

Evidence of partial seroreversion after early initiation of antiretroviral treatment in an acute HIV infection cohort from Argentina

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Background:

Initiating cART as early as possible following HIV infection to limit the size of the viral reservoir and improve disease prognosis has been widely recommended. However, some cases of seroreversion after very early antiretroviral therapy have been reported which has important implications for the safety of blood product and organ and tissue donation, among other settings. Here, we assessed the presence of HIV antibodies among individuals initiating cART during acute/early HIV infection in a cohort of Argentinean seroconverters.

Methods

24 recently diagnosed subjects were enrolled as part of the *Grupo Argentino de Seroconversion* study group. Baseline samples were obtained at a median of 60 days post-presumed date of infection. Regular diagnosis algorithm was performed to confirm infection. After subjects initiated cART, samples were obtained at 6-month intervals and up to 54 months post-cART. Fourth-generation ELISA, rapid tests (RT) and Western Blot (WBs) were performed.

Results

All 23 subjects included in this study had serologically confirmed HIV infection at baseline with detectable viral load. Post-cART, all subjects showed reactive RTs and 4th-generation ELISAs with elevated sample-to-positive ratios at all time-points. In the WBs, different longitudinal patterns were observed: some individuals showed the same numbers of bands along time (compared to baseline), others showed an increasing number of bands while others showed a decreasing number of bands along time. It was observed that **50% of early-treated subjects, i.e. those who started cART early (<120 days post-infection), showed, compared to the baseline WB, less WB bands or the same number of bands but with decreasing intensity**, than those who delayed the start of treatment after acquiring infection (>120 days post-infection). Moreover, 1 subject turned from one positive WB at baseline (5 bands: gp160/gp120/gp41/p24/p17) to an indeterminate state by 24 months post-cART (only the gp160/gp120 band). Within the same group, 22.2% showed the same and 27.8% showed an increasing number of bands. However, these proportions were 20%, 40% and 40%, respectively, in the delayed-treated subjects.

Same or increasing number of bands

Patient	# days from Inf to Tx	WB bands BSL	FW-U (mths)
M-7	61	8	BSL 8
M-8	97	4	BSL 5 6 12 24
M-10	60	4	BSL 4 6 12 24
F-2	248	3	BSL 3 6
M-12	87	3	BSL 4 6 7 12 23
M-13	66	7	BSL 8 6 8 12 24 36
M-14	60	3	BSL 3 6 12 24 36
M-15	90	5	BSL 5 6 12 24 36
M-16	30	3	6 12 21 28
F-3	129	6	BSL 7 12
M-17	139	3	BSL 5 6 12

Reversion after 2 years of treatment

M-18	62	7	BSL 7 6 1 24
Stopped therapy		8	48

Decreasing number of bands

Patient	# days from Inf to Tx	WB bands BSL	FW-U (mths)
M-1	75	8	BSL 4 6 12
F-1	30	7	6 12 36 48
M-2	90	7	BSL 7 6 18
M-3	5	5	BSL 2 24 36 48
M-4	90	8	BSL 8 6 12
M-5	137	5	BSL 4 6
M-6	50	4	BSL 3 12
M-11	No treat	4	BSL 3 6 12
M-9	60	8	BSL 8 6 10 13 24 36

Atypical pattern

M-20	90	4	BSL 4 5 8 8 12 24 48
M-19	74	5	BSL 7 6 12 5 24 36

Conclusions

Evidence of partial seroreversion was found in the studied cohort. The rate of reversion was higher within subjects who received cART at very early times post-infection and might become even more frequent with more prolonged time on suppressive cART. This phenomena, in addition to the delayed seroconversion seen among individuals receiving PrEP and the seropositivity produced by new HIV vaccines among individuals without infection, might challenge our current HIV diagnosis algorithms. Further research is warranted in the context of Test and Treat strategy and Combined Prevention paradigm.

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