

INTISARI

Latar belakang : Corona virus disease 2019 (COVID-19) merupakan penyakit saluran nafas akut yang disebabkan oleh *novel severe acute respiratory syndrome coronavirus 2* (SARS-CoV-2). Manifestasi klinis COVID-19 dari tidak bergejala hingga dapat terjadi distres nafas berat yang menyebabkan mortalitas yang diakibatkan oleh badai sitokin. Feritin merupakan salah satu reaktan fase akut yang memiliki keterlibatan terjadinya badai sitokin pada pasien COVID-19.

Tujuan : Mengetahui hubungan antara kadar feritin serum terhadap mortalitas pasien COVID-19 di RSUP Dr. Sardjito Yogyakarta.

Metode : Kohort retrospektif observasional dengan pengambilan data rekam medis elektronik pasien terkonfirmasi COVID-19 derajat berat dan kritis di RSUP Dr. Sardjito yang masuk rumah sakit tanggal 1 Januari 2021 hingga 31 Desember 2021. *Cut-off point* kadar feritin serum ditetapkan berdasar kurva ROC dan Indeks Youden. Hubungan kadar feritin serum dengan mortalitas dianalisis secara bivariat dan multivariat menggunakan *cox regression proportional hazard*. Waktu kesintasan dianalisis menggunakan Kaplan-Meier.

Hasil : Total subjek pada penelitian ini adalah 950 sampel. *Cut-off point* ditetapkan 954,77 ng/mL (AUC 0,605; $p=0,000$; CI 95% 0,569 – 0,641). Subjek dengan kadar feritin rendah ($< 954,77$ ng/mL) sebanyak 535 pasien dan tinggi ($\geq 954,77$ ng/mL) sebanyak 415 ng/mL. Subjek dengan luaran meninggal sebanyak 427 pasien (44,9%) dan hidup sebanyak 523 pasien (55,1%). Subjek dengan kadar feritin tinggi memiliki risiko mortalitas yang lebih tinggi ($p=0,000$; HR 1,524; CI 95% 1,26-1,84) dan waktu kesintasan yang lebih pendek, yaitu 258,62 jam dibandingkan kadar feritin rendah, yaitu 451,29 jam.

Simpulan : Kadar feritin serum yang tinggi, yaitu 954,77 ng/mL atau lebih berhubungan secara signifikan dengan mortalitas pasien COVID-19 derajat berat dan kritis.

Kata kunci : COVID-19, kadar feritin serum, mortalitas, badai sitokin

ABSTRACT

Background : Corona virus disease 2019 (COVID-19) is an acute respiratory disease caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The clinical manifestations of COVID-19 range from asymptomatic to severe respiratory distress that can cause death due to cytokine storms. Ferritin is one of the acute phase reactants involved in the occurrence of cytokine storms in COVID-19 patients.

Objective : To determine the relationship between serum ferritin levels and mortality in COVID-19 patients at RSUP Dr. Sardjito Yogyakarta.

Methods : Observational retrospective cohort by retrieving electronic medical record data for patients with confirmed severe and critical COVID-19 degrees at RSUP Dr. Sardjito, who was admitted to the hospital from January 1, 2021, to December 31, 2021. The cut-off point for serum ferritin levels was determined based on the ROC curve and Youden Index. The relationship between serum ferritin levels and mortality was analyzed bivariately and multivariately using Cox proportional hazard regression. Survival time was analyzed using Kaplan-Meier.

Results : The total number of subjects in this study was 950. The cut-off point was set at 954.77 ng/mL (AUC 0.605; $p = 0.000$; 95% CI 0.569–0.641). Subjects with low ferritin levels (< 954.77 ng/mL) were 535 patients, and those with high levels (≥ 954.77 ng/mL) were 415 ng/mL. The outcome was 427 patients (44.9%) who died and 523 patients (55.1%) who lived. Subjects with high ferritin levels had a higher mortality risk ($p = 0.000$; HR 1.524; 95% CI 1.26–1.84) and a shorter survival time, i.e., 258.62 hours, compared to subjects with low ferritin levels, i.e., 451.29 hours.

Conclusion : A high serum ferritin level, which is 954.77 ng/mL or more, is significantly associated with mortality in patients with severe and critical degrees of COVID-19.

Key words : COVID-19, serum ferritin level, mortality, cytokine storm.