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

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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 $\geq 60\text{ml}/\text{min}/1.73\text{m}^2$ or eGFR change ≥ -5 between post-transplant 3 and 12 months) or the poor prognosis group (eGFR at post-transplant 3 months $< 60\text{ml}/\text{min}/1.73\text{m}^2$ 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.