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BK Virus Infection In Pediatric Kidney Allograft Recipients: Experience of a Referral Center in Korea

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Objectives : BK virus (BKV) nephropathy (BKVN) is one of the important causes of allograft kidney loss. Yet, information of BKV infection in pediatric kidney transplantation is limited. To assess risk factors and outcomes of BKV infection and BKVN in our center, a referral center of Korea, retrospective review of pediatric kidney allograft recipients of our center was done.

Methods : Patients registered at Seoul National University Hospital were enrolled. We investigated the incidence, risk factors, clinical features, and outcomes of BK viremia and BK virus nephropathy in pediatric patients who underwent renal transplantation from January 1, 2001 to October 27, 2015.

Results : From January 1, 2001 to October 27, 2015, 183 pediatric kidney allograft recipients were tested for serum BKV PCR. BK viremia was found in 29 patients. Median onset of BK viremia was 25 month after transplantation, and there was no association between BK viremia and creatinine level. In univariate analyses of potential risk factors for the development of BK viremia, there was no significant difference in rates of BK viremia when considering gender, age, acute rejection history, donor source, cause of primary disease or type of maintenance immunosuppression.
Transplant renal biopsies were performed in 184 patients, BKVN was diagnosed in 4 (2.1%) of 184 patients at a median onset of 51 month after transplantation. All patients had BK viremia. The median BK virus quantity upon initial detection of viremia was 104,364 copies/mL plasma in BK virus nephropathy patients, and peak value was 1,975,579 copies/mL plasma. On the other hand, those without BKVN had BK viremia of 1,745 copies/mL plasma initially and up to 4,966 copies/mL plasma. All BKVN patients had an initial and peak BK virus level above 10,000 copies/mL plasma and patients without BKVN did not except for the peak level of one patient. Interestingly, three of the four BKVN patients were Alport syndrome patients, while this disease comprises only four % of our study population.
Treatment of BKVN included reduction of immunosuppression, leflunomide and intravenous immunoglobulin. On final follow-up, none of the four patients with

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BKVN lost their allograft, but had impaired renal allograft function of estimated GFR 30~50 mL/min/1.73 m2.

Conclusions : In our center, the incidence of BKVN was 2.1 % in pediatric kidney allograft recipients and BKVN was associated with higher BK viremia level and underlying disease of Alport syndrome.

Keywords : BK virus nephropathy, BK viremia, Kidney transplantation