BKVAN on kidney transplant patients

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Objectives: BK virus-associated nephropathy (BKVAN) is a known risk factor for allograft dysfunction and graft failure in kidney transplant recipients. The mainstay of treatment for BKVAN is the reduction of immunosuppression**.** However, there is a risk of acute rejection (AR) following virus clearance. We proposed to observe the differential impact of acute rejection and BKVAN on allograft outcomes of kidney transplant patients**.**

Methods: Using data from the Korean Organ Transplantation Registry (KOTRY), a nationwide organ transplantation database, we compared allograft survival and allograft function according to BKVAN and biopsy-proven acute rejection (BPAR).

Results: Among the 5,403 patients who received kidney transplantation (KT) between 2014 and June 2019, a total of 97 patients were diagnosed with BKVAN. 31 patients developed BPAR within 1 year of KT, 66 patients did not. Among 4491 patients without BKVAN, 78 patients were diagnosed with BPAR within 1 year of KT. There were no differences in baseline characteristics between groups. There was a significant decrease in allograft function in the BKV+AR group compared to BKV only & AR only group in 1-to-3 year follow-up period (BKV+AR Cr 4.46±3.6 vs. AR only Cr 2.17±1.3 & BKV only Cr 2.25±1.2, P=0.033). The BKV+AR group tend to show lower allograft survival rates compared to the other two groups. On multivariate logistic regression analysis, MMF discontinuation and calcineurin inhibitor (CNI) level reduction >20% within one year of KT were observed as a significant risk factor for acute rejection in BKVAN patients (Hazard ratio [HR], 3.243; 95% confidence interval [CI], 1.050-10.016; P=0.041).

Conclusions: BKV & acute rejection have synergistic negative effect on allograft function. Discontinuation of MMF and CNI level reduction > 20% within one year of kidney transplant as treatment for BKVAN increases risk for acute rejection.