Effect of hepatitis C virus infection, and its timing relative to HIV seroconversion, on CD4 T-cell and HIV RNA evolution among HIV-positive MSM

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Background

Hepatitis C virus (HCV) incidence increased after 2000 among HIV-positive MSM. Most studies have examined the effect of HIV/HCV-coinfection among individuals acquiring HCV before HIV, while HIV precedes HCV infection for the majority of MSM.

As the HCV epidemic among MSM has been recognized relatively recently, little is known about the effect of HCV infection and its timing, relative to HIV seroconversion, on CD4 T-cell count (CD4) and HIV RNA (VL) evolution.

Objectives

We aimed to assess the effect of HCV infection and its timing, relative to HIV seroconversion (HIVsc), on CD4 T-cell count and HIV RNA evolution among HIV-positive MSM before and after the start of cART.

Methods

- Included MSM with well-estimated dates of HIV seroconversion (HIVsc) from 17 cohorts in the CASCADE Collaboration
- Each newly ART-naïve HCV-infected individual was matched to two HCV-negative ones for time since HIVsc and country whereas each HCV-infected individual on cART was matched to two HCV-negative ones for time since HIVsc and time since cART initiation.
- We modeled trends in CD4 and VL from the matched time (i.e., HCVsc or matched time for HIV-monoinfected individuals) onwards using random effects models for 1) ART-naïve MSM 2) MSM on cART.
- Variables in the model: interval from HIVsc to HCV infection (timing), age at matched time and calendar year at matched time. For ART-naïve MSM we also included method of HIVsc determination and for MSM on cART, time since cART initiation; several interaction terms were included.

Results

	ART-naïve MSM	MSM on cART
At risk, n	6,248	4,856
HCVsc, n	96	139
Follow-up (years), median (IQR)	0.8 (0.03-2.3)	1.8 (0.6-3.9)
Age at matched time, median (IQR)	35 (29-40)	40 (35-47)
Calendar year at matched time, median (IQR)	2006 (2003-2011)	2008 (2005-2011)

- In ART-naive MSM, CD4 tends to converge over time whereas a difference in VL remained even after 3-4 years since HCVsc.
- For MSM on cART, CD4 difference is more apparent during the first years since HCVsc compared to HIV-monoinfected MSM, while the VL trend did not differ over time.
- The **timing** of HCV relative to HIVsc had **no** significant impact on VL and CD4 evolution, irrespective of cART usage.

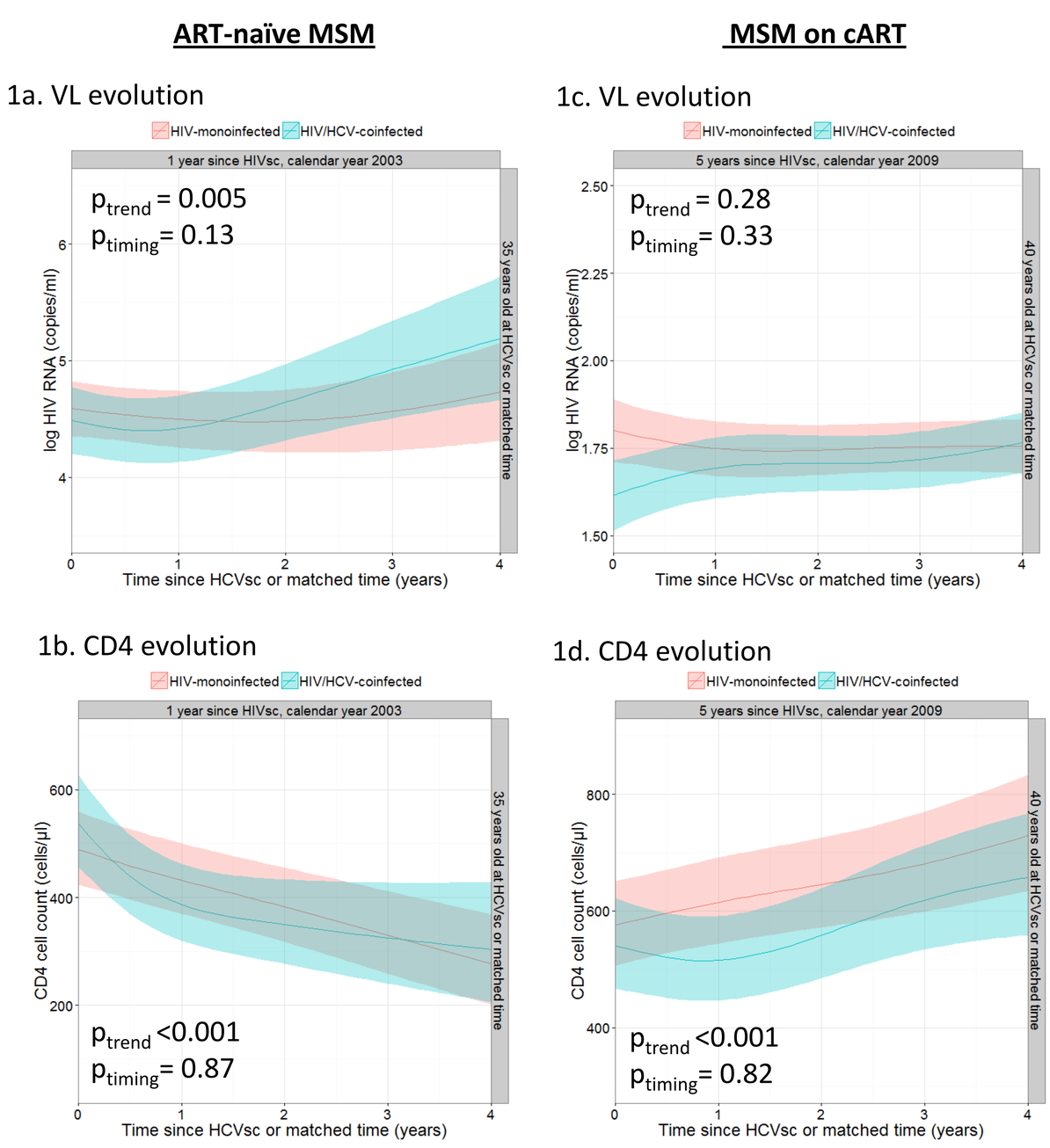

Figure 1. VL and CD4 evolution among HIV-positive MSM, aged 35 years at matched time.

<u>ART-naïve MSM</u>

Figure 1a. & 1b. illustrated for MSM with HIVsc estimated by the midpoint method.

<u>MSM on cART,</u>

Figure 1c. & 1d. illustrated for MSM 3 years on cART.

Conclusions

- After an HCV infection, we observed a temporary slight decrease in CD4 among ART-naïve MSM and a slower increase in CD4 among MSM on cART.
- In ART-naïve MSM only, HIV RNA increased more rapidly after the first year since HCVsc compared to HIV-monoinfected MSM.
- No effect of the timing of HCV infection relative to HIV seroconversion, neither among ART-naïve MSM nor MSM on cART.

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