D-DIMER SEBAGAI PREDIKTOR PENGGUNAAN VENTILATOR MEKANIK INVASIF PADA PASIEN COVID-19

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INTISARI

Latar belakang: Pada bulan Maret 2020 WHO mengumumkan penyakit COVID-19 sebagai pandemi global. Peningkatan kadar D-dimer pada pasien terkonfirmasi COVID-19 dicurigai berhubungan dengan ARDS dan peningkatan kebutuhan ventilator mekanik invasif. Beberapa penelitian melaporkan cut off optimal pada D-dimer dalam memprediksi penggunaan ventilator mekanik invasif pada pasien COVID-19 namun terdapat perbedaan nilai *cut off* D-dimer yang digunakan. Penelitian serupa dengan penelitian ini di Mesir melaporkan nilai cut off D-dimer >1415 ng/mL merupakan prediktor penggunaan ventilator mekanik invasif dengan AUC 0,9 pada pasien COVID-19 derajat berat.

Tujuan: Penelitian ini bertujuan untuk mengetahui kadar D-dimer > 1415 ng/mL dapat menjadi prediktor terhadap penggunaan ventilator mekanik invasif pada pasien COVID-19 yang dirawat di ruang perawatan intensif RSUP Dr. Sardjito.

Metode: Penelitian dilakukan dengan cohort prospective pada pasien COVID-19 yang dirawat di ruang perawatan intensif RSUP Dr. Sardjito. Inception cohort adalah pasien yang dirawat 24 jam pertama di ruang perawatan intensif. Kriteria inklusi yaitu pasien terkonfirmasi COVID-19 derajat berat, usia ≥18 tahun. Pemeriksaan laboratorium yang dilakukan meliputi pemeriksaan PT, APPT, D-dimer, fibrinogen dan darah lengkap. Hubungan D-dimer dan penggunaan ventilator mekanik invasif dianalisis dengan risiko relatif. Nilai p <0,05 dianggap signifikan secara statistik. Data dianalisis menggunakan *software IBM SPSS Statictic* versi 27.

Hasil: Sebanyak 70 subjek yang dianalisis dalam penelitian ini dengan 29 pasien (44%) dengan luaran penggunaan ventilator mekanik invasif. Leukosit, netrofil dan D-dimer, secara signifikan berbeda pada kelompok yang menggunakan ventilator mekanik invasif pada analisis bivariat. Dilakukan analisis multivariat D-dimer sebagai prediktor penggunaan ventilator mekanik invasif memiliki kemaknaan secara statistik dengan risiko relatif 4,16 (p=0,004; IK 95% 1,67-7,18).

Simpulan: D-dimer > 1415 ng/mL dapat memprediksi penggunaan ventilator mekanik invasif 4,16 kali lebih tinggi dibandingkan dengan D-dimer < 1415 ng/mL pasien COVID-19 derajat berat di ruang perawatan intensif

Kata kunci: COVID-19, D-dimer, ventilator mekanik invasif

D-DIMER AS PREDICTOR OF THE NEED FOR OF INVASIVE MECHANICAL VENTILATORS IN PATIENTS WITH COVID-19

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ABSTRACT

Background: In March 2020 WHO declared COVID-19 as global pandemic. The COVID-19 pandemic with high number of confirmed cases and deaths was burden on all countries in the world. Increased D-dimer levels in patients confirmed COVID-19 were suspected to related to ARDS and require respiratory treatment, one of which was invasive mechanical ventilator. Several studies have reported the optimal cut-off value for D-dimer in predicting the need of invasive mechanical ventilation in COVID-19 patients, but there were differences in the D-dimer cut off value that can be used. Study similar to this study in Egypt reported D-dimer cut off value >1415 ng/mL was predictor of the need of invasive mechanical ventilation usage with AUC of 0.9 in severe COVID-19 patients.
Objective: This study aims to determine D-dimer levels > 1415 ng/mL can be predictor of the utilization of invasive mechanical ventilation usage in COVID-19 patients treated in the intensive care unit at RSUP Dr. Sardjito.
Methods: This study was conducted in prospective cohort on COVID-19 patients treated at RSUP Dr. Sardjito. The Inception cohort was patients treated in the first 24 hours in the intensive care unit. Data was taken based on PCR results in the biomolecular laboratory at the Integrated Laboratory Installation. Inclusion criteria were patients with confirmed severe COVID-19, age ≥18 years. Laboratory examinations were PT, APPT, D-dimer, fibrinogen and complete blood count tests. Association between D-dimer and the need for invasive mechanical ventilation was analyzed using relative risk. P value <0.05 was considered statistically significant. Data were analyzed using IBM SPSS Statictic version 27 software.
Results: A total of 70 subjects were analyzed in this study with 29 patients (44%) with the outcome of the need for invasive mechanical ventilator. Leukocytes, neutrophils and D-dimer were significantly different in the group using invasive mechanical ventilation. Multivariate analysis of D-dimer as predictor of the need for invasive mechanical ventilation was carried out and had statistical significance with relative risk 4.16 (p=0.004; (95% CI 1.67-7.18).
Conclusion: D-dimer > 1415 ng/mL can predict the utilization of an invasive mechanical ventilator 4.16 times higher compared to D-dimer < 1415 ng/mL in severe COVID-19 patients treated in the ICU

Keywords: COVID-19, D-dimer, invasive mechanical ventilation