HIV-1 RNA levels in semen of people on “short-cycle” antiretroviral therapy

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Introduction/Summary

Short-cycle antiretroviral therapy (ART), whereby virally suppressed people living with HIV (PLWH) switch to 4 or 5-days-on and 3 or 2-days-off maintenance treatment, has been shown to be a safe and effective alternative to standard daily treatment in a randomised clinical trial1 and other small, not randomised, studies. Pharmacokinetic analyses showed low or undetectable plasma drug levels in the “off” period in some participants, without virological failure. PLWH on daily ART with suppressed plasma HIV RNA are advised that they can have unprotected sexual intercourse without transmitting the virus. Recently ANRS 170 Quator study group published results on semen HIV RNA amount on 78 participants to the 4 days/week maintenance strategy study.1 Their results supported that short cycle therapy is effective in controlling genital HIV shedding.

Study Design

We evaluated HIV RNA levels in the seminal fluid of seven virologically suppressed PLWH (all males) on different short-cycle antiretroviral regimens. In Table 1 we reported antiretroviral regimen for each patient and the month and year of start of short-cycle therapy strategy. These seven patients asked to check HIV RNA in their sperm, after a written informed consent

Results

All patients had plasma HIV RNA <20 copies/ml and undetectable HIV RNA seminal fluid at both time points.

Methods

At the time of sample collection, four patients were taking ART from Monday to Thursday while three from Monday to Friday. Semen samples (collected through masturbation) and blood samples were collected on Monday, the day after the off period, 1 to 12 hours before pill’s oral intake. All people were asymptomatic for sexually transmitted infections (STI) and screening tests for Chlamydia trachomatis, Neisseria gonorrhoeae, Mycoplasma genitalium, Trichomonas vaginalis, Mycoplasma hominis, Ureaplasma parvum and urealyticum and syphilis serological test were negative at the same time of HIV RNA quantification.

Conclusion

HIV shedding in genital fluids despite plasma viral suppression has been reported in PLWH on long-term ART,2,3 and can be partially explained by HIV replication in locally infected cells.4-11 The presence of an STI or local inflammation has been associated with HIV shedding in the genital tract. It may be that, similarly to blood, HIV rebound in genital fluids could observed after an eclipse phase of 1-7 days or even longer after the interruption of an effective therapy; this is particularly evident in subjects with a long history of virological suppression, who have a reduced viral load and whose lymphoid system is shifted towards a less favourable place to HIV replication and more deactivated quiescent state.12 In fact, in ART interruption studies the resumption of viral replication occurred after a 5-8 day latency.13,14 Our results, even if limited by the low number of individuals studied, confirm ANRS 170 Quator results in terms of virological efficacy and no viral replication in the genital compartment.