KSN 2016 Abstract Submission

Transplantation & Immunology

KSN2016ABS-1292

Urinary TIMP-2 and IGFBP7 predict delayed graft function after kidney transplantation

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Background: Recently, urinary TIMP-2 and IGFBP-7, markers for G1 cell cycle arrest, have been identified and validated in predicting the development of AKI in critically ill patients. It is unknown, however, whether these two biomarkers could predict the development of delayed graft function (DGF) after kidney transplantation.

Methods: This is a single center, prospective observational study. We enrolled 50 patients who underwent KT (living donor: 5, deceased donor: 45) between August 2013 and December 2015. Urine sample were collected right after the operation. The primary outcome was development of DGF as defined by need for dialysis of more than 1 session within 7 days of KT.

Results: Nine patients (18%) were diagnosed as DGF. In univariate analysis, kidneys from expanded criteria donors, donor serum creatinine, donor estimated glomerular filtration rate (eGFR), urinary IGFBP-7 and TIMP-2 were significantly different between early graft function (EGF) and DGF. However, in multivariate analysis adjusting for effects of donor eGFR only IGFBP7 x TIMP-2 at 0 hour post transplantation could predict the development of DGF. The receiver operating characteristic curve for prediction of DGF showed an area under the curve of 0.77 (sensitivity 0.77, specificity 0.81) for a cut off value of 1.76.

Conclusion: Our results indicate that urine IGFBP7 x TIMP-2 immediately after transplantation could be an early, predictive biomarker of DGF in kidney transplantation.

Keywords: kidney transplantation, delayed graft function, TIMP-2, IGFBP7