

LONG-TERM SEX-DIFFERENCES IN OUTCOMES FOLLOWING ACUTE HIV-1 INFECTION

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BACKGROUND

Women have shown more favorable immunovirological characteristics than men around seroconversion. Here, we investigated how these differences evolved throughout long-term antiretroviral therapy (ART) in individuals treated since acute and early HIV-1 infection (AHI).

METHODS

Study population

- Participants followed in the French prospective multicenter ANRS PRIMO cohort between 1996 and 2017, who initiated ART within the first three months of infection.

Measures

- Plasma HIV RNA, CD4 T-cell count, CD8 T-cell count were measured at enrollment, M1, M3, M6, M12 and every 6 months thereafter.
- Total HIV DNA was quantified at enrollment and during follow-up (BIOCENTRIC, Bandol France).

Statistical analysis: All models were adjusted for age, geographical origin, viral load at initiation of treatment, duration of infection and calendar year.

RESULTS

Table 1. Characteristics of patients at the AHI diagnosis

Characteristics	Women n = 143	Men n = 1123	P
Sub-Saharan African	67.4 (31)	38.3 (31)	0.02
In AHI			
Age, years	38 (12)	37 (11)	0.16
CD4 T-cell count, cells/mm ³	533 (230)	500 (235)	0.06
CD4:CD8 Ratio	0.67 (0.57)	0.58 (0.43)	0.04
Plasma HIV RNA, log ₁₀ copies/mL	5.23 (1.18)	5.59 (1.99)	0.001
Total HIV DNA, log ₁₀ copies/10 ⁶ PBMCs	3.37 (0.61)	3.40 (0.59)	0.28
Time from infection, days	44 (16)	42 (15)	0.06
ART duration, months	74.6 (66.4)	60.8 (52.7)	0.009

Data are presented as the mean (standard deviation) or percentage (No.).

Compared to men, women experienced:

- higher CD4 T-cell count and lower viral load during AHI.
- a faster viral suppression on ART : adjusted HR: 1.33 (95%CI, 1.09 - 1.69), P = 0.03.
- a more rapid increase in CD4 T-cell counts and CD4:CD8 ratios during the first months of treatment, leading to even greater differences between men and women for these parameters under long-term ART. After 150 months of ART, women had on average +99 to 168 more CD4 T-cells/ μ L than men and CD4:CD8 ratio higher than that of men by 0.31.
- both women and men achieved similar and low levels of HIV DNA: 1.9 log₁₀ copies/10⁶ PBMCs on average after 70 months of ART.

Figure 1. Sex-related differences in CD4+ T-cell count (cells/ μ L) depending on age

A. At AHI diagnosis. **B.** After 150 months of ART initiated during AHI. Scatterplot of predicted values of CD4+ T-cell count obtained by mixed model. Regression lines of predicted values on age, depending on sex. Points over 2500 cells/ μ L were cut from the graph for better visibility.

