Long-term Outcome in HIV-1 Infected Adults with Advanced Immunodeficiency

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Background

Prior to the President's Emergency Plan for AIDS Relief (PEPFAR) Program, patients initiating antiretroviral treatment (ART) in resource-limited settings frequently had very advanced immunodeficiency.

In this study, we examined CD4 cell count recovery and viral suppression among patients with very low baseline CD4 count (<50 cells/µL) in Côte d'Ivoire.



History of HIV/AIDS program in Côte d'Ivoire.

Methods

- We identified 1,883 HIV-1-infected adults who initiated ART at clinics in Abidjan between August 1, 1998 and July 31, 2004 and had follow-up data between August 1, 2004 and July 31, 2015.
- Among them, 474 had CD4 cell count less than 50 cells/µL at ART initiation.
- We retrospectively analyzed baseline CD4 count, CD4 recovery, and viral suppression data collected from patient laboratory records (1998-2015) in the CDC Projet Retrovirus Côte d'Ivoire laboratory information system.
- Data analyses were performed by the IBM SPSS software version 24, and the significance level was set at a 2-tailed P value of 0.05.

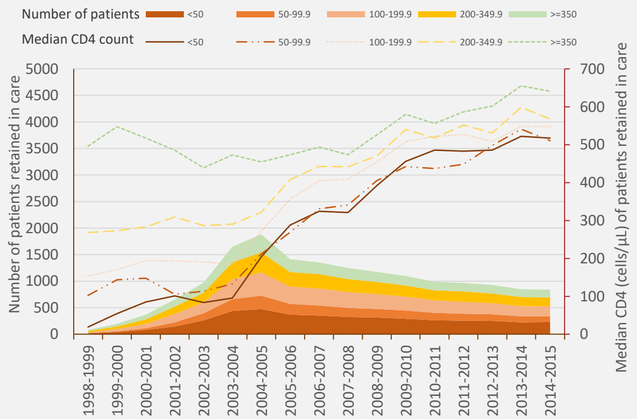
Results

- After 10 years of follow-up, 231 (48.7%, 95% confidence interval [CI]: 44.3%-53.2%) of 474 patients with baseline CD4 count less than 50 cells/µL remained in care at the end of the study period, between August 2014 and July 2015.
- Their CD4 cell count increased from a median of 18.9 cells/µL at baseline to 517.5 cells/µL, with a sharp increase from 95.4 to 456.0 cells/µL occurring during the first six years of PEPFAR in the country (2004-2010). At their last visit, 50.6% of them had a CD4 count over 500 cells/µL, the proportion was comparable to that of patients with higher baseline CD4 counts of 50-99.9, 100-199.9, and 200-349.9 cells/µL, but was lower than that of patients with baseline CD4 count over 350 cells/µL (Bonferroni-adjusted P values <0.01).
- Logistic regression (adjusted for age and year of ART initiation) showed that females were more likely to achieve CD4 recovery (adjusted odds ratio is 2.56, 95% CI: 1.76-3.72).
- Among the 231 patients, 58.0% (n=134) had viral load (VL) results recorded between August 2014 and July 2015, and 87.3% (117/134) of them had VL less than 1000 copies/mL. No significant difference in viral suppression at their last visit was detected between patients with baseline CD4 count less than 50 cells/µL and those with baseline CD4 counts of 50-99.9, 100-199.9, 200-349.9, or ≥350 cells/µL.

Demographics of patients at enrollment and median CD4 count of patients retained in care over time

Baseline CD4 ranges	<50	50-99.9	100-199.9	200-349.9	≥350
Male, n (%)	232 (48.9%)	118 (46.6%)	183 (41.8%)	143 (37.9%)	101 (29.6%)
Female, n (%)	242 (51.1%)	135 (53.4%)	255 (58.2%)	234 (62.1%)	240 (70.4%)
Age at enrollment, median (IQR)	37 (31-43)	37 (32-45)	38 (32-44)	36 (30-42)	34 (29-41)
Median CD4 (n)					
1998-1999	19 (16)	103 (8)	154 (12)	268 (26)	496 (21)
1999-2000	54 (43)	144 (13)	171 (44)	273 (47)	548 (49)
2000-2001	85 (83)	148 (30)	194 (80)	283 (90)	517 (87)
2001-2002	101 (148)	106 (77)	193 (156)	309 (138)	485 (137)
2002-2003	84 (260)	114 (136)	191 (205)	287 (182)	439 (191)
2003-2004	95 (439)	133 (223)	184 (375)	291 (321)	473 (292)
2004-2005	204 (474)	212 (253)	271 (438)	322 (377)	454 (341)
2005-2006	288 (368)	269 (203)	357 (326)	409 (273)	474 (244)
2006-2007	325 (352)	331 (190)	405 (320)	443 (272)	494 (220)
2007-2008	321 (324)	341 (172)	409 (297)	442 (247)	474 (209)
2008-2009	392 (315)	405 (161)	454 (279)	470 (231)	526 (190)
2009-2010	456 (290)	443 (156)	508 (263)	540 (210)	580 (177)
2010-2011	486 (263)	437 (141)	522 (233)	518 (190)	556 (161)
2011-2012	483 (256)	449 (130)	527 (223)	552 (198)	587 (160)
2012-2013	486 (250)	498 (125)	509 (209)	531 (182)	602 (161)
2013-2014	522 (225)	541 (112)	548 (193)	599 (172)	655 (147)
2014-2015	518 (231)	511 (107)	548 (190)	568 (166)	641 (147)

Median CD4 count and number of patients with different baseline CD4 count levels (<50, 50 to 99.9, 100 to 199.9, 200 to 349.9, ≥350 cells/µL) retained in care over time



Conclusions

- These findings showed that patients with very advanced immunodeficiency have equivalent capacity for immunologic recovery and viral suppression compared to those with higher baseline CD4 cell counts, if they are retained in care.
- A retrospective analysis of a decade's worth of data extracted from a laboratory information system offered a glimpse into the remarkable impact of the U.S. government's efforts, through PEPFAR, to save the lives and improve the health status of people living with HIV in resource limited settings.

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