INTISARI

Latar belakang: Kematian akibat COVID-19 masih cukup tinggi di berbagai wilayah menjadi fokus perawatan saat pandemi COVID-19. Identifikasi faktor risiko kematian sangat penting dalam upaya pencegahan kematian pasien COVID-19. Peningkatan respon inflamasi berhubungan dengan risiko kematian pada pasien COVID-19. Kejadian limfopenia memiliki angka prevalensi yang paling tinggi di antara penurunan penanda hematologi lainnya dan dapat menjadi faktor risiko kematian. Hasil penelitian subset limfosit T belum banyak dan hubungannya dengan kematian pada COVID-19 masih kontradiktif. Peran pengukuran subset limfosit T yang dihubungkan dengan kematian pasien COVID-19 khususnya di RSUP Dr. Sardjito, Yogyakarta belum pernah diteliti.
Tujuan: Untuk mengkaji kemampuan subset limfosit T sebagai faktor prognosis dalam memprediksi kematian pasien COVID-19 di RSUP Dr. Sardjito Yogyakarta.
Metode: Penelitian observasional kohort prospektif ini dengan kriteria inklusi: pasien COVID-19 di RSUP Dr. Sardjito yang terkonfirmasi melalui RT-PCR, usia ≥ 18 tahun, dan memiliki sampel dan hasil pemeriksaan darah lengkap pada hari pertama kunjungan. Kriteria eksklusi: pasien HIV, kehamilan dan penggunaan obat imunosupresan. Pemeriksaan subset limfosit T dengan metode *flow cytometry* menggunakan alat *BD FACSCanto™ II* yang dilakukan pada hari pertama perawatan. Hasil subset limfosit T dibagi berdasarkan *cut-off* sel T CD3+ <500/µL, sel T $CD4^+$ <300/µL, sel T $CD8^+$ <200/µL sebagai faktor risiko pada hari pertama dan pasien diikuti selama 30 hari untuk luaran kematian. Risiko kematian dianalisis dengan uji *chi square* dan perhitungan risiko relatif dengan menggunakan *software SPSS versi 25* dengan kemaknaan p<0,05.
Hasil: Penelitian ini melibatkan 139 subjek yang memenuhi kriteria inklusi dan eksklusi. Sebanyak 23 subjek (16,5%) meninggal dalam waktu 30 hari. Median usia subjek penelitian adalah 51 tahun dengan rentang 18 - 72 tahun. Pasien perempuan lebih banyak dibandingkan laki-laki (60,4% vs 43,8%). Berdasarkan berbagai *cut-off* subset limfosit T terdapat perbedaan yang bermakna pada karakteristik usia, jenis kelamin, tingkat keparahan, tempat perawatan dan komorbid. Terdapat perbedaan yang bermakna pada parameter jumlah trombosit, jumlah leukosit, netrofil absolut, limfosit T CD3 absolut, limfosit T CD4 absolut, limfosit T CD8 absolut dan nilai NLR antara kelompok meninggal dan hidup. Hasil analisis kesintasan subset limfosit T pada penelitian ini yaitu: limfosit T $CD3^+$ absolut <500 sel/µl (RR= 11,15; IK95% 3,48-35,72; p<0,001), $CD4^+$ <300 sel/µl (RR= 16,04; IK95% 3,92-65,68; p<0,001) dan $CD8^+$ <200 sel/µl (RR= 8,46; IK95% 3,05-23,47; p<0,001) merupakan prediktor kematian pasien COVID-19 di rumah sakit.
Simpulan: Penelitian ini membuktikan bahwa subset limfosit T dapat digunakan sebagai faktor prognosis dalam memprediksi kematian pasien COVID-19 di RSUP Dr. Sardjito Yogyakarta.

Kata kunci: COVID-19, subset limfositT, faktor prognosis, kematian

ABSTRACT

Background: Mortality from COVID-19 are still relatively high in various regions and is the focus of treatment during the COVID-19 pandemic. Identification of risk factors for death is crucial in efforts to prevent the death of COVID-19 patients. The increased inflammatory response is associated with the risk of mortality in COVID-19 patients. Lymphopenia has the highest prevalence rate among other hematological markers and can be a risk factor for mortality. The results of research on T lymphocyte subsets are few, and their relationship with death in COVID-19 is still contradictory. The role of measuring the T lymphocyte subset in being associated with the mortality of COVID-19 patients, especially at Dr Sardjito, Yogyakarta, has never been studied.

Aims: This study aims to determine the ability of the T lymphocyte subset as a prognostic factor in predicting the mortality of COVID-19 patients at Dr Sardjito Yogyakarta.

Methods: This prospective cohort observational study with inclusion criteria: COVID-19 patients at Dr Sardjito whom RT-PCR confirmed, aged ≥ 18 years, and had a sample and complete blood test results on the first day of the visit—the Exclusion criteria: HIV patients, pregnancy and use of immunosuppressant drugs. Examination of the T lymphocyte subset using the flow cytometry method using the BD FACSCanto™ II tool was carried out on the first day of treatment. The results of the T lymphocyte subset were divided based on the cut-off of CD3+ T cells <500/µL, $CD4^+$ T cells <300/µL, $CD8^+$ T cells <200/µL as risk factors on the first day and patients were followed for 30 days for mortality outcomes. The mortality risk was analyzed using relative risk with a significance $p<0.05$.

Results: This study involved 139 subjects who met the inclusion criteria. A total of 23 subjects (16.5%) died within 30 days. The median age of the study subjects was 51 years, ranging from 18 to 72 years. There were more female patients than male patients (60.4% vs 43.8%). Based on the various cut-off subsets of T lymphocytes, there were significant differences in the characteristics of age, sex, severity, place of treatment and comorbidities. There were significant differences in the parameters of platelet count, leukocyte count, absolute neutrophils, absolute CD3 T lymphocytes, absolute CD4 T lymphocytes, absolute CD8 T lymphocytes and NLR values between survive and non-survive groups. The results of the survival analysis of the T lymphocyte subset in this study were: absolute CD3+ T lymphocytes <500 cells/µl (RR= 11,15; 95%CI 3,48-35,72; $p<0,001$), CD4+ <300 cells/µl (RR= 16,04; 95%CI 3,92-65,68; $p<0,001$) and CD8+ <200 cells/µl (RR= 8,46; 95%CI 3,05-23,47; $p<0,001$) were predictors COVID-19 patient mortality in hospital.

Conclusion: This study proves that the T lymphocyte subset can be used as a prognostic factor in predicting the mortality of COVID-19 patients at Dr Sardjito Yogyakarta.

Keywords: COVID-19, T lymphocyte subset, prognostic factors, mortality