

## INTISARI

### PERBANDINGAN NILAI PROGNOSIS RASIO NETROFIL LIMFOSIT, SKOR HALP, DAN INDEKS SII TERHADAP KEMATIAN AKIBAT SEPSIS

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**Latar Belakang:** Sepsis masih menjadi masalah kesehatan yang penting dengan angka mortalitas yang tinggi, mengakibatkan lebih dari 5 juta kematian per tahun di seluruh dunia. Diagnosis dini untuk sepsis dan syok septik akan mengurangi mortalitas, dan meningkatkan prognosis yang lebih baik. Diperlukan *marker* klinis yang praktis, cepat, mudah diakses, dan ekonomis, untuk membantu diagnosis, dan menilai prognosis sepsis. Rasio netrofil limfosit (NLR), skor HALP (hemoglobin, albumin, limfosit, *platelet*), dan indeks SII (*systemic immune inflammatory index*) digunakan untuk prognosis kematian pada kondisi keganasan, namun belum pernah diteliti bersamaan pada kondisi sepsis.

**Tujuan Penelitian:** Mengetahui, menilai, dan melihat perbandingan gambaran NLR, skor HALP, dan indeks SII sebagai faktor prognosis kematian akibat sepsis.

**Metode Penelitian:** Penelitian kohort retrospektif dengan subjek pasien sepsis di UGD dan ruang rawat inap penyakit dalam RSUP Dr. Sardjito, yang dirawat pada 2017-2019. NLR, skor HALP, dan indeks SII ditentukan batasnya (*cut-off*) melalui analisis kurva ROC. Luaran klinis (*outcome*) yang dinilai adalah mortalitas dalam 5 hari setelah didiagnosis sepsis dengan berbagai penyebab.

**Hasil Penelitian:** Dari 125 subjek penelitian, terdapat 64 (51,2%) pria, 61 (48,8%) wanita, dengan rerata usia  $56,81 \pm 16,05$  tahun. Mortalitas sebesar 48,8% (61 subjek) dengan 18,4% (23 subjek) pasien meninggal dalam kurun waktu 5 hari sejak terdiagnosis sepsis. Nilai *cut-off* NLR, skor HALP, dan indeks SII berturut-turut adalah 12,92; 93,80; dan 3999,20; dengan indeks SII memiliki sensitivitas tertinggi (65,2%), dan spesifisitas tertinggi (61,8%). Dari analisis bivariat diketahui bahwa NLR ( $p=0,023$ ; OR 2,91; 95% CI:1,129-7,482) dan indeks SII ( $p=0,001$ ; OR 4,98; 95% CI:1,805-13,727) adalah yang bermakna terhadap kematian akibat sepsis dalam 5 hari. Analisis multivariat dengan regresi logistik dilakukan untuk mengontrol variabel perancu, didapatkan indeks SII ( $p=0,018$ ; OR 7,26; 95% CI:1,398-37,772) sebagai faktor prognosis independen kematian dini pasien sepsis dewasa di RSUP Dr. Sardjito.

**Kesimpulan:** Rasio netrofil limfosit (NLR) dan indeks SII dapat digunakan sebagai prognosis kematian dini pada sepsis. Indeks SII merupakan faktor prognosis independen kematian akibat sepsis dalam kurun waktu lima hari yang paling bermakna di bandingkan NLR dan skor HALP.

**Kata kunci:** Rasio Netrofil Limfosit (NLR), Skor HALP, Indeks SII, Prognosis kematian, Sepsis

## ABSTRACT

### COMPARISON OF THE PROGNOSTIC VALUE OF NEUTROPHIL-LYMPHOCYTE RATIO, HALP SCORE, AND SII INDEX IN HOSPITAL MORTALITY OF PATIENTS WITH SEPSIS

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**Background:** Sepsis is still an important health problem with a high mortality rate, resulting in more than 5 million deaths per year worldwide. Early diagnosis of sepsis and septic shock will reduce mortality, and increase a better prognosis. The biomarkers, which fast, easily accessible, and economical, are needed to help diagnose and determine the prognosis of sepsis. The neutrophil-lymphocyte ratio (NLR), HALP score (hemoglobin, albumin, lymphocyte, platelet), and systemic immune inflammatory index (SII) were used to predict mortality in malignant conditions, but have not been studied concurrently in sepsis conditions.

**Objective:** The objective of this study was to compare and determine whether NLR, HALP score, and SII index have a prognostic value for mortality in septic patients at Dr. Sardjito Hospital.

**Methods:** A retrospective cohort study with septic patients in the Emergency Room (ER) and the Internal Medicine Ward of RSUP Dr. Sardjito, who was admitted in 2017-2019. The prognostic accuracy of NLR, HALP score, and SII index were evaluated by assessing the area under the receiver operating characteristic (AUC ROC) curve. The primary outcome assessed was mortality within 5 days after diagnosis of sepsis from various causes.

**Results:** 125 research subjects, there were 64 (51.2%) men, 61 (48.8%) women, with mean of age  $56.81 \pm 16.05$  years old. Mortality was 48.8% (61 subjects) with 18.4% (23 subjects) of patients died within 5 days of being diagnosed with sepsis. The cut-off value of NLR, HALP score, and SII index were 12.92, 93.80, and 3999.20, respectively, with SII index having the highest sensitivity (65.2%), and the highest specificity (61.8%). From the bivariate analysis, it was found that the NLR ( $p=0.023$ ; OR 2.91; 95% CI:1.129-7.482) and SII index ( $p=0.001$ ; OR 4.98; 95% CI:1.805-13.727) were significant for mortality of sepsis within 5 days. Multivariate analysis with logistic regression was performed to control for confounding variables, SII index ( $p=0.018$ ; OR 7.26; 95% CI: 1.398-37.772) as an independent prognostic factor for early death in adult septic patients at Dr. Sardjito Hospital.

**Conclusion:** NLR and SII index can be used as a prognosis for early death in sepsis. The SII index was the most significant independent prognostic factor of death from sepsis within five days, compared to NLR and HALP score.

**Keywords:** Neutrophil-Lymphocyte Ratio (NLR), HALP score, SII index, Prognostic of mortality, Sepsis