

INTISARI

Latar belakang: *Coronavirus Disease 2019* atau Covid-19 menjadi pandemi global yang disebabkan oleh virus SARS-CoV2. Pasien Covid-19 mengalami inflamasi hebat di paru-paru yang diistilahkan sebagai badai sitokin. Indikator inflamasi yang lazim dipakai yaitu *C-reactive protein* (CRP). *C-Reactive protein* merupakan golongan protein yang diproduksi dalam hepatosit saat terjadi inflamasi dengan sensitivitas yang baik. Biaya pemeriksaan CRP masih relatif lebih tinggi dan ketersediaan di pelayanan kesehatan primer belum ada. *Platelet-to-lymphocyte ratio* (PLR) merupakan penanda inflamasi yang mudah dan sederhana sebagai alternatif pengganti CRP dan dapat menggambarkan aktivitas inflamasi dalam tubuh. Beberapa teori menyatakan peran trombosit pada proses inflamasi. Pelepasan sitokin proinflamasi meliputi trombopoietin meningkatkan produksi trombosit di samping sitokin yang lain seperti IL-6 dan IL-8 yang meningkatkan konsumsi trombosit. Aktivitas virus korona juga sangat mempengaruhi jumlah limfosit pada berbagai mekanisme sehingga jumlahnya mengalami penurunan lebih signifikan sehingga PLR tetap meningkat. Sampai saat ini belum ada penelitian korelasi PLR dengan CRP pada pasien Covid-19 khususnya yang dirawat di RSUP Dr. Sardjito, Yogyakarta.

Tujuan: Penelitian ini bertujuan untuk mengevaluasi bagaimana korelasi PLR dengan kadar CRP pada pasien Covid-19 yang dirawat inap RSUP Dr. Sardjito.

Metode: Penelitian dilakukan dengan desain observasional analitik menggunakan data sekunder pada pasien Covid-19 yang dirawat di RSUP Dr. Sardjito. Data diambil berdasarkan hasil PCR di laboratorium biomolekular Instalasi Laboratorium Terpadu, kemudian subjek penelitian dipilih berdasarkan kriteria inklusi yaitu pasien rawat inap ≥ 18 tahun yang menjalani perawatan dengan protokol Covid-19 di RSUP Dr. Sardjito dan memiliki hasil pemeriksaan PLR dan CRP dalam 24 jam saat terdiagnosis Covid-19. Analisis data dasar secara deskriptif, ditampilkan dalam median (minimal–maksimal). Data kategorikal disajikan dalam proporsi. Data yang dianalisis secara statistik adalah pemeriksaan PLR dan CRP dengan uji korelasi *Spearman* nilai $p < 0,05$ dianggap signifikan secara statistik. Data dianalisis menggunakan software SPSS versi 27.

Hasil dan pembahasan: Didapatkan 277 subjek penelitian, terdiri dari pasien Covid-19 dengan usia 57 (18-90) tahun, 56% pria dan 44% wanita. Didapatkan median PLR 216,6 (21,13 – 1350,98) dan kadar CRP 77 (4-151) mg/L. Pada penelitian ini didapatkan koefisien korelasi antara PLR dan kadar CRP sebesar $r=0,402$; $p<0,001$.

Simpulan: Terdapat korelasi positif antara nilai PLR dengan CRP pada pasien Covid-19 di RSUP Dr. Sardjito

Kata kunci: Covid-19, hiperinflamasi, *Platelet to Lymphocyte Ratio* (PLR), CRP

ABSTRACT

Background: Coronavirus Disease 2019 or Covid-19 is a global pandemic caused by the SARS-CoV2 virus. Covid-19 patients have severe inflammation in the lungs which is termed a cytokine storm. Inflammation indicator commonly used is C-reactive protein (CRP). C-Reactive protein is a class of proteins produced in hepatocytes during inflammation with good sensitivity. The cost of CRP examinations is still relatively high and the availability of primary health services is not yet available. Platelet-to-lymphocyte ratio (PLR) is an easy and simple inflammatory marker as an alternative to CRP and can describe inflammatory activity in the body. Several theories state the role of platelets in the inflammatory process. The release of proinflammatory cytokines including thrombopoietin increases platelet production in addition to other cytokines such as IL-6 and IL-8 that increase platelet consumption. Corona virus activity also greatly affects the number of lymphocytes in various mechanisms so that the number has decreased more significantly so that the PLR continues to increase. Until now, there has been no study about correlation between PLR and CRP in Covid-19 patients those treated at RSUP Dr. Sardjito, Yogyakarta.

Objective: The aim of this study is to evaluate how the correlation between PLR and CRP levels in Covid-19 patients who are hospitalized at RSUP Dr. Sardjito.

Methods: The study was conducted with an analytical observational design using secondary data on Covid-19 patients who were treated at RSUP Dr. Sardjito. Data was taken based on PCR results in the biomolecular laboratory at the Integrated Laboratory Installation, then the research subjects were selected based on inclusion criteria, namely inpatients 18 years who underwent treatment with the Covid-19 protocol at Dr. Sardjito and has the results of PLR and CRP examinations within 24 hours of being diagnosed with Covid-19. Descriptive basic data analysis, displayed in the median (minimum–maximum). Categorical data are presented in proportions. The data analyzed statistically were PLR and CRP examination with Spearman correlation test p value <0.05 was considered statistically significant. Data were analyzed using SPSS version 27 software.

Results and discussion: There were 277 research subjects, consisting of Covid-19 patients aged 57 (18-90) years, 56% men and 44% women. The median PLR was 216.6 (21.13 – 1350.98) and CRP levels were 77 (4-151) mg/L. In this study, the correlation coefficient between PLR with CRP levels was $r=0.402$; $p<0.001$.

Conclusion: There is a positive correlation between PLR and CRP values in Covid-19 patients at RSUP Dr. Sardjito

Keywords: Covid-19, hyperinflammation, Platelet to Lymphocyte Ratio (PLR), CRP