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Identification of Risk Factors for BK Infection – A Paired Kidney Analysis

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BACKGROUND: BK nephropathy remains an important cause of premature renal allograft failure. It is thought to be primarily related to the intensity of immunosuppression, while the importance of donor and recipient factors remains uncertain.

METHODS: Using data from Scientific Registry of Transplant Recipients (SRTR) between 2004 – 2010, we performed a paired kidney analysis in which both kidneys were transplanted from the same deceased donor (n = 21,575) to identify 1) concordance of BK infection – cases where both kidneys were infected, 2) recipient factors for BK infection – using discordant pairs where only one kidney was infected.

RESULTS: Among the 21,575 pairs, 1975 pairs (9%) had discordant infection, while 174 (1%) had concordant infection. Concordant infection was 5-fold higher than would be expected at random. In a multivariate conditional logistic regression model including discordant pairs, the following factors were associated with BK infection: Age < 18 (OR 1.31; 95% CI 1.01-1.54), male gender (OR 1.53; 95% CI 1.32-1.77), HLA MM ≥ 4 (OR 1.80; 95% CI 1.28-2.53), acute rejection (OR 2.75; 95% CI 2.23-3.38), use of T cell depleting antibody (OR 1.22; 95% CI 1.02-1.47). Among recipient pairs, concordant pairs were more likely to have both recipients treated with lymphocyte-depleting antibodies ($p<0.001$) or tacrolimus ($p<0.001$), have acute rejection ($p<0.001$), HLA MM ≥ 4 ($p<0.001$) and to be from the same center ($p=0.001$).

CONCLUSIONS: We conclude that concordant infection among mate kidneys is higher than would be expected by random chance, suggesting the importance of donor factors. However, similar recipient and treatment factors, as well as the finding that many co-infected kidneys were transplanted at the same center suggest that risk of BK infection may be related primarily to treatment factors, rather than donor factors.