Efficacy of Urinary C5b-9 as a prognostic marker in IgA nephropathy

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Background/Aims: Recent studies showed that C5b-9 derived from activation of complement pathway mediates kidney cell damage and plays an important role in pathogenesis of IgA nephropathy (IgAN). We evaluated C5b-9 as a prognostic marker in IgAN.

Methods: We prospectively enrolled 33 patients with biopsy-proven pure IgAN. Serum and urinary C5b-9 levels were measured using enzyme-linked immunosorbent assay at the time of diagnosis and 6 month after medical treatment. We analyzed the correlation among baseline C3b-9 levels, changes in their levels after medical treatment, and clinical outcomes including changes in proteinuria and estimated glomerular filtration rate (eGFR).

Results: Baseline urinary C3b-9 levels were positively correlated with mean arterial pressure (r = 0.489, p = 0.004) and amount of proteinuria (r = 0.522, p = 0.002), and were lower in patients with segmental sclerosis than those without according to the Oxford classification (11.4 ± 15.6 vs 51.3 ± 55.1 ng/mL, respectively, p = 0.012) at the time of diagnosis. Changes in urinary C3b-9 levels were positively correlated with changes in proteinuria (p = 0.050), but did not correlate with changes in eGFR (p = 0.605) at 6 month after medical treatment (Figure 1). Baseline urinary C3b-9 levels was positively correlated with time averaged proteinuria (p = 0.016), but not correlated with mean annual rate of eGFR decline (p = 0.139) during mean follow-up duration of 3.4 years (Table 1). Baseline serum C3b-9 levels and changes in their levels after treatment did not correlated with conventional risk factors at presentation and clinical outcomes (Figure 1 and Table 1).

Conclusions: Urinary C5b-9 levels were closely associated with baseline proteinuria and changes in proteinuria after medical treatment. Urinary C5b-9 may be a promising prognostic biomarker in patients with IgAN.

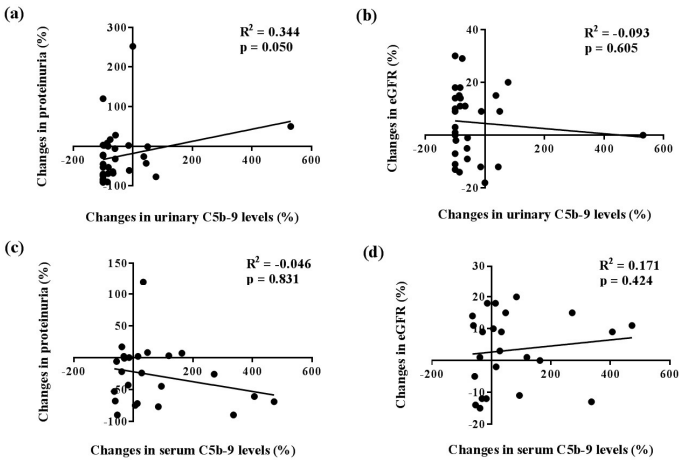

Figure 1. Relationships between changes in serum and urinary C5b-9 levels, proteinuria, and estimated glomerular filtration rate (eGFR) after medical treatment. Changes in urinary levels of C5b-9 showed positive correlations with changes in proteinuria (**a**), but did not correlate with changes in eGFR at 6 months after medical treatment (**b**). Changes in serum levels of C5b-9 did not correlate with changes in proteinuria **(c)** and eGFR **(d)** at 6 months after medical treatment. Data were analyzed by Spearman's rank correlation coefficient.

Variables	Mean annual rate of eGFR decline	Time-averaged proteinuria
Baseline Serum C5b-9 levels (ng/mL)	r = 0.248,	r = -0.136,
	p = 0.266	*p* = 0.546
Baseline urinary C5b-9 levels (ng/mL)	r = 0.263,	r = 0.415,
	p = 0.139	*p* = 0.016
Changes in serum C5b-9 (%)	r = -0.229,	r = -0.058,
	p = 0.306	*p* = 0.797
Changes in urinary C5b-9 (%)	r = -0.021,	r = 0.253,
	p = 0.907	*p* = 0.156

Table 1. Correlation among baseline and changes in serum and urinary C5b-9 levels at 6 month after medical treatment, mean annual rate of eGFR decline, and time-averaged proteinuria. Data are shown as mean ± standard deviation for continuous variables and were analyzed by Mann-Whitney *U*-tests. eGFR, estimated glomerular filtration rate.