

## ABSTRAK

### Hubungan Kadar D-Dimer Dengan Kematian Pada Pasien Hamil Yang Menderita COVID-19 di RSUP dr. Kariadi Semarang

Brilliant Zanuar Ichsan<sup>1</sup>, Fathur Nur Kholis<sup>2</sup>, Banteng Hanang Wibisono<sup>3</sup>

<sup>1</sup> Residen Ilmu Penyakit Dalam, Fakultas Kedokteran, Universitas Diponegoro/ RSUP Dr. Kariadi Semarang

<sup>2,3</sup> Divisi Pulmonologi dan Medik Kritis, Departemen Ilmu Penyakit Dalam, Fakultas kedokteran, Universitas Diponegoro/ RSUP Dr. Kariadi Semarang

**Pendahuluan :** Kematian maternal di Indonesia mengalami peningkatan dari 4421 kematian di tahun 2019 menjadi 7389 kematian pada tahun 2021. Risiko COVID-19 berat lebih tinggi pada populasi ibu hamil. Peningkatan kadar D-dimer mengindikasikan prognosis yang buruk. Masih sedikit penelitian mengenai *cut-off* D-dimer pada pasien COVID-19 khususnya pada populasi ibu hamil. Perubahan fisiologis kehamilan disertai infeksi COVID-19 semakin memperberat severitas penyakit, dan berujung pada kematian. Pengenalan dini dan prognostik severitas penyakit melalui biomarker pada pasien hamil sangatlah penting. Penelitian ini bertujuan mengetahui adanya hubungan antara kadar D-dimer dengan kematian pada pasien hamil yang menderita COVID-19.

**Tujuan :** Menganalisis hubungan antara kadar D-dimer dengan kematian pada pasien hamil yang menderita COVID-19.

**Metode :** Penelitian ini merupakan penelitian observasional dengan desain kohort retrospektif, menganalisis kadar D-Dimer serta mortalitas pada 140 pasien hamil dengan COVID-19 di RSUP Dr Kariadi Semarang, yang menjalani rawat inap pada bulan Juli 2020 - Agustus 2021. Kriteria inklusi adalah pasien hamil usia > 18 tahun terkonfirmasi COVID 19, sedangkan kriteria eksklusi adalah pasien dengan riwayat penyakit paru fibrosis, riwayat gagal jantung, gagal ginjal, penyakit hepar kronis, autoimun, malignansi, diabetes, preeklampsia. Variabel bebas penelitian ini adalah kadar D-dimer. Variabel terikat adalah kematian. Analisis univariat dan bivariat dipergunakan untuk mengeksplorasi karakteristik ibu hamil yang menderita COVID-19 dan hubungan kadar D-dimer dengan kematian. Kurva *Receiver operating characteristic* (ROC) untuk menentukan kadar *cut-off* optimal D-dimer yang membedakan survivor dan non survivor selama rawat inap.

**Hasil:** Analisis statistik pada 140 subjek penelitian menunjukkan kadar D-dimer  $\geq 2800$  ng/mL berhubungan signifikan dengan kematian pasien hamil yang menderita COVID-19 ( $p$  0,000), dengan sensitivitas 83% dan spesifisitas 63%. Rata-rata D-dimer pada ibu hamil meninggal adalah 4615 ng/mL ( $SD \pm 2498$  ng/mL), 3 kali lipat lebih tinggi dibandingkan dengan ibu hamil yang hidup sebesar 1306 ng/mL ( $SD \pm 683$  ng/mL). Peningkatan D-dimer ( $\geq 2800$  ng/mL) ditemukan pada 83% kasus kematian pasien hamil dengan COVID-19. Tingkat kematian pada penelitian ini sebesar 4,3%. Kematian tertinggi didapatkan pada kelompok usia 31-40 tahun (62,1%), gravida 4 (tingkat kematian sebesar 9,09%), paritas 2 (tingkat kematian 8,33%), kelompok dengan riwayat abortus 1 kali (tingkat kematian 7,7%), serta usia kehamilan trimester ke-2 (tingkat kematian 3,2%). Tidak ditemukan kematian pada subjek dengan komorbid obese. Sebesar 29,41% kematian didapatkan dari kelompok COVID berat-kritis.

