상염색체 우성 다낭신 환자에서 신기능 저하 예측인자로서의 소변내 NAG/Cr의 기능

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Urinary NAG/Cr Can be a Predictor of Renal Function Deterioration in ADPKD

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Background: Autosomal dominant polycystic kidney disease (ADPKD) is the most common hereditary kidney disease characterized by progressive growth of multiple renal cysts leading to end-stage renal disease. Because serum creatinine (Cr) is considered of limited use and measuring total kidney volume is time consuming and expensive, novel biomarker is needed to predict and monitor disease progression in ADPKD. In this prospective study, we investigated urinary N-acetyl-β-glucosaminidase-to-creatinine ratio (NAG/Cr) as a novel biomarker to predict renal progression.

Methods: 121 ADPKD patients (65 male and 56 female) with their glomerular filtration rate (GFR) over 30 ml/min/1.73m^2 were enrolled in the study. Each subject underwent medical review and blood pressure measurement at the first visit. Initial laboratory assessment included BUN (mg/dL), Cr (mg/dL), estimated GFR (ml/min/1.73 m^2), urinary albumin-to-creatinine ratio (mg/g), and urinary NAG/Cr (IU/g). Specimens were collected every 6 months and computed tomography (CT) was taken every 2 years to measure total kidney volume.

Results: The mean age of subjects was 47 years and the mean follow up duration 12 years from diagnosis. Baseline Cr and eGFR was 1.08$\pm$0.3 mg/dL and 72.5$\pm$18.3 (ml/min/1.73m^2), respectively. Among 121 patients, 73 (60.3%) patients were follow up at 6 month, and 34 (28%) and 18 (14.9%) patients were followed up at 12 and 18 month, respectively. Subjects with persistently high NAG/Cr value (> 5.5 IU/g) showed lower eGFR at 6, 12, 18 month follow-up period compared to those with low NAG/Cr value ($p<0.05$). These differences remained significant after adjustment with random urine albumin-to-creatinine ratio.

Conclusion: Urinary NAG/Cr may be a good and reliable biomarker to predict renal progression in ADPKD patients. Further studies are warranted to reveal the underlying mechanism.

Key Words: 상염색체우성다낭신, 바이오마커, 신기능악화
ADPKD, urinary biomarker, renal progression