

급성신손상에서 단기에후인자로서의 요중 Neutrophil Gelatinase-associated lipocalin

고려대학교 의과대학 내과학교실 신장병연구소

부창수 · 김혜원 · 최혜민 · 우영석 · 조상경 · 조원용 · 김형규

Urine Neutrophil Gelatinase-Associated Lipocalin Predicts the Short Term Outcome of Acute Kidney Injury

Boo Chang-Su, Kim Hye Won, Choi Hye Min, Woo Young Seok
Jo Sang-Kyung, Cho Won Yong and Kim Hyoung-Kyu

Korea University College of Medicine Department of Internal Medicine The Institute of Renal Disease

Introduction : Acute kidney injury (AKI) is a significant medical problem with high morbidity and mortality. Serum creatinine is not a sensitive marker for early detection of AKI nor is a reliable outcome predictor. Recent several studies revealed that neutrophil gelatinase-associated lipocalin (NGAL) can be a promising biomarker for early detection of AKI, but the role of NGAL in predicting adverse clinical outcome has not been well addressed. The purpose of this study was to evaluate the relationship between urinary NGAL level and short term clinical outcome in patients with AKI.

Methods : This was a prospective cohort study of patient with AKI. AKI was diagnosed according to RIFLE criteria. Patients were divided into two groups. Group I includes patients with risk or injury, and Group II includes patients with failure. Clinical and laboratory data and outcomes were prospectively collected. Serum and urinary NGAL at admission were measured by ELISA. Clinical outcome variable was renal function at 4 weeks after admission defined by recovery or persistent loss of renal function.

Results : Of 38 patients, 17 patients were classified into Group I and 21 patients into Group II. Age and sex were not significantly different between two groups. Initial serum Cr and peak serum Cr were significantly higher and worst GFR was significantly lower in group II. Although RIFLE classification didn't show significant difference with outcome ($p=0.067$), there was a significant positive correlation between worsening RIFLE classification and loss of renal function ($r=0.395$, $p=0.040$), suggesting RIFLE criteria can be used as outcome predictor. Serum and urinary NGAL levels at admission didn't show significant difference between two groups ($p=0.089$, $p=0.433$, respectively). However serum and urinary NGAL levels at admission were significantly higher in loss group compared with recovery group after 4weeks of AKI. By multivariate analysis, urinary NGAL was identified as the most powerful predictor of loss of renal function. In initial urinary NGAL, the AUC was 0.870 and a cutoff value of 290 pg/mL predicted loss of renal function with 100% sensitivity and 73.1% specificity.

Conclusion : In this study, increased urinary excretion of NGAL predicted an unfavorable outcome of AKI. Therefore, NGAL, a promising new biomarker for early detection of AKI may also be used as a outcome predictor. Further studies enrolling larger patient population will be needed to confirm this finding.

Key Words : 급성신손상, 예후인자, NGAL
AKI, NGAL, Outcome