

## INTISARI

**Latar belakang:** Cedera ginjal akut atau *Acute kidney injury* (AKI) merupakan suatu kumpulan gejala klinis akibat adanya gangguan fungsi ginjal yang terjadi secara mendadak dan merupakan komplikasi yang sering dijumpai pada pasien dengan kondisi kritis. Biomarker deteksi AKI yang digunakan saat ini masih kurang reliabel. *Neutrophil Gelatinase Associated Lipocalin* (NGAL) merupakan penanda cedera tubular dapat digunakan sebagai penanda dini untuk memprediksi kejadian AKI. Tujuan penelitian ini untuk mengetahui rasio prevalensi kejadian Cedera Ginjal Akut pada pasien rawat *Intensive* dengan peningkatan kadar *Neutrophil Gelatinase-Associated Lipocalin* (NGAL) urin.

**Metode:** Penelitian observasional analitik dengan desain penelitian *cross sectional*. Subjek penelitian adalah pasien yang dirawat ICU RSUP Dr. Sardjito yang memenuhi kriteria inklusi dan eksklusi. NGAL urin diperiksa menggunakan Architect dengan metode *Chemiluminescent Microparticle Immunoassay* (CMIA). Kriteria AKI menggunakan kriteria KDIGO. Analisis data dasar secara deskriptif, disajikan dengan median (minimal-maksimal), *chi-square test* dan *Mann Whitney u-test*. Perhitungan rasio prevalensi (RP) disajikan dengan tabel 2x2 serta beda proporsi diuji dengan *chi-square test*.

**Hasil :** Total subjek penelitian ini adalah 77 orang, sebagian besar subjek penelitian laki-laki (51,9%). Total subjek yang berkembang kearah AKI 16 orang (19,5%). Median usia subjek 48 (18 - 92) tahun. Kriteria usia <60 tahun dan  $\geq 60$  tahun didapatkan perbedaan bermakna pada kelompok AKI dan non-AKI ( $p=0,0359$ ). Kadar NGAL urin pada dua kelompok penelitian didapatkan perbedaan bermakna [112,1(8,5 – 1500) vs 53,1 (0,3 – 1500)  $p=0,0413$ ]. Peningkatan kadar NGAL urin >34,32 ng/ml memiliki rasio prevalensi sebesar 2,29 dengan CI 95%: 0,776 – 11,668 dibandingkan kadar NGAL urin  $\leq 34,32$  ng/ml dan secara statistik tidak bermakna ( $p= 0,1021$ ). Peningkatan NGAL urin berdasarkan *cut off* ROC populasi sebesar >46,5 ng/mL memiliki rasio prevalensi sebesar 3,08 dengan 95% CI (1,016–15,182) mengalami cedera ginjal akut dan hal ini signifikan secara statistik ( $p= 0,0388$ ).

**Simpulan:** Berdasarkan perhitungan Rasio Prevalensi (RP) yaitu sebesar 2,29 mengalami cedera ginjal akut dan secara statistik tidak bermakna, akan tetapi berdasarkan *cut off* pada populasi penelitian ini didapatkan RP sebesar 3,08 mengalami cedera ginjal akut dan hal ini signifikan secara statistik

**Kata kunci:** Cedera Ginjal akut, NGAL urin, rawat *intensive*

## ABSTRACT

**Background:** Acute Kidney Injury (AKI) is a clinical syndrome of symptoms due to a sudden disruption of kidney function and is a complication that is often found in patients with critical ill. The current of AKI detection biomarker is not reliable enough. Neutrophil Gelatinase Associated Lipocalin (NGAL) is a biomarker that can be used as an early biomarker to predict the incidence of AKI. The aim of the study was to determine prevalence ratio of Acute Kidney Injury in intensive care unit with urinary NGAL increased levels.

**Method:** This is an analytical observational study with cross sectional method. The subjects were the patients who were admitted to the ICU in RSUP Dr. Sardjito that met the inclusion and exclusion criteria. Urinary NGAL was examined using Architect with Chemiluminescent Microparticle Immunoassay (CMIA) method. Criteria for acute kidney injury were assessed using KDIGO criteria. Baseline descriptive baseline data analysis presented with median (minimum-maximum), chi-square test, and Mann Whitney u test. Determination cut off NGAL urine level analyzed by ROC curve, the prevalence ratio (PR) is presented in 2x2 table and different proportions analyzed by chi-square test.

**Result :** The total subject of this study was 77 people, most of the subject were male (51,9%). The total subjects who developed AKI were 16 subjects (19,5%). Median age of subjects was 48 (18-92) years. There were significant differences in the criteria for age <60 years old and  $\geq$  60 years in the AKI and non-AKI groups ( $p=0,0359$ ). Urinary NGAL levels in two groups were statistically significant [112,1(8,5 – 1500) vs 53,1 (0,3 – 1500)  $p=0,0413$ ]. Elevated urine NGAL level >34,32 ng/mL had prevalence ratio of 2,29 (CI 95% 0,776 – 11,668) compare to urinary NGAL level  $\leq$ 34,32 ng/ml and statistically not significant ( $p= 0,1021$ ). Elevated urinary NGAL cut off based on ROC curve >46,5 ng/mL had prevalence ratio 3,08 with 95% CI (1,016–15,182) to have acute kidney injury and it was statistically significant ( $p= 0,0388$ ).

**Conclusion :** Based on calculation of Prevalence Ratio (PR), it was 2,29 had acute kidney injury and it was not statistically significant. However, based on the cut off in this study population, it was obtained PR of 3.08 had Acute Kidney Injury and it was statistically significant.

**Keywords:** Acute Kidney Injury, urinary NGAL, intensive care unit