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신손상 진단 및 예측 인자로서 소변 Cystatin C와 creatinine의 유용성

순천향 대학교 부천병원 신장내과

김은정 · 정철호 · 박무용 · 최수정 · 김진국 · 황승덕

The Clinical use of Urinary Cystatin C and Creatinine Level as a Diagnostic and Prognostic Marker for Kidney Injury

Eun Jung Kim, Chul Ho Jung, Moo Yong Park, Soo Jeong Choi, Jin Kuk Kim, Seung Duk Hwang

Department of Nephrology, Soonchunhyang University hospital, Bucheon, Korea

Background: Acute kidney injury (AKI) is a frequent clinical problem in critically ill patients and the associated mortality is high. Standard serum and urine biomarkers are insensitive and nonspecific for the detection of kidney injury and were not useful for predicting the outcome of AKI.

Methods: In this study, serum and urinary cystatin C (UCysC) and urinary creatinine (UCr) were measured in patients, presenting with acute renal failure. The patients were divided in two groups with prerenal azotemia and intrinsic AKI. And AKI was classified according to AKIN criteria. Prerenal azotemia was defined as a new-onset increase in serum creatinine (SCr) that resolved within 48 hours and returned to the baseline normal kidney function level. We excluded the patients with post renal AKI and chronic kidney disease.

Result: Patient (n=142) were adjudicated to have prerenal azotemia in 39.9% (n=56) and AKI in 60.1% (n=86). UCysC and UCysC/UCr were significantly higher in AKI than prerenal azotemia (4.11±4.37, 0.12±0.19 Vs 0.62±1.61. 0.01±0.04). UCysC or UCystC/UCr had a good discriminatory ability for detecting intrinsic AKI, with areas under the receiver operating characteristic curve (AUC-ROC) of 0.82 (95% CI 0.75-0.88) and 0.82 (95% CI 0.75-0.89). In patients with intrinsic AKI (n=86), UCystC concentration rose significantly according to the severity of AKI (median values 0.3, 3.0 and 3.1, corresponding to AKIN stage). In intrinsic AKI, UCystC/UCr level inversely related with recovery of AKI (p=0.032). But UCysC, SCysC, AKIN stage did not related with prognosis of AKI.

Conclusion: UCysC and UCysC/UCr were useful marker for detecting acute tubular injury. Moreover, UCysC/UCr could be a prognostic marker of AKI.

Key Words: 소변 cystatin C,급성 신손상, 소변 인자
Urinary cystatin C, Acute kidney injury, Urine biomarker