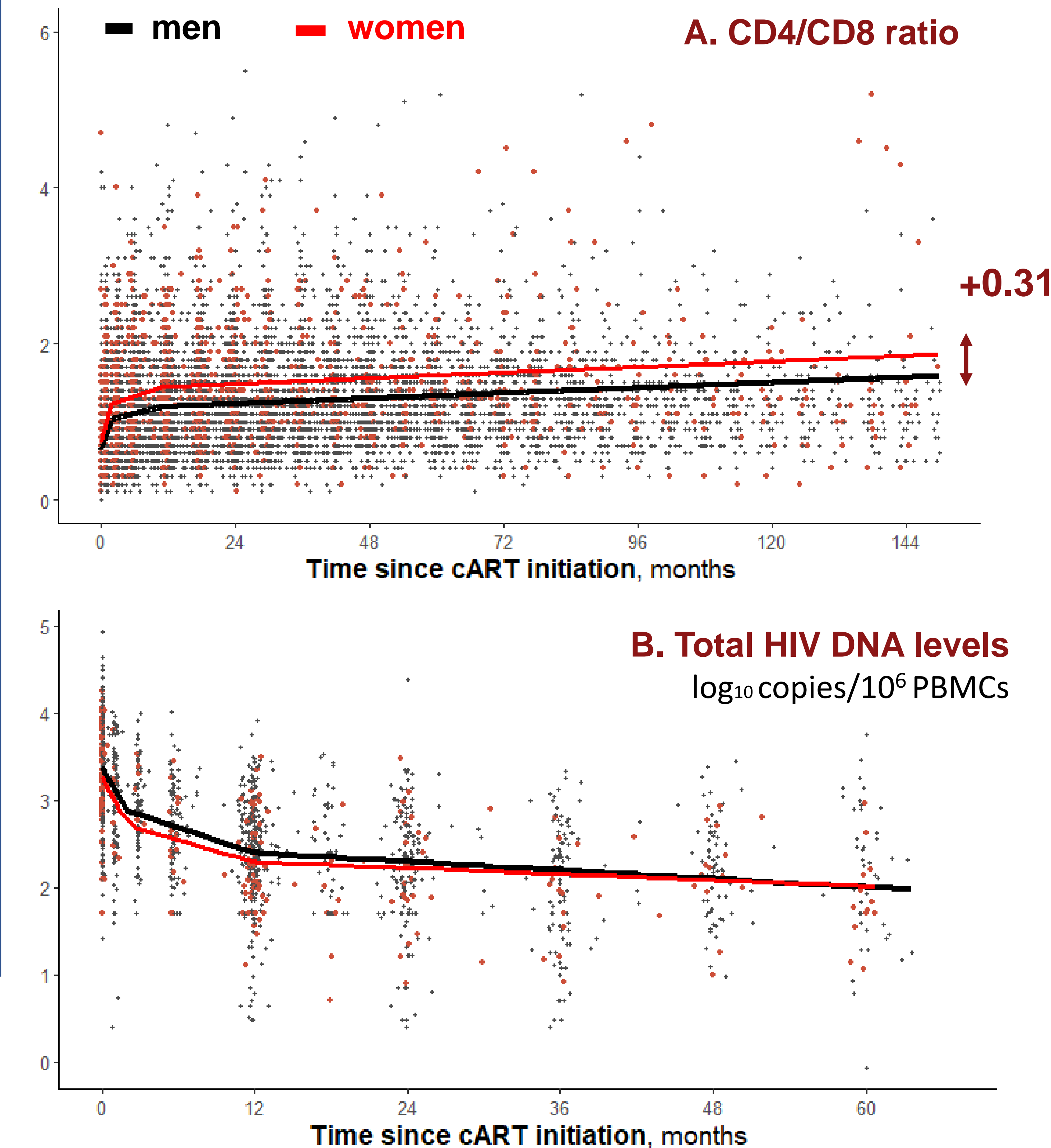
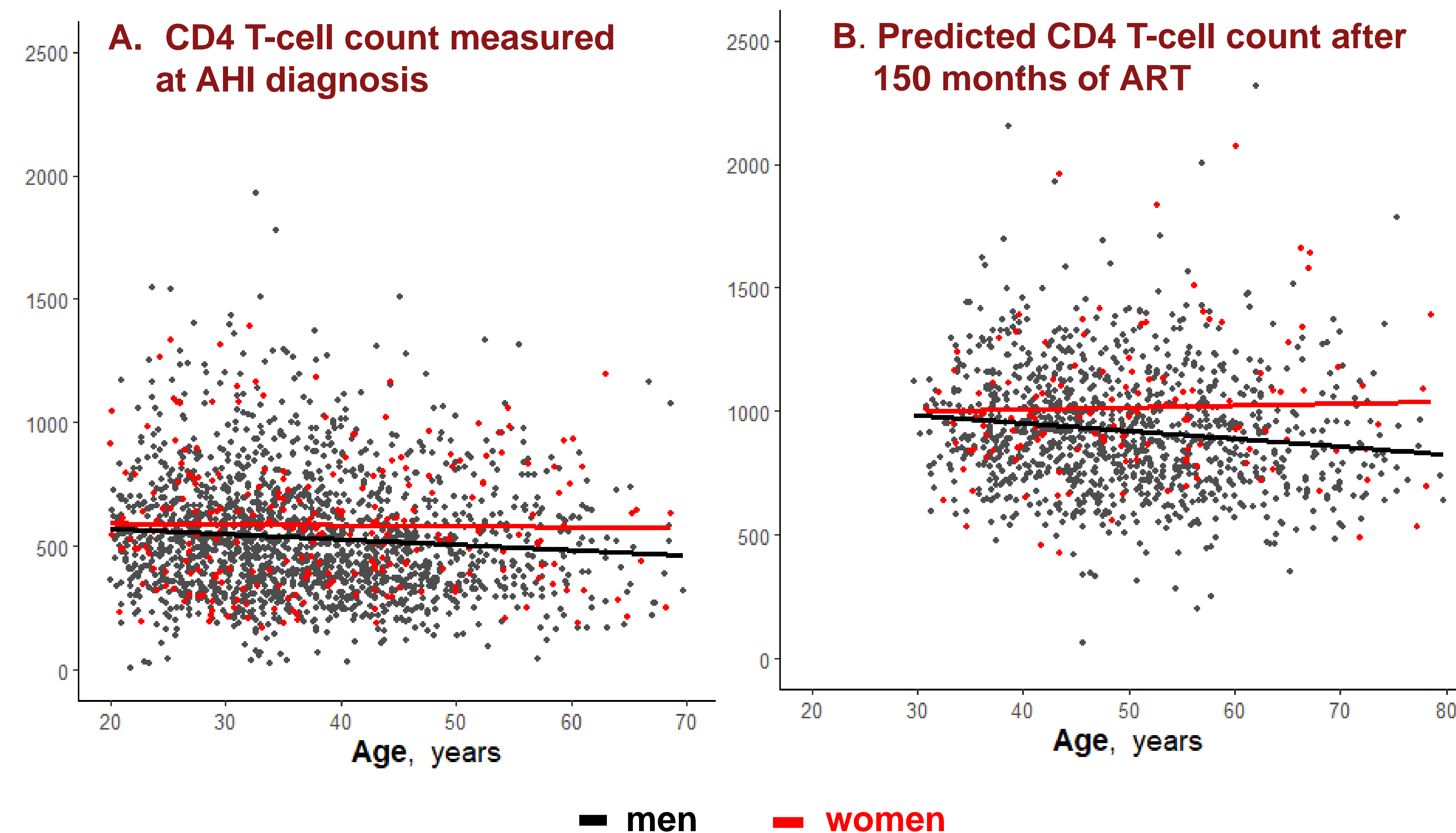


Figure 2. Immunovirological marker dynamics after ART initiation during acute and early HIV infection estimated using mixed models with random coefficients

CONCLUSIONS

- The immunological benefit of being female increased throughout prolonged ART duration.
- Whether this increased benefit may give women additional protection from adverse clinical events and premature ageing is to be further investigated.

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