

Maximum Capacity of Restoration of CD4 Counts Is Lower in HIV-1-infected Patients from Sub-Saharan Africa during the First Months of cART: Athena Cohort

Anouk Kesselring, Luuk Gras, Ferdinand Wit, Peter Reiss, Frank de Wolf

Background

We investigated differences in the maximum capacity for immune restoration during 5 years of cART between male and female HIV-1 infected patients and between patients from different regions of origin.

Methods

Antiretroviral therapy naïve patients starting cART ≥ 16 years of age were selected from the Netherlands ATHENA HIV observational cohort. Patients who took longer than 9 months to suppress plasma HIV RNA ≤ 50 copies/ml were excluded. CD4 response from start of cART was modelled over 5 years using mixed effect models. CD4 counts were censored from the first of two consecutive HIV RNA measurement > 500 copies/ml. Multivariate analyses were adjusted for gender, age, baseline CD4 count and HIV RNA, HCV/HBV co-infection, infection through IDU, and region of origin (W-Europe/N-America [WN], sub-Saharan Africa [SSA], South East Asia [SEA] and Latin America/Caribbean [LAC]).

Results

The majority of 4348 selected patients were males (80%) from WN (68.3%). 17.3% were from SSA, 3.6% from SEA and 10.8% from LAC origin. Median follow-up after starting cART was 3.8 years. Median CD4 count at the start of cART was 210 cells/mm³ for WN (ref), 160 in SSA ($p < 0.0001$), 140 in SEA ($p < 0.0001$), and 170 in LAC patients ($p < 0.0001$). Median increase after 5 years was 360 cells/mm³ (IQR 230-520) for WN (ref), 320 for SSA (210-450, $p = 0.004$), 340 (240-490, $p < 0.87$) for SEA and 360 (210-530, $p = 0.86$) for LAC patients. There were no significant differences in CD4 count at start of cART ($p = 0.19$) and CD4 increase at 5 years of cART ($p = 0.51$) between male and female patients.

In multivariate analyses increase in CD4 count was 14 cells/mm³ ($p = 0.03$) between 0-6 months and 12 cells/mm³/year ($p = 0.0002$) between 6-36 months higher in women compared to men. No significant differences were found between 36-60 months ($p = 0.41$). Patients from SSA had a lower mean increase of 47 CD4 cells/mm³ (95% CI 33-62, $p < 0.0001$) between 0-6 months and 8 cells/mm³/year (1-16, $p = 0.02$) between 6 and 36 months after starting cART compared to WN patients. No significant differences in CD4 increase between patients from SEA or LAC and WN origin were found nor was an interaction between region of origin and gender.

Conclusion

CD4 increases after 5 years of cART in patients with viral suppression were lower in male patients and patients from SSA origin compared to WN patients. However, these differences mainly occurred during the first 6 months of cART and no differences in annual CD4 increase were found after 36 months.