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## **Urinary cell-free DNA as a biomarker in immunoglobulin A nephropathy**

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**Objectives:** Cell-free DNA (cfDNA), measured in blood, has been reported to be of clinical significance in many immune and kidney diseases. However, urinary cfDNA has not been studied much, especially in kidney disease. We analyzed urinary cfDNA in immunoglobulin A nephropathy (IgAN).

**Methods:** We measured cfDNA in urine samples collected at the time of diagnosis of 98 IgAN and analyzed the correlation between these values and various clinical parameters and kidney pathologic findings.

**Results:** Linear regression analysis showed a significant negative correlation with serum albumin ( $\beta = -0.246$ ,  $P = 0.015$ ) and a significant positive correlation with total cholesterol level ( $\beta = 0.247$ ,  $P = 0.014$ ). There was no correlation between proteinuria, serum creatinine (sCr) and GFR at diagnosis, and urinary cfDNA. However, when cfDNA was divided by median value and the renal function was compared between the two groups; the higher cfDNA group showed lower sCr (1.21 mg/dL vs. 0.98 mg/dL,  $P = 0.031$ ) and higher GFR (53.3 mL/min/1.73 m<sup>2</sup> vs. 86.7 mL/min/1.73 m<sup>2</sup>,  $P = 0.014$ ), that is, better renal function. Among the biopsy findings, cfDNA was lower in patients with interstitial fibrosis/tubular atrophy ( $P = 0.019$ ). In patients with fibrointimal thickening of the vessel ( $P = 0.032$ ) or hyaline arteriosclerosis ( $P = 0.028$ ), cfDNA tended to be lower. There was no significant correlation with other pathological findings, however.

**Conclusions:** Urinary cfDNA levels were significantly correlated with various clinical markers and biopsy findings in patients with IgAN. Higher cfDNA levels were measured in patients with better renal function and less tissue injury. Further analysis will be needed to predict treatment response or to predict long-term kidney prognosis.