Effect of hepatitis C virus infection, and its timing relative to HIV seroconversion, on CD4 T-cell and HIV RNA trajectories 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) trajectories in this group.

Objectives

We aimed to assess the effect of HCV infection and its timing, relative to HIV seroconversion, on CD4 T-cell count and HIV RNA trajectories 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 from Europe, Australia, Canada and Sub-Saharan Africa.
- 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. Also, having a detectable VL was analyzed using random effects logistic regression model among MSM on cART.
- Variables in the model: interval from HIVsc to HCV infection (timing) and age 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

Figures. VL and CD4 trajectories 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.

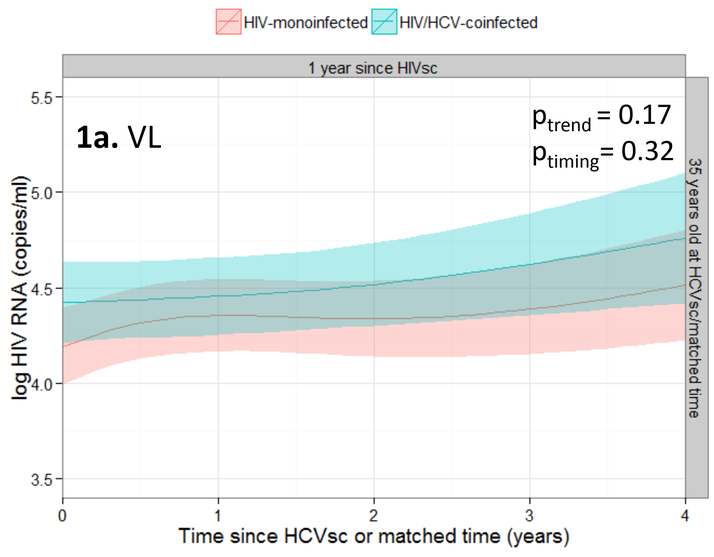
<u>MSM on cART,</u>

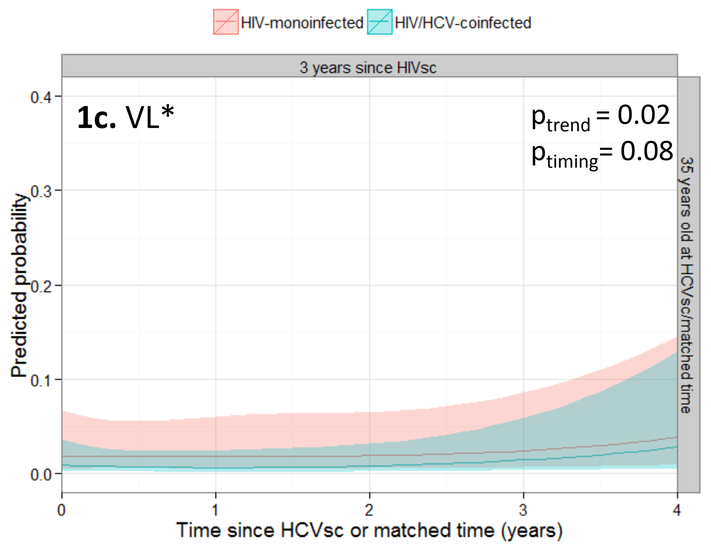
Figure 1c. & 1d. illustrated for MSM 3 years on cART.

Figure 1c. Predicted probabilities of having a detectable VL.

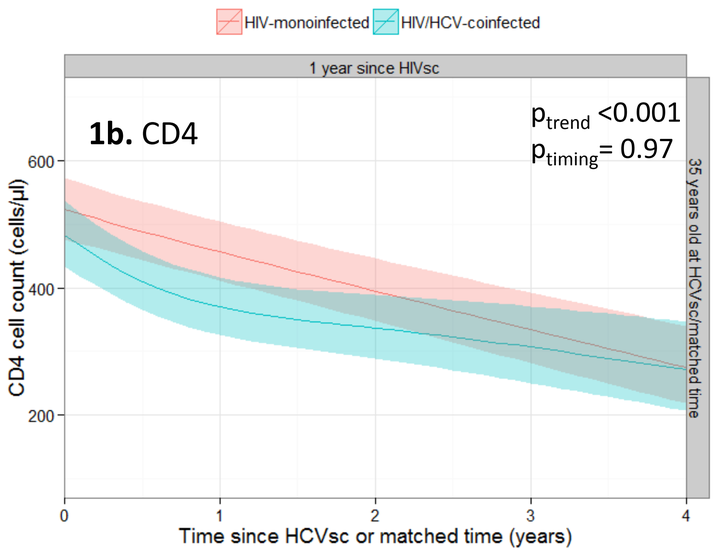
	ART-naïve MSM	MSM on cART
At risk, n	6,325	4,856
HCV-coinfected, n	217	147
Follow-up (years), median (IQR)	0.9 (0.2-2.7)	1.8 (0.5-3.4)
Age at matched time, median (IQR)	34 (28-40)	40 (34-47)
Calendar year at matched time, median (IQR)	2006 (2003-2011)	2008 (2005-2011)

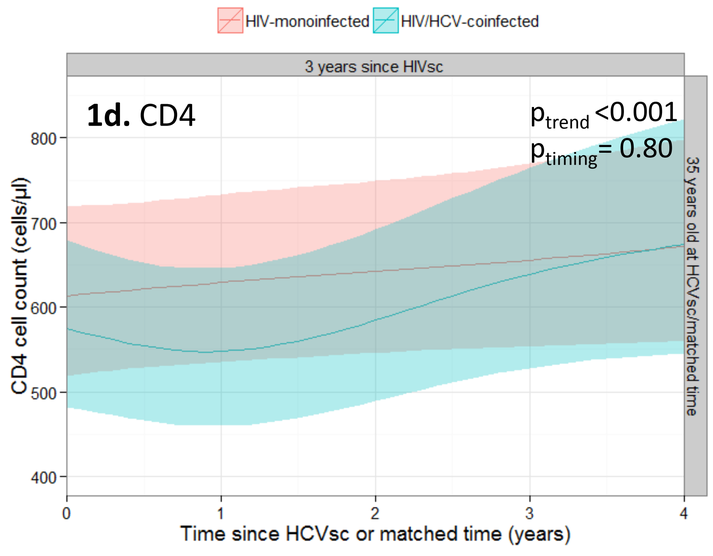
ART-naïve MSM | **MSM on cART**





** Interaction with age & duration on cART significant*





Conclusions

- After a 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 was higher at baseline among HCV-coinfected, but VL trajectories did not differ by HCV-coinfection status.
- Young HIV-monoinfected and, particularly when on cART <2 years, had a higher probability of having a detectable VL than HCV-coinfected.
- 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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