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Clinical value of urinary cytokines / chemokines as prognostic markers in patients with crescentic glomerulonephritis

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Objectives : Although immunosuppressive therapy is known as a standard treatment for crescentic glomerulonephritis (CrGN), urgent kidney biopsy or timely initiation of aggressive immunosuppressive treatment are not always feasible. In this study, we investigated the clinical value of urinary cytokines/chemokines as prognostic markers predicting the response to immunosuppressive therapy in patients with CrGN.

Methods : A total of 87 patients with biopsy-confirmed CrGN from 2002 to 2015 were included. Both urine and serum samples were collected on the same day of kidney biopsy in 38 patients and cytokines/chemokines were measured as follows: RANTES, fractalkine, interferon-ɣ, IL-4, IL-6, IL-10, MCP-1, TNF-α, and VEGF. Baseline estimated glomerular filtration rate (eGFR), urinary protein to creatinine ratio (uPCR), and the proportion of non-albumin proteinuria were analyzed together with serum and urinary cytokines/chemokines. Primary outcome was uPCR and eGFR at 1 year after kidney biopsy. Good response to treatment was defined as a decrease in proteinuria to < 50% of baseline uPCR or an increase in eGFR > 10 ml/min/1.73m2.

Results : The median age of patients was 65 years and 47% were male. Baseline eGFR was 18.7 ml/min/1.73m2 and uPCR was 1.87 mg/mg Cr. The proportion of the good response group by uPCR and by eGFR was 50% and 41%, respectively. Baseline serum and urine RANTES, urine fractalkine), urine IL-10, urine MCP-1, and urine TNF-α levels were higher in the good response group by uPCR. Urine MCP-1 level was also higher in the good response group by eGFR. In all patients, baseline eGFR was identified as a predictor of good response to immunosuppressive treatment.

Conclusions : Our study showed that early initiation of immunosuppressive treatment before renal function deterioration improves the treatment outcome in CrGN and may support the clinical value of urinary MCP-1, RANTES, fractalkine, IL-10, and TNF-α as non-invasive prognostic markers.

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