

## INTISARI

**Latar Belakang:** Infeksi HIV/AIDS masih menjadi tantangan global. Terapi antiretroviral (ART) berkontribusi dalam menurunkan replikasi virus, menurunkan morbiditas infeksi oportunistik dan meningkatkan kualitas hidup orang yang hidup dengan HIV/AIDS. Meskipun demikian proporsi pasien yang tidak mengalami pemulihan sel CD4 dengan optimal cukup bermakna. Aktivasi imun dan homeostasis fenotipe sel T CD4 diduga mempengaruhi pemulihan sel T CD4 selama terapi.

**Tujuan:** untuk mengetahui hubungan antara aktivasi imun (CD8/38<sup>+</sup>) dengan fenotipe sel CD4/45RA<sup>+</sup> & CD4/45RO<sup>+</sup> dengan pemulihan sel T CD4 6 bulan setelah memulai ART.

**Metode:** Penelitian ini adalah penelitian observasional dengan desain prospektif longitudinal. Subyek penelitian adalah 44 pasien HIV dewasa di RSUP Dr. Sardjito dan RSUP Dr. Karyadi yang belum pernah mendapat ART. Sampel darah diambil dua kali, sebelum dan 6 bulan setelah mulai ART untuk pemeriksaan jumlah sel T CD4, jumlah virus, persentase sel CD8/38<sup>+</sup> dan jumlah fenotipe sel T CD4/45RA<sup>+</sup> dan CD4/45RO<sup>+</sup>. Data dianalisis menggunakan uji T berpasangan/ Mann whitney, korelasi Pearson/ Spearman dan regresi linear.

**Hasil:** Setelah 6 bulan memulai ART, sebanyak 35 pasien mengalami pemulihan sel T CD4 optimal (>50 sel/  $\mu$ L) dan 9 pasien sub optimal. Jumlah virus turun lebih dari 1 log<sub>10</sub> kopi/ mL pada 93% pasien. Persentase fenotipe sel CD4/45RA<sup>+</sup> meningkat (p<0,0001) dan sel CD4/45RO<sup>+</sup> turun secara bermakna (p<0,0001), namun jumlah absolut kedua fenotipe sel meningkat (p<0,0001 dan p=0,0003). Persentase sel CD8/38<sup>+</sup> menurun bermakna (p<0,0001) dan penurunannya berkorelasi negatif dengan peningkatan sel T CD4 (r=-0,33; p=0,03) dan peningkatan jumlah sel CD4/45RO<sup>+</sup> (r= 0,31; p=0,04) tetapi bukan dengan fenotipe sel CD4/45RA<sup>+</sup>.

**Kesimpulan:** Pemulihan sel T CD4 6 bulan setelah memulai ART berhubungan bermakna dengan penurunan persentase sel CD8/38<sup>+</sup> dan peningkatan jumlah CD4/45RA<sup>+</sup> dan CD4/45RO<sup>+</sup>.

**Kata kunci:** Infeksi HIV, ART, pemulihan sel T CD4, aktivasi imun, sel CD8/38<sup>+</sup>, fenotipe sel CD4/45RA<sup>+</sup> dan CD4/45RO<sup>+</sup>

## ABSTRACT

**Background:** HIV/ AIDS remains a significant global challenge. ART has made significant contribution by reducing viral replication, reducing morbidity from opportunistic infection, and improves the life of person living with HIV/AIDS. However a significant proportion of HIV patients on ART were not gained optimal CD4 recovery during ART. Immune activation and homeostasis naive and memori CD4 T cell phenotype may influence CD4 T cell reconstitution.

**Objectives:** To determine the relationship of immune activation (CD8/38<sup>+</sup>) and the CD4/45RA<sup>+</sup> & CD4/45RO<sup>+</sup> phenotypes, and CD4 T cells recovery in HIV patients pre and 6 months after ART initiation.

**Methods:** This was an observational study with longitudinal design. The study subjects were 44 ART naive-HIV infected adults patients in RSUP Dr. Sardjito and RSUP Dr. Karyadi Hospital, Blood samples were drawn pre and 6 month after ART initiation to evaluate the CD4 T cell count, viral load, percentage of CD8/38<sup>+</sup> and CD4 T cell phenotype: CD4/45RA<sup>+</sup> and CD4/45RO<sup>+</sup> counts. Data were analyzed statistically using paired T/ Mann whitney test, Pearson/ Spearman correlation and linear regression.

**Results:** There were 35 patients obtained optimally CD4 T cells recovery (>50 cell/  $\mu$ L) and 9 patients were sub-optimal, after 6 months of ART initiation. Viral load were decreased more than 1 log<sub>10</sub> copy/mL in 93% patients. The proportion of CD4/45RA<sup>+</sup> was increased (p<0,0001) and CD4/45RO<sup>+</sup> was decreased significantly (p<0,0001), but the absolute count of both CD4 T cells phenotype were increased (p<0,0001 and p=0,0003). The percentage of CD8/38<sup>+</sup> cell was decreased significantly (p<0,0001) and the change was negatively correlated with the increased CD4 T cells (r=-0,33; p=0,03). The negative correlation also observed between the decreased percentage of CD8/38<sup>+</sup> cell and the increased CD4/45RO<sup>+</sup> cell count (r= 0,31; p=0,04) but not CD4/45RA<sup>+</sup> cell count.

**Conclusion:** The CD4 T cell recovery 6 month after ART initiation was related significantly with the decreased of CD8/38<sup>+</sup> and increased of CD4 T cells phenotype, CD4/45RA<sup>+</sup> and CD4/45RO<sup>+</sup> counts.

**Keywords:** HIV infection, ART, CD4 T cell recovery, immune activation, CD8/38<sup>+</sup> cell, CD4/45RA<sup>+</sup> and CD4/45RO<sup>+</sup> cell phenotypes