Hubungan Antara Kadar 25(OH)D Serum dengan Rasio CD4+/CD8+ dan Respons Antibodi Spesifik SARS-CoV-2 Pada Tenaga Kesehatan Di Rumah Sakit Rujukan COVID-19 = Association of Serum 25(OH)D Level with CD4+/CD8+ Ratio and SARS-CoV-2 Specific Antibody Response in Healthcare Workers at COVID-19 Referral Hospital

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Abstrak

Respons antibodi spesifik SARS-CoV-2 dapat diperoleh dari paparan virus ketika infeksi ataupun dari vaksinasi. Studi mengenai rasio CD4+/CD8+ sebagai penanda status imunitas masih belum banyak dilakukan pada dewasa sehat. Vitamin D yang memiliki efek imunomodulatori pada sistem imun adaptif dan alamiah, mampu memodulasi pembentukan antibodi dan regulasi dari sel T. Penelitian ini bertujuan melihat hubungan kadar 25(OH)D serum terhadap titer antibodi SARS-CoV-2 dan rasio CD4+/CD8+ sebagai penanda status imunitas individu. Studi potong lintang ini dilakukan terhadap tenaga kesehatan di tiga rumah sakit rujukan COVID-19 di Jakarta dan Depok pada periode Juli–Desember 2021. Pengambilan data yang dilakukan berupa wawancara kuesioner data sosiodemografik, pemeriksaan tanda-tanda vital, pengukuran antropometri, dietary assessment menggunakan 24-h food recall dan SQ-FFQ. Pengambilan sampel darah dilakukan untuk menilai kadar 25(OH)D serum, rasio CD4+/CD8+, dan titer antibodi SARS-CoV-2. Didapatkan 154 tenaga kesehatan usia 22-53 tahun dalam kondisi sehat dan tanpa riwayat penyakit kronis. Median asupan vitamin D subjek penelitian sebesar 2,42 mcg/hari (1,23–4,00) dengan 94,7% subjek memiliki asupan vitamin D yang kurang. Median kadar serum 25(OH)D pada subjek sebesar 14,4 ng/mL (9,50–18,62) dengan 81,8% subjek mengalami defisiensi dan 14,9% subjek mengalami insufisiensi vitamin D. Median rasio CD4+/CD8+ 1,14 (0,88–1,34), 85,7% subjek memiliki titer antibodi SARS-CoV-2 >250 U/mL dan 14,3% subjek memiliki titer antibodi 250. Tidak ditemukan adanya hubungan yang siginifikan antara kadar 25(OH)D dengan titer antibodi SARS-CoV-2 (p 0,209 OR 4,101 95% CI 0,45–37,04) dan Rasio CD4/CD8 (p 0,385 ð -0,005 95% CI -0,0015–0,006). Asupan dan kadar vitamin D pada subjek penelitian masih tergolong rendah. Penelitian ini tidak berhasil membuktikan adanya hubungan antara kadar serum 25(OH)D dengan rasio CD4+/CD8+ dan titer antibodi SARS-CoV-2.
.....SARS-CoV-2 specific antibody response can be generated from exposure to the virus during infection or from vaccination. There is limited data on CD4+/CD8+ ratio in healthy individuals as a marker of immunity status. Vitamin D, which has an immunomodulatory effect on both innate and adaptive immune systems, is able to modulate antibody formation and regulation of T cells. This study aimed to examine the association between serum 25(OH)D levels and SARS-CoV-2 antibody titers along with CD4+/CD8+ ratio as a marker of immunity status. This cross-sectional study was conducted on healthcare workers at three COVID-19 referral hospitals in Jakarta and Depok in the period of July–December 2021. Data collection was carried out using questionnaire, examination of vital signs, anthropometric measurements, dietary assessment using 24-h food recall, and SQ-FFQ. Blood samples were taken to assess serum 25(OH)D levels, CD4+/CD8+ ratio, and SARS-CoV-2 antibody titers. 154 healthcare workers aged 22-53 years who were in good health and had no history of chronic disease were examined in this study. The median intake of vitamin D was 2.42 mcg/day (1.23-4.00), with 94.7% of participants having insufficient intake of vitamin D. The median serum

25(OH)D level was 14.4 ng/mL (9.50-18.62), with 81.8% participants are vitamin D deficiency and 14.9% are insufficient. Median CD4+/CD8+ ratio was 1.14 (0.88 to 1.34). 85.7% participants had SARS-CoV-2 antibody titers >250 U/mL, while 14.3% were below 250 U/mL. There was no significant relationship of serum 25(OH)D levels to SARS-CoV-2 antibody titers (p 0.209 OR 4.101 95% CI 0.45–37.04) and CD4+/CD8+ ratio (p 0.385 o-0.005 95% CI -0.0015–0.006). Vitamin D intake and serum 25(OH)D levels are relatively low. This study disproves relationship between serum 25(OH)D levels with CD4+/CD8+ ratio and SARS-CoV-2 antibody.