Rasio CD64 Neutrofil Terhadap HLA-DR Monosit Sebagai Kandidat Penanda Sepsis Neonatal Pasien NICU = Neutrophil CD64 to monocyte HLA-DR ratio as a candidate marker of sepsis neonatal in NICU patients

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Abstrak

Latar belakang: Sepsis neonatal masih menjadi masalah kesehatan di dunia. Hal ini tidak terlepas dari kesulitan dalam menegakkan diagnosis akibat sistem imun yang belum sempurna sehingga tidak memiliki gejala yang khas dan tidak memiliki penanda laboratorium tunggal. Tujuan: Penelitian ini bertujuan untuk menilai potensi CD64 neutrofil, HLA-DR monosit dan rasio CD64 neutrofil per HLA-DR monosit sebagai penanda sepsis neonatal. Metode: Subjek penelitian ini adalah neonatus yang dicurigai sepsis secara klinis yang ditandai dengan gejala pada salah satu sistem organ. Diagnosis sepsis neonatal secara klinis ditegakkan berdasarkan kriteria dari European Medical Association. Expresi CD64 neutrofil dan HLA-DR monosit dilakukan menggunakan flow cytometry mengikuti protokol Quantibrite dengan hasil dilaporkan sebagai indeks fluoresens dan dikonversi menjadi antibody bound per cell (ABC). Sedangkan rasio CD64 neutrofil per HLA-DR monosit didapatkan dari hasil perhitungan. Hasil: Lima puluh subjek neonatus berhasil direkrut dalam penelitian ini, yang terdiri 24 subjek sepsis, dan 26 subjek non sepsis. Ekspresi CD64 neutrofil dan rasio CD64 neutrofil per HLA-DR monosit lebih tinggi pada kelompok sepsis neonatal dan masing-masing memiliki area under curve (AUC) 71,8% dan 70,2%. Nilai titik potong CD64 neutrofil didapatkan 5.196,15 ABC sedangkan rasio CD64 neutrofil terhadap HLA-DR monosit memiliki titik potong 13,44%. Kesimpulan: CD64 neutrofil dan rasio CD64 neutrofil per HLA-DR monosit berpotensi menjadi penanda sepsis neonatal.

.....Background: Neonatal sepsis remains a global health concern. This is attributed to the challenges in establishing a diagnosis due to an immature immune system, resulting in a lack of specific symptoms and a singular laboratory marker. Objective: This research aims to explore the potential of CD64 neutrophils, HLA-DR monocytes, and the CD64 neutrophil to HLA-DR monocyte ratio as markers for neonatal sepsis. Methods: The subjects of this study were neonates with suspected sepsis, identified by symptoms affecting one of the organ systems. Neonatal sepsis confirmation followed the criteria set by the European Medical Association. CD64 neutrophil and HLA-DR monocyte examinations were conducted using flow cytometry following the Quantibrite protocol and reported as fluorescence index that were converted to antibody bound per cell (ABC). Meanwhile, the CD64 neutrophil to HLA-DR monocyte ratio was calculated. Results: Fifty neonatal subjects were recruited into this study, comprising 24 sepsis cases and 26 non-sepsis cases. The expression of CD64 neutrophils and the CD64 neutrophil to HLA-DR monocyte ratio were higher in the neonatal sepsis group, with respective areas under the curve (AUC) of 71.8% and 70.2%. The cutoff value for CD64 neutrophils was determined to be 5,196.15 ABC, while the cutoff for the CD64 neutrophil to HLA-DR monocyte ratio was 13.44%. Conclusion: CD64 neutrophils and the CD64 neutrophil to HLA-DR monocyte ratio show potential as markers for neonatal sepsis.