**Kesimpulan :** Kadar D-dimer berhubungan signifikan dengan mortalitas dan dapat dijadikan marker prognostik mortalitas pada pasien hamil dengan COVID-19 dengan sensitivitas tinggi dan spesifisitas yang relatif rendah.

**Kata Kunci :** Hamil, D Dimer, COVID 19, kematian

## ABSTRACT

### **The Correlation Between D-Dimer Levels and Mortality in Pregnant Patients Suffering from COVID-19 in RSUP Dr. Kariadi Semarang**

Brilliant Zanuar Ichsan<sup>1</sup>, Fathur Nur Kholis<sup>2</sup>, Banteng Hanang Wibisono<sup>3</sup>

<sup>1</sup> Resident of Internal Medicine, Faculty of Medicine, Diponegoro University / Dr. Kariadi Hospital Semarang

<sup>2,3</sup> Pulmonology and Critical Medicine Division, Department of Internal Medicine, Faculty of Medicine, Diponegoro University / Dr. Kariadi Hospital Semarang

**Introduction:** Maternal mortality in Indonesia had increased from 4421 deaths in 2019 to 7389 deaths in 2021. The risk of severe COVID-19 is higher in the pregnant women population. Elevated D-dimer levels indicate a poor prognosis. There is limited research regarding the D-dimer cut-off in COVID-19 patients, especially in the pregnant women population. Physiological changes in pregnancy accompanied by COVID-19 infection further aggravate the severity of the disease and lead to death. Early recognition and prognostication of disease severity through biomarkers in pregnant patients is very important. This study aims to determine the relationship between D-dimer levels and death in pregnant patients suffering from COVID-19.

**Aim:** To analyze the relationship between D-dimer levels and mortality in pregnant patients suffering from COVID-19.

**Methods:** This study is a retrospective cohort design, analyzing D-Dimer levels and mortality in 140 hospitalized pregnant patients with COVID-19 at Dr Kariadi General Hospital Semarang, in July 2020 - August 2021. The inclusion criteria are pregnant patients aged > 18 years confirmed COVID-19, while the exclusion criteria are patients with a history of pulmonary fibrosis, history of heart failure, kidney failure, chronic liver disease, autoimmune, malignancy, diabetes, and preeclampsia. The independent variable is D-dimer levels. The dependent variable is mortality. Univariate and bivariate analyses were used to explore the characteristics of pregnant women suffering from COVID-19 and the relationship between D-dimer levels and mortality. Receiver operating characteristic (ROC) curve to determine the optimal cut-off level of D-dimer that differentiates survivors from non-survivors during hospitalization.

**Results:** Statistical analysis showed that D-dimer  $\geq$  2800 ng/mL was significantly associated with mortality in COVID-19 pregnant patients ( $p$  0.000), with a sensitivity of 83% and specificity of 63%. The mean of D-dimer in nonsurvivor pregnant women was 4615 ng/mL (SD + 2498 ng/mL), 3 times higher compared to survivor pregnant women which was 1306 ng/mL (SD + 683 ng/mL). Elevated D-dimer (>2800 ng/mL) was found in 83% of cases of death in pregnant patients with COVID-19. The mortality rate in this study was 4,3%. The highest mortality was found in the 31-40 year age group (62.1%), gravida 4 (death rate 9.09%), parity 2 (death rate 8.33%), a group with a history of 1 abortion (death rate 7.7%), as well as the 2nd trimester of pregnancy (mortality rate 3.2%). No deaths were found in subjects with comorbid obesity. 29.41% of deaths were from the severe-critical COVID group.

**Conclusion:** D-dimer levels are significantly related to mortality and can be used as a prognostic marker of mortality in pregnant COVID-19 patients with high sensitivity and relatively low specificity.

**Keywords:** Pregnancy, D Dimer, COVID-19, mortality