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Prognostic Value of Neutrophil Gelatinase-Associated Lipocalin (NGAL) Ratio Measurement to Predict Acute Kidney Injury in the Intensive Care Unit (ICU) Patients

Adika Zhulhi Arjana, Isni Meilasari
Department of Clinical Pathology and Laboratory Medicine, Faculty of Medicine Public Health and Nursing, Universitas Gadjah Mada, Indonesia

Objectives: Intensive Care Unit (ICU) patients have a high susceptibility to the occurrence of acute kidney injury (AKI). This incident will have a direct impact on the patient's morbidity and mortality. Examination of the possibility of the occurrence of acute kidney injury will have great benefits for the patient so that it can be prevented earlier by better handling of hydration. This prediction opportunity is demonstrated by neutrophil gelatinase-associated lipocalin (NGAL). NGAL is an iron-transporting protein rapidly accumulating in the kidney tubules and urine after nephrotoxic and ischemic insults, has been put forward as an early, sensitive, non-invasive biomarker for acute kidney injury. This study aims to determine the prognostic performance of the NGAL ratio examination in predicting the incidence of acute kidney injury in patients treated at the ICU

Methods: This study is a cohort study involving ICU patients treated at Dr. Sardjito General Hospital with all diagnoses. Samples were taken of patients <24 hours of ICU admission first time and then checked again on day 2 hospitalization. The occurrence of acute kidney injury uses AKIN criteria and is enforced on the 3rd day after treatment at the ICU. Statistical analysis uses the ROC curve with the help of Medcalc's statistical program

Results: A total of 80 patients (55 male, 25 female) were studied. NGAL levels at admission were significantly higher among patients who subsequently developed AKI [43.8 (8.5-15000) ng/mL vs. 87.4 (0.3-15000) ng/mL, p=0.006] and these higher levels persisted over the following 2 days. On the basis of receiver-operating characteristic analysis, NGAL ratio measurements could predict AKI [area under the curve (95% confidence interval) 0.764 (0.655-0.852)] with p=0.0457. A cut-off point >1.0322 for NGAL ratio had a sensitivity of 0.86 and specificity of 0.71 in predicting AKI

Conclusions: NGAL ratio have prognostic value to predict acute kidney injury event in ICU patients

ROC of NGAL Ratio-AKI