

INTISARI

HUBUNGAN STATUS VAKSINASI COVID-19 TERHADAP KADAR INTERLEUKIN-6 PADA PASIEN COVID-19 DI RSUP DR. SARDJITO

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Latar Belakang: Pandemi COVID-19 merupakan wabah baru yang disebabkan oleh virus SARS COV-2 yang sangat mudah menular antar manusia dan menyebabkan jutaan korban jiwa di seluruh dunia. Infeksi COVID-19 menyebabkan hiperaktivasi sistem imun dengan produksi berlebih sitokin proinflamasi termasuk IL-6 dan menimbulkan perburatan kondisi seperti badai sitokin, syok sepsis, distres respirasi, kegagalan organ hingga kematian. Vaksin COVID-19 menginduksi produksi antibodi yang diharapkan dapat mencegah hiperaktivasi sistem imun humoral dan menghambat produksi berlebihan IL-6. Hingga saat ini, belum diketahui pengaruh vaksin COVID-19 terhadap kadar IL-6 pada pasien COVID-19 di Indonesia, khususnya pada pasien yang membutuhkan perawatan di rumah sakit.

Tujuan: Menganalisis hubungan antara status vaksinasi COVID-19 terhadap kadar Interleukin-6 pada pasien COVID-19 yang dirawat di RSUP Dr. Sardjito.

Metode: Penelitian menggunakan desain potong lintang dengan mengambil data seluruh pasien COVID-19 yang dirawat di RSUP Dr. Sardjito periode 1 Januari 2021 hingga 31 Desember 2022, yang memenuhi kriteria inklusi dan eksklusi. Variabel yang dikaji meliputi usia, jenis kelamin, indeks massa tubuh (IMT), status vaksinasi, dan IL-6. Analisis bivariat menggunakan uji *chi-square*, sedangkan analisis multivariat menggunakan regresi logistik. Hasil dinyatakan bermakna secara statistik bila nilai $p < 0,05$ dengan *confidence interval* 95%.

Hasil: Dari 900 subjek penelitian, 51,9% tidak vaksin, 17,0% vaksin lengkap, 19,6% booster 1 dan 4,4% booster 2. Proporsi subjek dengan kadar IL-6 $>7\text{pg/mL}$ yaitu 47,9% pada kelompok tidak vaksin, 13,7% pada vaksin lengkap, 16,2% pada booster 1, dan 3,0% pada kelompok booster 2. Status vaksinasi berhubungan signifikan terhadap kadar IL-6 ($p=0,000$). Dibandingkan dengan kelompok tidak vaksin, vaksinasi lengkap memiliki peluang lebih rendah kenaikan kadar IL-6 $>7\text{pg/mL}$ (AOR 0,439; 95% CI 0,258–0,747), booster 1 memiliki proteksi lebih besar (AOR 0,354; 95% CI 0,207–0,606), dan booster 2 memberikan proteksi paling kuat (AOR 0,152; 95% CI 0,070–0,326). Usia dan jenis kelamin menunjukkan hubungan signifikan, sementara IMT tidak memiliki hubungan signifikan terhadap kadar IL-6.

Kesimpulan: Vaksinasi COVID-19 secara signifikan menurunkan peluang kenaikan kadar IL-6 pada pasien COVID-19 yang dirawat di RSUP Dr. Sardjito.

Kata Kunci: COVID-19, Vaksin, Interleukin-6

ABSTRACT

RELATIONSHIP BETWEEN COVID-19 VACCINATION STATUS AND INTERLEUKIN-6 LEVELS IN COVID-19 PATIENTS AT DR. SARDJITO GENERAL HOSPITAL

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Background: The COVID-19 pandemic is a new outbreak caused by the highly transmissible SARS-CoV-2 virus, which has caused millions of deaths worldwide. COVID-19 infection causes immune system hyperactivation with excessive production of pro-inflammatory cytokines, including IL-6, leading to worsening conditions such as cytokine storms, septic shock, respiratory distress, organ failure, and death. The COVID-19 vaccine induces antibody production, which is expected to prevent the excessive production of pro-inflammatory cytokines, including IL-6. The effect of the COVID-19 vaccine on interleukin-6 levels in COVID-19 patients in Indonesia, particularly those requiring hospitalization, is still unknown.

Objective: To analyze the relationship between COVID-19 vaccination status and IL-6 levels in COVID-19 patients hospitalized at Dr. Sardjito General Hospital

Methods: This cross-sectional study collected data from all COVID-19 patients hospitalized at Dr. Sardjito General Hospital from January 1, 2021, to December 31, 2022, who met the inclusion and exclusion criteria. The variables studied included age, gender, body mass index (BMI), vaccination status, and IL-6. Bivariate analysis used chi-square test, and multivariate analysis was performed with logistic regression. The results were considered statistically significant if the p-value was <0.05 with a 95% confidence interval.

Results: Among 900 study subjects, 51.9% were unvaccinated, 17.0% were fully vaccinated, 19.6% booster 1, and 4.4% booster 2. Elevated IL-6 levels >7pg/mL occurred in 47.9% of the unvaccinated group, 13.7% of the fully vaccinated group, 16.2% of the booster 1 group, and 3.0% of the booster 2 group. Vaccination status was significantly associated with lower IL-6 levels (p=0.000). Compared with the unvaccinated group, complete vaccination had a lower chance of IL-6 levels >7pg/mL (AOR 0.439; 95% CI 0.258–0.747), booster 1 provided greater protection (AOR 0.354; 95% CI 0.207–0.606), and booster 2 provided the strongest protection (AOR 0.152; 95% CI 0.070–0.326). Age and gender showed significant association, while BMI did not show a significant association with IL-6 levels.

Conclusion: COVID-19 vaccination was significantly associated with a lower likelihood of elevated IL-6 levels in COVID-19 patients hospitalized at Dr. Sardjito General Hospital.

Keywords: COVID-19; Vaccine; Interleukin-6.