UNIVERSITAS
GADJAH MADA
Hubungan Perubahan NLR (Neutrofil Limfosit Rasio) sebagai Indikator Respon Antibiotik terhadap Pasien Sepsis di ICU RSUP DR. Sardjito Yogyakarta
TRIWIDODO BUDI MULYANTO, dr. Bowo Adiyanto, M.Sc, Sp.An-TI, Subsps.TI(K).; Dr.dr. Akhmad Yun Jufan, M.Sc
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

INTISARI

Latar Belakang
Sepsis merupakan salah satu penyebab utama mortalitas di unit perawatan intensif (ICU) dengan angka kematian yang masih tinggi. Evaluasi respon terapi antibiotik sangat penting untuk menentukan efektivitas tata laksana sepsis. Saat ini, Procalcitonin (PCT) dan *Sequential Organ Failure Assessment* (SOFA) score banyak digunakan sebagai penanda respon terapi, namun keduanya memiliki keterbatasan terutama pada ketersediaan alat laboratorium dan biaya. Neutrofil Limfosit Rasio (NLR) merupakan parameter sederhana yang mudah diperoleh dari hitung jenis leukosit rutin dan berpotensi digunakan sebagai indikator alternatif. Namun, hingga saat ini masih belum banyak bukti ilmiah yang menilai validitas NLR sebagai respon terapi antibiotik

Tujuan Penelitian
Mengetahui hubungan NLR sebagai indikator respon terapi antibiotik terhadap pasien sepsis di ICU RSUP Dr.Sardjito Yogyakarta.

Metode
Penelitian ini menggunakan desain kohort observasional analitik prospektif pada pasien sepsis di ICU RSUP Dr. Sardjito Yogyakarta setelah mendapat ijin penelitian sampai jumlah sampel yang dibutuhkan terpenuhi. Sampel diambil secara consecutive sampling. Pemeriksaan NLR, Procalcitonin, dan SOFA score dilakukan pada hari ke-0 dan hari ke-3. Respon terapi antibiotik dinilai positif bila terjadi penurunan Procalcitonin ≥80% dari nilai awal atau penurunan SOFA score ≥2 poin**.** Menentukan nilai cut off optimal nilai NLR dengan analisis ROC.

Hasil
Sebanyak 38 pasien sepsis yang dirawat di ICU RSUP Dr. Sardjito Yogyakarta memenuhi kriteria penelitian. Nilai *cut-off* optimal perubahan NLR adalah 1,2. Analisis bivariat menunjukkan penurunan NLR ≥ 1,2 berhubungan signifikan dengan respon terapi antibiotik positif (OR 19,83; 95% CI 3,78–103,8; p<0,001). Pada analisis multivariat, perubahan NLR ≥ 1,2 tetap menjadi prediktor independen terhadap respon antibiotik (OR 14,474; 95% CI 2,562–81,764; p=0,002). Analisis kurva ROC menunjukkan AUC sebesar 0,821 (95% CI 0,66–0,98; p=0,001), sensitivitas 82,4%, dan spesifisitas 81,0%.

Kesimpulan
Perubahan Neutrofil Limfosit Rasio (NLR) memiliki hubungan bermakna sebagai indikator respon terapi antibiotik pada pasien sepsis di ICU RSUP Dr. Sardjito Yogyakarta.

Kata kunci: Sepsis, Perubahan Neutrofil Limfosit Ratio (NLR), Procalcitonin (PCT), skor SOFA, Antibiotik

UNIVERSITAS
GADJAH MADA
Hubungan Perubahan NLR (Neutrofil Limfosit Rasio) sebagai Indikator Respon Antibiotik terhadap Pasien Sepsis di ICU RSUP DR. Sardjito Yogyakarta
TRIWIDODO BUDI MULYANTO, dr. Bowo Adiyanto, M.Sc, Sp.An-TI, Subsps.TI(K).; Dr.dr. Akhmad Yun Jufan, M.Sc
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

ABSTRACT

Background
Sepsis is a leading cause of mortality in intensive care units (ICUs), with a persistently high mortality rate. Evaluating the response to antibiotic therapy is crucial for determining the effectiveness of sepsis management. Currently, Procalcitonin (PCT) and the Sequential Organ Failure Assessment (SOFA) score are widely used as markers of therapeutic response, but both have limitations, particularly in terms of availability laboratory equipment and cost. The Neutrophil-Lymphocyte Ratio (NLR) is a simple parameter readily obtained from a routine leukocyte count and has the potential to be used as an alternative indicator. However, there is still a lack of scientific evidence assessing the validity of the NLR as a measure of antibiotic therapy response.
Objective
To determine the relationship of the NLR as an indicator of antibiotic therapy response in sepsis patients in the ICU of Dr. Sardjito General Hospital, Yogyakarta
Method
This study used a prospective analytic observational cohort design involving sepsis patients admitted to the ICU of Dr. Sardjito General Hospital Yogyakarta after ethical approval was obtained until the required sample size was fulfilled. Subjects were recruited using consecutive sampling. NLR, Procalcitonin, and SOFA score examinations were performed on day 0 and day 3. A positive antibiotic therapy response was defined as a reduction in Procalcitonin levels of ≥80% from baseline or a decrease in SOFA score of ≥2 points. The optimal cut-off value of NLR was determined using Receiver Operating Characteristic (ROC) curve analysis.
Results
A total of 38 sepsis patients treated in the ICU of Dr. Sardjito General Hospital Yogyakarta met the study criteria. The optimal cut-off value for NLR change was 1.2. Bivariate analysis showed that a decrease in NLR ≥1.2 was significantly associated with a positive antibiotic therapy response (OR 19.83; 95% CI 3.78–103.8; p<0.001). Multivariate analysis demonstrated that a decrease in NLR ≥1.2 remained an independent indicator of antibiotic therapy response (OR 14.474; 95% CI 2.562–81.764; p=0.002). ROC analysis showed good discriminatory performance, with an AUC of 0.821 (95% CI 0.66–0.98; p=0.001), a sensitivity of 82.4%, and a specificity of 81.0%.

Conclusion
Changes in the Neutrophil-to-Lymphocyte Ratio (NLR) were significantly associated with antibiotic therapy response in sepsis patients admitted to the ICU of Dr. Sardjito General Hospital Yogyakarta.

Keywords: Sepsis, Neutrophil-to-Lymphocyte Ratio (NLR) Changes, Procalcitonin (PCT), SOFA score, Antibiotics