

INTISARI

Latar belakang: Pandemi COVID-19 menyebabkan tingginya angka morbiditas dan mortalitas. Infeksi SARS-CoV-2 menyebabkan berbagai gejala mulai asimtomatik, gejala ringan hingga berat yang berkembang menjadi gagal nafas dan berakhir dengan kematian. Pengujian sampel yang cepat dan akurat sangat diperlukan dalam menentukan diagnosis serta tatalaksana pasien COVID-19. *Real time reverse transcription polymerase chain reaction* merupakan standar emas untuk mendeteksi SARS-CoV-2 dengan indikator kepositifannya yaitu CT-value. Hasil penelitian CT-value dengan derajat keparahan COVID-19 belum banyak dan hubungannya dengan derajat keparahan masih kontradiktif.

Metode: Desain penelitian ini adalah kohort restrospektif, dengan kriteria inklusi pasien dewasa usia ≥ 18 tahun, terkonfirmasi COVID-19 berdasarkan hasil RT-PCR, dirawat di RSUP Dr. Sardjito Yogyakarta. Kriteria eksklusi yaitu data rekam medik elektronik tidak lengkap dan hamil. Pemeriksaan RT-PCR menggunakan Light Cycler 480 Roche (Salt Lake City, USA) yang dilakukan pada hari pertama perawatan. Hasil CT-value dibagi berdasarkan *cut off* CT-value ≤ 25 dan CT-value > 25 kemudian diikuti derajat keparahannya. Data kategorikal ditampilkan secara proporsi, analisis bivariat menggunakan uji *chi-square* dan perhitungan risiko relatif. Analisis multivariat menggunakan regresi logistik dengan *software* SPSS versi 25 dan batas kemaknaan $p < 0,05$.

Hasil: Penelitian ini terdiri dari 310 subjek dengan median usia 56 (24-89) tahun dan didominasi oleh laki-laki (51,6%). Subjek dengan IMT > 23 (67,1%) dan didominasi komorbid hipertensi (38,1%). Index massa tubuh dan komorbid bermakna pada kedua kelompok CT-value ≤ 25 dan CT-value > 25 $p = 0,009$. Terdapat perbedaan bermakna pada komorbid, hipertensi dan CT-value terhadap derajat keparahan COVID-19. Analisis multivariat, hipertensi dan CT-value merupakan prediktor keparahan COVID-19 dengan nilai risiko relatif (RR) masing-masing 1,44 (IK 95% 1,13-1,66, $p = 0,008$); 1,78 (IK95% 1,70-1,84, $p = 0,001$).

Simpulan: *Cycle threshold value* SARS-CoV-2 ≤ 25 dapat digunakan untuk memprediksi keparahan pasien COVID-19 di RSUP Dr. Sardjito Yogyakarta dengan risiko relatif 1,78 kali lebih tinggi dibandingkan CT-value > 25 .

Kata kunci : COVID-19, RT-PCR, CT-value, *viral load*, derajat keparahan

ABSTRACT

Background: The COVID-19 pandemic has led to high morbidity and mortality rates. SARS-CoV-2 infection causes a variety of symptoms ranging from asymptomatic, mild to severe symptoms that progress to respiratory failure and end in death. Rapid and accurate sample testing is essential in determining the diagnosis and management of COVID-19 patients. Real time reverse transcription polymerase chain reaction is the gold standard for detecting SARS-CoV-2 with the indicator of positivity being CT-value. The results of CT-value research with COVID-19 severity have not been much and its relationship with severity is still contradictory.

Methods: The design of this study is a retrospective cohort, with the inclusion criteria of adult patients aged ≥ 18 years, confirmed COVID-19 based on RT-PCR results, treated at Dr Sardjito Hospital Yogyakarta. Exclusion criteria were incomplete electronic medical record data and pregnancy. RT-PCR examination using the Roche Light Cycler 480 (Salt Lake City, USA) was performed on the first day of treatment. CT-value results were divided based on cut off CT-value ≤ 25 and CT-value > 25 then followed by severity. Categorical data were presented as proportions, bivariate analysis using chi-square test and relative risk calculation. Multivariate analysis used logistic regression with SPSS software version 25 and a significance limit of $p < 0.05$.

Results: This study consisted of 310 subjects with a median age of 56 (24-89) years and was dominated by men (51.6%). Subjects with BMI > 23 (67.1%) and predominantly comorbid hypertension (38.1%). Body mass index and comorbidities were significant in both groups CT-value ≤ 25 and CT-value > 25 $p = 0.009$. There were significant differences in comorbidities, hypertension and CT-value on the severity of COVID-19. Multivariate analysis, hypertension and CT-value were predictors of COVID-19 severity with relative risk (RR) values of 1.44 (95% CI 1.13-1.66, $p = 0.008$); 1.78 (95% CI 1.70-1.84, $p = 0.001$), respectively.

Conclusion: Cycle threshold value of SARS-CoV-2 ≤ 25 can be used to predict the severity of COVID-19 patients at Dr Sardjito Hospital Yogyakarta with a relative risk of 1.78 times higher than CT-value > 25 .

Keywords: COVID-19, RT-PCR, CT-value, viral load, degree of severity