P159

신이식 환자에게 발생한 BK 바이러스 신병증의 분석

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Clinical Manifestation and Outcome of BK Virus-Induced Nephropathy in Kidney Transplantation

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Background: BK virus (BKV)-induced nephropathy in kidney transplant recipients is an important cause of renal transplant dysfunction. We aimed at assessing the prevalence and intensity of active BKV infection, to determine risk factors for BKV reactivation and interstitial nephropathy within one year after kidney transplantation under the impact of intensive monitoring and reduction in maintenance immunosuppression. Also, we evaluated the significant cut-off level of BKV DNAemia using real-time PCR.

Methods: Two hundred fifty-nine patients (120 women, 139 men; mean age: 42.1±10.6 years) who underwent kidney transplantation between January, 1, 2009 and May, 31, 2010 at the Asan Medical Center (Seoul, Republic of Korea) were included in the study. Urine and peripheral blood were taken from 259 renal transplant recipients for BKV cytological testing and real-time PCR for BKV DNA at every three months after transplantation and treatment. Graft biopsies and urinary sediments of recipients with BKV induced nephropathy were taken to monitor viral particles by conventional transmission electronmicroscopy.

Results: In the 259 patients, BKV DNA was detectable in the plasma of 94 patients during the 12 months of follow-up. The negative conversion of BKV DNAemia was occurred in 38.3% (n=36). We compared between BKV PCR titer under 4 and over 4 groups. In the 259 patients, BKV DNA PCR titer was 4 and over in the plasma of 25 patients. In the 94 patients with BKV DNAemia, decoy cells were observed in the urine of 10 patients. Decoy cells were found in 5.8% (4/69) patients in the group under 4 and 24% (6/25) patients in the group over 4 (p=0.02). Renal biopsy was performed in 30.8% of BKV DNAemia patients and 8 patients were proven BKVAN; 4.4% (3/69) patients in the group under 4 and 20% (5/25) patients in the group over 4 (p=0.027). The TDMs of immunosuppressants were not different between the group over 4 and under 4. The BKV positive duration was longer in the group over 4 (p=0.003) and immunosuppressant dose reduction was common in the group over 4 (p=0.043).

Conclusion: This retrospective cohort study shows epidemiology and clinical manifestation of BKV induced nephropathy after kidney transplantation. In conclusion, this study shows that BKV PCR titier over 4 was significant in the BKV induced nephropathy and regular BKV PCR titier monitoring leads reduction of immnosuppressive therapy for avoid progression of BKV induced nephropathy.

Key Words: 신장이식, BK 바이러스
BK virus, Kidney transplantation