

ABSTRAK

Latar Belakang: COVID-19 merupakan penyakit infeksi virus SARS-CoV-2 dan telah mewabah di Indonesia. Tingkat kematian pasien COVID-19 cukup tinggi. Sistem imun tubuh akan merespon infeksi virus dengan mengaktivasi sel imun, salah satunya sel limfosit. Infeksi virus dapat mengganggu regulasi glukosa darah dan sistem imunitas tubuh. Infeksi menyebabkan peningkatan glukosa darah dan penurunan sel limfosit. Oleh karena itu, rasio glukosa darah terhadap limfosit (GLR) pada pasien terinfeksi virus dapat dikaji lebih lanjut. Saat ini, belum ada penelitian yang mengkaji rasio glukosa darah terhadap limfosit sebagai prediktor kematian dalam 21 hari perawatan pada pasien COVID-19 derajat berat dan kritis.

Tujuan: Untuk mengetahui hubungan rasio glukosa limfosit (GLR) sebagai prediktor kematian dalam 21 hari perawatan pada pasien COVID-19 derajat berat dan kritis.

Metode: Penelitian ini dilakukan dengan desain kohort retrospektif. Pengambilan sampel dilakukan dengan teknik *consecutive sampling*. Data diperoleh dari rekam medis di RSUP Dr. Sardjito tahun 2021. Uji *chi-square* digunakan untuk menentukan hubungan GLR dengan kematian dalam 21 hari perawatan pada pasien COVID-19 dengan nilai $p < 0,05$ dianggap bermakna. Titik potong GLR ditentukan menggunakan grafik ROC.

Hasil: Dari 236 subjek penelitian, jumlah pasien yang meninggal dalam 21 hari perawatan sebanyak 185 pasien. Nilai *cut-off* GLR yang didapatkan dari kurva ROC adalah 401,04. Sebanyak 21,18% dari total subjek penelitian mengalami kematian dan memiliki nilai GLR di atas *cut-off*. Uji *chi-square* menunjukkan terdapat hubungan antara GLR dengan kematian pasien COVID-19 derajat berat dan kritis di RSUP Dr. Sardjito dengan nilai $p=0,001$ yang bermakna signifikan secara statistik.

Kesimpulan: Rasio glukosa limfosit (GLR) dapat digunakan sebagai prediktor kematian dalam 21 hari perawatan pada pasien COVID-19 derajat berat dan kritis di RSUP Dr. Sardjito.

Kata Kunci: Pasien COVID-19 derajat berat dan kritis, GLR, glukosa darah, limfosit, kematian.

ABSTRACT

Background: COVID-19 is an infectious disease caused by the SARS-CoV-2 virus that has spread in Indonesia. The mortality rate among COVID-19 patients remains high. The immune system responds to viral infection by activating immune cells, including lymphocytes. Viral infection can disrupt blood glucose regulation and immune function, leading to increased blood glucose levels and decreased lymphocyte counts. Therefore, the blood glucose-to-lymphocyte ratio (GLR) in virus-infected patients warrants further investigation. To date, no study has evaluated the glucose-to-lymphocyte ratio as a predictor of 21-day mortality in patients with severe and critical COVID-19.

Objective: To determine the association between the glucose-to-lymphocyte ratio (GLR) and 21-day mortality among patients with severe and critical COVID-19.

Methods: This study employed a retrospective cohort design. Samples were collected using a consecutive sampling technique. Data were obtained from the medical records of patients treated at RSUP Dr. Sardjito in 2021. The chi-square test was used to assess the association between GLR and 21-day mortality in COVID-19 patients, with a p-value $< 0,05$ considered statistically significant. The GLR cut-off value was determined using a receiver operating characteristic (ROC) curve.

Results: Among 236 study subjects, 185 patients died within 21 days of hospitalization. The GLR cut-off value obtained from the ROC curve was 401,04. A total of 21,18% of the study subjects had GLR values above the cut-off and experienced mortality. The chi-square test showed a statistically significant association between GLR and mortality among patients with severe and critical COVID-19 at RSUP Dr. Sardjito ($p = 0,001$).

Conclusion: The glucose-to-lymphocyte ratio (GLR) can be used as a predictor of 21-day mortality in patients with severe and critical COVID-19 at RSUP Dr. Sardjito.

Keywords: Severe and critical COVID-19 patients, GLR, blood glucose, lymphocytes, and mortality.