Prognostic value of urinary cytokines & chemokines in early renal outcome after kidney transplantation

Minjung Kim, Suhyun Kim, Eun Jeong Lee, Hye Ryoun Jang, Jung Eun Lee, Yoon-Goo Kim, Daejoong Kim, Ha young Oh, Wooseong Huh
Department of Internal Medicine-Nephrology, Samsung Medical Center, Korea, Republic of

Objectives: Changes in intra-renal immunologic micromilieu has been shown to affect the renal outcome in kidney transplantation. Urinary markers have been studied as potential non-invasive diagnostic markers. In this study, the prognostic value of urinary cytokines and chemokines for predicting early renal outcome in kidney transplant patients was investigated.

Methods: Urine samples were collected from kidney transplant patients at the following time points; during transplantation, 8 hours, 24 hours, 72 hours, 1 week, 3 months, and 1 year after transplantation. Cytokines and chemokines including regulated on activation, normal T cell expressed and secreted (RANTES), fractalkine, interleukin (IL)-10, IL-4, IL-6, monocyte chemoattractant protein (MCP)-1, tumor necrosis factor (TNF)-α, and vascular endothelial growth factor (VEGF) were measured in 64 patients. Patients were divided into either the good prognosis group (eGFR at post-transplant 3 months ≥ 60ml/min/1.73m² or eGFR change ≥ -5 between post-transplant 3 and 12 months) or the poor prognosis group (eGFR at post-transplant 3 months < 60ml/min/1.73m² or eGFR change < -5 between post-transplant 3 and 12 months) T-test and one-way or two-way ANOVA were used for statistical analysis.

Results: The median age of patients was 42.3 years and 70.3% were male. Urinary RANTES (P < 0.001) and urinary IL-4 at 24 hours after transplantation (P < 0.05) were higher in the good prognosis group. When patients were divided by eGFR change between 3 months and 1 year after transplantation, urinary IL-6 at 3 months after transplantation (P < 0.05) was higher in the good prognosis group.

Conclusions: Our study showed the potential clinical value of urinary RANTES and IL-4 measured after transplantation as well as urinary IL-6 at 3 months as non-invasive predictors of early renal outcome after kidney transplantation.