

INTISARI

Latar belakang: Deteksi dini adanya gangguan fungsi ginjal terkait paparan kontras pada pasien STEMI yang menjalani intervensi koroner perkutan primer diperlukan untuk mencegah terjadinya *contrast induced acute kidney injury* (CIAKI). Biomarker NGAL urin telah banyak diteliti keandalannya mendeteksi cedera ginjal sebelum terjadi penurunan filtrasi glomerulus. Estimasi laju filtrasi glomerulus (eLFG) menggunakan formula CKD-EPI menjadi metode yang direkomendasikan dalam menilai fungsi ginjal. Tujuan pada penelitian ini adalah menilai korelasi rasio NGAL / kreatinin urin dengan eLFG metode CKD-EPI pada pasien STEMI setelah intervensi koroner perkutan primer

Metode: Penelitian ini menggunakan desain potong lintang dengan subjek pasien STEMI yang akan menjalani intervensi koroner perkutan primer di RSUP Dr Sardjito Yogyakarta yang memenuhi kriteria inklusi dan eksklusi. Sampel darah tanpa antikoagulan diambil untuk pemeriksaan kreatinin serum sebelum tindakan dan 48 jam setelah intervensi koroner perkutan sedangkan sampel urin sewaktu diperiksa pada jam ke 12 setelah intervensi koroner perkutan primer. Analisis data karakteristik subjek secara deskriptif, disajikan dalam tabel. Uji korelasi *Spearman* untuk menilai korelasi antara rasio NGAL/kreatinin urin dengan eLFG metode CKD-EPI. Analisis statistik menggunakan program SPSS versi 24

Hasil: Total subjek penelitian adalah 82 orang dengan mayoritas laki-laki 84,1 % dan subjek rata-rata berumur $59,67 \pm 10,7$ tahun. Perbedaan bermakna didapatkan pada variabel umur, hemoglobin, albumin, eLFG *baseline* terhadap penurunan eLFG CKD-EPI jam ke 48 ($p=0,047$, $p=0,006$, $p=0,000$) berturut, turut. Peningkatan nilai rasio NGAL / kreatinin urin memiliki korelasi negatif sedang yang signifikan terhadap penurunan eLFG CKD-EPI jam ke-48 pasca intervensi koroner yang menunjukkan kemampuan rasio NGAL/kreatinin dalam mendeteksi dini kejadian CIAKI ($r: -0,351$; $p = 0,001$)

Simpulan: Rasio NGAL / kreatinin urin berkorelasi negatif sedang dengan estimasi laju filtrasi glomerulus yang dihitung berdasarkan metode *Chronic Kidney Disease Epidemiology Collaboration* (CKD-EPI) pada pasien STEMI yang menjalani intervensi koroner perkutan primer.

Kata kunci: Rasio NGAL/kreatinin urin, laju filtrasi glomerulus, estimasi laju filtrasi glomerulus (eLFG), perhitungan CKD-EPI

ABSTRACT

Background: Early detection of impaired renal function related to contrast exposure in STEMI patients undergoing primary percutaneous coronary intervention required to prevent contrast induced acute kidney injury (CIAKI). Urinary NGAL biomarkers had been extensively studied for their reliability in detecting renal injury before a decrease in glomerular filtration occurs. Estimation of glomerular filtration rate (eGFR) using the CKD-EPI formula was recommended in assessing kidney function. The aim of this study was to assess the correlation of the urinary creatinine NGAL ratio with the CKD-EPI method of eGFR in STEMI patients after primary percutaneous coronary intervention.

Method: A cross-sectional study involved STEMI patients undergoing primary percutaneous coronary intervention at Dr Sardjito Hospital Yogyakarta who met the inclusion and exclusion criteria. Blood samples without anticoagulant were taken for examination of serum creatinine before the procedure and 48 hours after percutaneous coronary intervention while urine samples were examined at 12 hours after primary percutaneous coronary intervention. Descriptive analysis of the data on the characteristics of the subject was presented in the table. Spearmann correlation test used to assess the correlation between urinary NGAL/creatinine ratio and eGFR CKD-EPI method. Statistical analysis using SPSS version 24.

Results: Total research subjects were 82 (84.1%) people with the majority of male and the mean age of the subjects was 59.67 ± 10.7 years. There were significant differences in the variables of age, hemoglobin, albumin, baseline eGFR to the decrease of eGFR CKD-EPI at 48 hours ($p=0.047$, $p=0.006$, $p=0.000$) consecutively. An increase in urinary NGAL/creatinine ratio had a moderately significant negative correlation with the decrease of eGFR CKD-EPI at 48 hour after coronary intervention which indicates the ability of the NGAL/creatinine ratio in early detection of CIAKI events ($r: -0.351$; $p = 0.001$).

Conclusion: Urinary NGAL/creatinine ratio had a moderate negative correlation with the estimated glomerular filtration rate calculated based on the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) method.

Keywords: Urinary NGAL/creatinine ratio, glomerular filtration rate, estimated glomerular filtration rate, CKD-EPI equation