

Optimising cohorts for HIV cure interventions: the role of very high CD4 T cell counts

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Background:

The major barrier to an HIV cure is the persistence of a viral reservoir on antiretroviral therapy (ART). People with HIV (PHIV) who start ART with very high CD4 counts, or who rapidly reconstitute their CD4s after starting ART have smaller reservoirs as measured by HIV DNA compared to controls with lower CD4s on ART start and who did not reconstitute, respectively. We aimed to fully characterise the HIV reservoir in these PHIV after at least 2 years of ART.

Methods:

Participants who started ART with CD4>800cells/mm³, or those who recovered their CD4 counts >1000cells/mm³ within 48 months of ART initiation were recruited from 2 tertiary hospitals in Melbourne. Control groups were PHIV on ART with lower CD4 counts or that did not increment as high. Participants had blood sampled and clinical, demographic and HIV subtype details collected. The HIV reservoir was measured using digital droplet PCR to calculate total HIV DNA and Intact Proviral DNA (IPDA).

Results:

Forty PHIV recruited, 28 males (70%) and 12 females (30%); median age 49 years (IQR: 38-59.25). Nineteen (47.5%) participants were born overseas and the most common HIV-1 subtype was B. Median total HIV DNA levels were lower in PHIV with CD4>800cells/mm³ (41.35 vs 84.44 p=0.7394), and in PHIV who recovered their CD4 counts (69.92 vs 128.6 p=0.6305), compared to controls, but was not statistically significant. IPDA conducted on subtype B samples (n=13, no provirus detected in n=5) found no differences between cohorts. Correlations were noted between HIV DNA and CD4+ T cell levels(r=-0.32, p=0.04); and between HIV DNA and Age (r=0.31, p=0.05, Spearman's r test).

Conclusion:

Smaller HIV reservoirs were noted in PHIV who started ART with high CD4 counts. Developing methods to accurately quantify the HIV reservoir in non-subtype B HIV is important as increasingly diverse study populations are studied.

Disclosure of Interest Statement:

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