

## INTISARI

### Latar belakang

Infeksi *human immunodeficiency virus* (HIV) masih menjadi masalah kesehatan yang terus meningkat dan kompleks dari tahun ke tahun di seluruh bagian dunia. Pasien HIV yang mengalami aktivasi imun mengalami perubahan imun dan sekresi sitokin, hal ini akan mendukung replikasi virus sehingga menyebabkan tingginya *viral load* HIV pada pasien dan juga meningkatkan apoptosis limfosit CD4 sehingga menurunkan jumlah limfosit CD4. Rendahnya kadar vitamin D serum berhubungan dengan lebih banyak inflamasi dan aktivasi imun, jumlah limfosit CD4 yang rendah, progresi penyakit HIV yang lebih cepat, dan meningkatkan mortalitas. Terdapat adanya variasi hasil dari penelitian-penelitian sebelumnya mengenai hubungan kadar vitamin D serum dengan jumlah limfosit CD4 pada pasien HIV. Hubungan kadar vitamin D serum dan jumlah limfosit CD4 masih perlu diteliti lebih lanjut.

### Tujuan

Tujuan penelitian ini adalah untuk mengetahui ada tidaknya korelasi antara kadar vitamin D serum dengan jumlah limfosit CD4 pada pasien HIV yang belum mendapat terapi antiretroviral.

### Metode

Penelitian ini merupakan penelitian observasional analitik dengan desain potong lintang (*cross-sectional*) untuk menilai hubungan antara kadar vitamin D serum dengan jumlah limfosit CD4 pada pasien HIV yang belum mendapatkan terapi anti retroviral (ARV). Subjek penelitian adalah pasien HIV dewasa dari semua stadium yang baru terdiagnosis dan belum mendapatkan ARV, yang menjalani pengobatan di Poliklinik Edelweis RSUP Dr. Sardjito Yogyakarta. Subjek penelitian diambil sampel darah EDTA sebanyak 10 ml. Sampel darah diperiksa di Instalasi Laboratorium Terpadu RSUP Dr. Sardjito dan Laboratorium Departemen Patologi Klinik dan Kedokteran Laboratorium FKMK Universitas Gadjah Mada Yogyakarta. Pemeriksaan kadar vitamin D serum dikerjakan dengan alat Cobas e 411. Pemeriksaan jumlah limfosit CD4 dikerjakan dengan alat BD FACSCalibur dengan metode *flow cytometry*. Analisis statistik dilakukan untuk mengetahui hubungan antara kadar vitamin D serum dengan jumlah limfosit CD4 menggunakan uji korelasi Spearman.

### Hasil

Uji korelasi Spearman antara kadar vitamin D serum dengan jumlah limfosit CD4 mendapatkan nilai  $r = 0,055$  dengan nilai  $p = 0,669$  yang menunjukkan tidak adanya hubungan signifikan antara kadar vitamin D serum dengan jumlah limfosit CD4.

### Simpulan

Tidak terdapat korelasi antara kadar vitamin D serum dengan jumlah limfosit CD4 pada pasien HIV yang belum mendapat terapi ARV.

### Kata Kunci

*human immunodeficiency virus* (HIV), kadar vitamin D serum, jumlah limfosit CD4

## ABSTRACT

### Background

Human immunodeficiency virus (HIV) infection is still a health problem that continues to increase from year to year. HIV patients who experience immune activation experience changes in immune and cytokine secretion, this will support viral replication, causing a high HIV viral load in patients and also increase CD4 lymphocyte apoptosis, thereby reducing CD4 lymphocyte count. Low levels of vitamin D are associated with more inflammation and immune activation, lower CD4 lymphocyte count, faster HIV disease progression, and increased mortality. There are variations in the results from previous studies regarding the association of serum vitamin D level with CD4 lymphocyte count in HIV patients. The relationship between serum vitamin D level and CD4 lymphocyte count still needs to be investigated further.

### Aim

The aim of this study was to determine whether there was correlation between vitamin D levels and CD4 lymphocyte count in HIV patients who had not received antiretroviral therapy.

### Methods

This study was an analytical observational study with a cross-sectional design to assess the relationship between serum vitamin D level and CD4 lymphocyte count in HIV patients who had not received anti-retroviral therapy (ARV). This research subjects were all stage HIV adult patients who had not received antiretroviral therapy in Edelweis clinic Dr. Sardjito hospital Yogyakarta. The research subjects were drawn 10 ml of EDTA blood sample. Blood samples were examined at integrated laboratory installation Dr. Sardjito hospital and clinical pathology and laboratory medicine department laboratory, FKMK Universitas Gadjah Mada Yogyakarta. Serum vitamin D level was measured by Cobas e 411. Measurement of CD4 lymphocyte count was carried out with the BD FACSCalibur using the flow cytometry method. Statistical analysis have been performed to determine the relationship between serum vitamin D level and CD4 lymphocyte count using the Spearman correlation test.

### Results

The Spearman correlation test between serum vitamin D level and CD4 lymphocytes count obtained a value of  $r = 0.055$  with a p value of 0.669 which indicates that there is no significant relationship between serum vitamin D levels and the CD4 lymphocytes count.

### Conclusion

There is no correlation between serum vitamin D levels and CD4 lymphocyte counts in HIV patients who had not received ARV therapy.

### Keywords:

Human immunodeficiency virus (HIV), serum vitamin D level, CD4 lymphocyte count