HIV Rebound in the Male Genital Tract after ART Interruption

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Background

- To cure HIV, we need a better understanding of the distribution of HIV reservoirs throughout the many compartments of the body outside of the blood.

Objective

To determine if HIV reservoirs in the male genital tract contribute to viral rebound after antiretroviral therapy (ART) interruption.

Cohort and Sampling

Population: Twelve people living with HIV (PLWH) who began ART during acute or early infection were enrolled in a randomized, double-blind, placebo-controlled clinical trial of HIV-MAG DNA vaccine prime, rVSVN4CT1gag booster vaccine (NCT01859325).

Sampling. Paired blood and semen were collected up to 9 longitudinal time points after ART interruption.

Study Design and Sampling

HIV pDNA-12 or placebo

| HIV pDNA-12 or placebo | 0 | 4 | 12 | 24 | 36 | 48 | 56 | 72 | 96 |

Results

Vaccine had no effect on kinetics and magnitude of HIV RNA rebound in blood plasma (Snellor et al, STM 2017).

Compared to blood, HIV RNA rebound in semen occurred significantly later (median of 66 versus 42 days post ART interruption) and reached lower levels (164 versus 16,224 copies/ml).

Despite ART started during early infection, HIV diversity was higher in semen compared to blood in all three coding regions.

Conclusions

- Higher diversity in the genital compartment suggests distinct evolutionary dynamics.
- Unique viral populations are observed in seminal plasma.
- Reservoirs in all anatomic compartments need to be actively targeted to achieve a complete functional cure.