RENAL ANGINA INDEX SEBAGAI PREDIKTOR GANGGUAN GINJAL AKUT PADA ANAK SAKIT KRITIS

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INTISARI

Latar belakang: Gangguan ginjal akut (GnGA) kerap ditemukan pada anak sakit kritis, dan berhubungan dengan meningkatnya angka mortalitas disertai prognosis yang berat. *Renal angina index* (RAI) adalah penilaian stratifikasi risiko yang sudah banyak diteliti di negara maju, dan dapat dinilai pada hari pertama admisi untuk prediksi kejadian GnGA. Studi terkait RAI masih terbatas di Indonesia.
Tujuan: Mengetahui validitas skor RAI sebagai prediktor GnGA pada anak sakit kritis yang dirawat di *pediatric intensive care unit* (PICU) RSUP Dr. Sardjito Yogyakarta.
Metode: Penelitian kohort prospektif dengan subyek anak sakit kritis, berusia 1 bulan sampai dengan 18 tahun, tanpa riwayat GnGA yang dirawat di PICU pada 26 Januari 2024 – 12 Maret 2024. Skor RAI dinilai dalam 24 jam sejak admisi, dengan *cut-off* ≥8 sebagai prediktor GnGA yang dinilai pada hari ke-3 perawatan. GnGA ditegakkan dengan perbandingan nilai kreatinin serum dari *baseline* (hari ke-0) dan pada hari ke-3 atau berdasarkan penurunan *output* urin sesuai stratifikasi KDIGO 2012. Performa diagnostik RAI dinilai dalam kurva *receiver operating characteristic* (ROC), uji sensitivitas dan spesifisitas. Analisis multivariat dilanjutkan menggunakan uji regresi logistik dengan kemaknaan p<0,05 dan parameter kekuatan hubungan dinilai dengan *odds ratio* (OR) dan interval kepercayaan (IK) 95%.
Hasil: Sebanyak 119 anak sakit kritis dirawat di PICU selama periode penelitian, dengan 54 subyek yang dimasukkan dalam studi ini. RAI ≥8 ditemukan pada 16 (29,62%) subyek, dengan proporsi GnGA pada hari ke-3 lebih tinggi pada kelompok RAI ≥8 (43,75%; 7/16) dibandingkan kelompok RAI <8 (7,89%; 3/38). Kemampuan prediksi skor RAI ≥8 terhadap GnGA pada hari ke-3 memiliki AUC 0,789 (IK95% 0,645-0,932, p<0,001), sensitivitas 70%, spesifisitas 79,5%. RAI ≥8 berhubungan secara independen terdahadap GnGA dengan OR 8,270 (IK95% 1,687-40,547, p=0,009). Kelompok RAI ≥8 memiliki skor PELOD-2 yang lebih tinggi, dengan median 5 (IQR 3-7,75; p=0,006).
Simpulan: RAI ≥8 merupakan faktor prediktor independen kejadian GnGA pada hari ke-3 perawatan pada anak sakit kritis.
Kata kunci: gangguan ginjal akut, *renal angina index*, anak sakit kritis, prediktor

RENAL ANGINA INDEX AS A PREDICTOR OF ACUTE KIDNEY INJURY IN CRITICALLY ILL CHILDREN

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ABSTRACT

Background: Acute kidney injury (AKI) is common in critically ill children and is associated with higher occurrence of mortality and poorer prognosis. Renal angina index (RAI) assessed on the first day of admission is a well-studied risk stratification tool to predict the occurrence of AKI in developed countries; however, studies on RAI in Indonesia remain scarce.
Aim: To determine the validity of RAI to predict AKI in critically ill patients admitted in pediatric intensive care unit (PICU) Dr. Sardjito General Hospital Yogyakarta.
Method: This was a prospective cohort study in critically ill children, ranging from 1 month to 18 years old, with no previous kidney disease admitted in PICU from 26th January 2024-12 March 2024. RAI was determined within 24 hours of admission, and RAI ≥8 was assessed as a predictor of AKI occurrence on the third day of admission. We diagnosed AKI by compared serum creatinine levels at baseline (day 0) and day 3, or decreased urine output, as defined according to KDIGO guidelines. Sensitivity, specificity and receiver operating characteristic (ROC) analysis were performed to evaluate for diagnostic performance of RAI ≥8. Further multivariate analysis using logistic regression was conducted and power of association was shown by odds ratio (OR) dan 95% confidence interval (CI).
Results: A total of 119 critically ill children were admitted in PICU during the study period, and 54 subjects were included in the analysis; of these, 16 (29.6%) patients had RAI ≥8. We observed a higher proportion of AKI in the RAI ≥8 (43.8%;7/16) group compared to the RAI <8 (7.9%; 3/38) group. RAI ≥8 cut-off to predict AKI had an AUC of 0.789 (95%CI 0.645-0.932, p <0.001), sensitivity 70%, and specificity 79.5%. RAI ≥8 was independently associated with AKI with OR 8.270 (95%CI 1.687-40.547, p=0.009) after multivariate analysis. Patients with RAI ≥8 had higher median PELOD-2 scores of 5 (IQR 3-7.75) than patients with RAI <8 (p=0.006).
Conclusion: RAI ≥8 is an independent predictor of AKI on the third day of admission in critically ill children.
Keywords: acute kidney injury, renal angina index, critically ill children, predictor