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Clinical significance of circulating microRNA-21 in patients with IgA nephropathy

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Objectives: Urinary microRNA (miR)-21 has been reported to correlate with histologic lesions of IgA nephropathy (IgAN). We conducted this study to determine if a urinary or circulating miR-21 could serve as a biomarker for detecting renal progression of IgAN.

Methods: Thirty-seven biopsy-proven IgAN patients were enrolled in this study. Serum and urinary sediment miRNAs were extracted, and expression of miR-21 was quantified by real-time quantitative polymerase chain reaction. Renal progression was defined as end-stage renal disease or 50% decrease in estimated glomerular filtration rate (eGFR) from baseline.

Results: Six patients experienced renal progression during the follow up period. Compared to patients without renal progression, the eGFR was lower in the renal progression group (49 ± 12 ml/min/1.73m^2 vs. 90 ± 24 ml/min/1.73m^2, $p<0.05$) at the time of kidney biopsy. Serum miR-21 levels were higher in progression group than in the non-progression group (39.5 ± 1.3 vs. 38.4 ± 1.0 ΔCt value of miR-21, $p<0.01$), whereas there is no difference in urinary miR-21 between two groups. The receiver operator characteristic curve analysis demonstrated good discriminative power for the prediction of renal progression, with an area under the curve value of 0.806.

Conclusions: Circulating miR-21 could be a surrogate marker for predicting renal progression of patients with IgAN.