

INTISARI

IL 6, CRP, DAN FERRITIN SEBAGAI PREDIKTOR MORTALITAS 14 HARI DI RUMAH SAKIT PADA PASIEN COVID-19 DERAJAT BERAT ATAU KRITIS DI RSUP DR. SARDJITO

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Latar Belakang : Kasus *Coronavirus disease* 2019 (COVID-19) menjadi pusat perhatian di seluruh dunia akibat tingginya angka mortalitas. Reaksi inflamasi memainkan peran penting dalam patofisiologi COVID-19. Badai sitokin menyebabkan pasien jatuh pada kondisi *Acute Respiratory Distress Syndrome* (ARDS). Berbagai sitokin inflamasi dan protein fase akut meningkat pada pasien COVID-19 sehingga dijadikan marker prediktor mortalitas, diantaranya CRP, IL-6, dan ferritin. Belum ada penelitian di Indonesia yang membandingkan ketiga parameter tersebut pada pasien COVID-19 derajat berat atau kritis dalam memprediksi kematian 14 hari.

Tujuan : Mengetahui apakah IL-6, CRP, dan ferritin dapat berperan sebagai prediktor mortalitas 14 hari pasien COVID-19 derajat berat dan kritis di RSUP dr. Sardjito.

Metode : Penelitian kohort retrospektif dari rekam medik pasien COVID-19 derajat berat dan derajat kritis yang dirawat di RSUP dr. Sardjito pada Juli 2020 – Maret 2023. Analisis ROC untuk mendapatkan *cut off* IL-6, CRP, dan ferritin. Analisa statistik bivariat menggunakan uji *Chi-Square* dan menghitung OR (*Odds Ratio*), dilanjutkan uji analisis multivariat dengan regresi logistik.

Hasil Penelitian : Diperoleh 305 pasien COVID-19 derajat berat dan kritis, dengan median usia 61 tahun, komorbid DM sebesar 48,9%, hipertensi 32,5%, stroke 6,9%, PJK 3,6%, dan CKD stadium 5 2,6%. Analisis bivariat didapatkan CRP, IL-6, dan ferritin dapat berperan sebagai prediktor mortalitas 14 hari ($p < 0,05$) dengan nilai *cut off* CRP=59,5 mg/l dengan sensitivitas 82,9% dan spesifisitas 29,3%, ferritin =1404,025 ng/ml dengan sensitivitas 45,3% dan spesifisitas 77,7%, dan IL-6 67,81 pg/ml dengan sensitivitas 62,4% dan spesifisitas 66%. Analisis multivariat didapatkan IL-6 dengan $p=0,001$ dan OR=2,889; ferritin dengan $p=0,001$ dan OR=2,394; d-dimer dengan $p=0,001$ dan OR=2,426, dan komorbid stroke dengan $p=0,026$ dan OR=3,150 berpengaruh signifikan terhadap meninggal 14 hari.

Kesimpulan : IL-6, CRP, dan ferritin dapat berperan sebagai prediktor mortalitas 14 hari di rumah sakit pasien COVID-19 derajat berat atau kritis di RSUP dr. Sardjito, dengan *cut off* CRP=59,5 mg/l; ferritin=1404,025 ng/ml; dan IL-6=67,81 pg/ml.

Kata kunci : COVID-19, CRP, IL-6, ferritin, mortalitas.

ABSTRACT

IL-6, CRP, AND FERRITIN AS PREDICTORS OF 14-DAY IN HOSPITAL MORTALITY SEVERE OR CRITICAL COVID-19 PATIENTS AT DR. SARDJITO HOSPITAL

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Background: Coronavirus Disease 2019 (COVID-19) cases have garnered global attention due to the high mortality rate. Inflammatory reactions play a crucial role in the pathophysiology of COVID-19, leading to patients experiencing Acute Respiratory Distress Syndrome (ARDS) during cytokine storms. Various inflammatory cytokines and acute-phase proteins increase in COVID-19 patients, making them potential markers for predicting mortality, including CRP, IL-6, and ferritin. No studies in Indonesia have compared these three parameters in severe or critical COVID-19 patients to predict 14-day mortality.

Objective: To determine whether IL-6, CRP, and ferritin can serve as predictors of 14-day mortality in severe and critical COVID-19 patients at Dr. Sardjito General Hospital.

Methods: A retrospective cohort study using medical records of severe and critical COVID-19 patients admitted to Dr. Sardjito General Hospital from July 2020 to March 2023. ROC analysis was conducted to obtain cut-offs for IL-6, CRP, and ferritin. Bivariate statistical analysis was performed using the Chi-Square test, calculating Odds Ratios (OR), followed by multivariate analysis with logistic regression.

Result: A total of 305 severe and critical COVID-19 patients were included, with a median age of 61 years. Comorbidities included diabetes mellitus (48.9%), hypertension (32.5%), stroke (6.9%), coronary artery disease (3.6%), and stage 5 chronic kidney disease (2.6%). Bivariate analysis revealed that CRP, IL-6, and ferritin could act as predictors of 14-day mortality ($p < 0.05$). The cut-offs were CRP=59.5 mg/l with sensitivity 82.9% and specificity 29.3%, ferritin=1404.025 ng/ml with sensitivity 45.3% and specificity 77.7%, and IL-6=67.81 pg/ml with sensitivity 62.4% and specificity 66%. Multivariate analysis indicated that IL-6 ($p=0.001$, OR=2.889), ferritin ($p=0.001$, OR=2.394), d-dimer ($p=0.001$, OR=2.426), and comorbid stroke ($p=0.026$, OR=3.150) significantly influenced 14-day mortality.

Conclusion: IL-6, CRP, and ferritin can serve as predictors of 14-day mortality in severe or critical COVID-19 patients at Dr. Sardjito General Hospital, with cut-offs of CRP=59.5 mg/l, ferritin=1404.025 ng/ml, and IL-6=67.81 pg/ml.

Keywords: COVID-19, CRP, IL-6, ferritin, mortality.