S-E5

급성 신손상이 동반된 중증 환자의 CRRT에서 IHD로의 성공적인 전환 예측 모델

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A Predictive Model for Successful Conversion of Continuous Renal Replacement Therapy to Intermittent Hemodialysis for Acute Kidney Injury in Critical Ill Patients

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Introduction: Continuous renal replacement therapy (CRRT) is preferred modality of renal replacement therapy (RRT) incritical ill patients with acute kidney injury (AKI). However, it has several disadvantage such as high cost and risk of continuous anticoagulation. Therefore, initial application of CRRT and subsequent conversion to intermittent hemodialysis (IHD) could be practical measure. However, there has been no standard criteria for optimal timing of conversion to IHD in pateints receiving CRRT. The aim of this study was to develop a predictive model for successful conversion of CRRT to IHD.

Materials and methods: This case-control study was conducted by retrospective review of electric medical records. We identified 513 adult patients who received CRRT at least 24 hours and and then IHD subsequently in intensive care units between April 2009 and February 2014. Failure in conversion to IHD was defined when CRRT was re-applied within 72 hours after discontinuation of CRRT, and 83 (16%) out of 513 patients corresponded failure criteria: failure group. Equal number of patients were selected randomly from remaining 430 patients: success group.

Results: Prevalence of comorbid diseases and contributing factors to acute kidney injury were not different between two groups. Multivariate regression analysis demonstrated that cardiovascular (CV) sequential organ failure assessment (SOFA) score and nervous SOFA score at CRRT stop day were only two independent predictors of conversion failure as shown in Table. The risk of failure was discriminated between score 0,1 and score 2-4 for both CV and nervous SOFA. CV SOFA score 2-4 was associated with 13 fold increased Odds ratio for failure (95% C.I. 4.62-38.27, Ref 0-1) and nervous SOFA score 2-4 was associated with 5.4 fold increased Odds ratio for failure (95% C.I. 2.56-11.42, Ref 0-1). Final prediction model included CV SOFA and nervous SOFA weighting CV SOFA (≥2) as 2 points and nervous SOFA (≥2) as 1 point. Thus risk score ranged from 0 to 3 points (0 point 47%, 1 point 29%, 2 point 13%, 3 point 11%). The performance of this model was acceptable with area under the receiver operating characteristic curve of 0.792 (95% C.I. 0.772-0.861).

Conclusions: The prediction model might provide an objective criteria for conversion to IHD in patients receiving CRRT and contribute to establish cost-effetive protocol of RRT for AKI in critical ill patients.

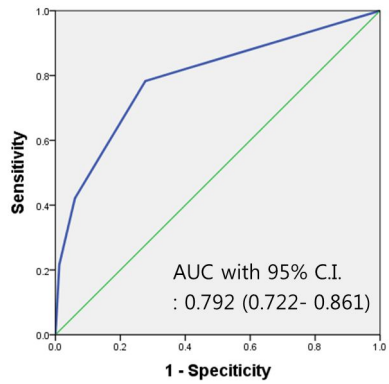

Fig. 1. ROC curve of prediction model.

Key Words: 신대체요법, 혈액투석, 급성신손상
Renal replacement therapy, Hemodialysis, Acute kidney injury