

Poster presentation

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## **P07-11 LB. Impact of highly active antiretroviral therapy on cell-free and cell-associated HIV-1 in cervicovaginal secretions and blood**

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### **Background**

Heterosexual contact is a major route for HIV-1 transmission and cervicovaginal secretions (CVS) contain both cell-associated and cell-free virus. Nevertheless, these different forms of HIV-1 and their involvement in sexual transmission have been poorly characterized.

### **Methods**

CVS and blood were sampled in 80 HIV-1 infected women. Cells phenotype was analyzed by flow cytometry and levels of spontaneous HIV-1-antigen secreting CD4<sup>+</sup> T cells were evaluated by ELISpot assay. Cell-free virus was quantified in CVS and paired plasma while cell-associated virus was assayed in cell-culture supernatants.

### **Results**

Cell-free HIV-1 RNA was frequently detected in CVS from patients viremic for HIV RNA in plasma but was unusual in aviremic patients (75% versus 16%, and mean = 5921 copies/ml versus 2696 copies/ml, respectively,  $P < 0.001$ ). Levels of HIV-1 RNA were positively correlated in CVS and plasma ( $\rho = 0.7$ ,  $P < 0.001$ ). CVS contains low T lymphocytes quantities (mean = 120 CD4<sup>+</sup> cells/ml and 133 CD8<sup>+</sup> cells/ml) and CVS-derived CD4<sup>+</sup> T cells are mostly memory and activated lymphocytes (CD45RA<sup>-</sup>, HLA-DR<sup>+</sup>, CD38<sup>+</sup>, CD69<sup>+</sup>). Those cells were strikingly different from blood CD4<sup>+</sup> T cells with a phenotype exhibiting a mucosal profile with higher expression of CD103 combined with lower expression of CCR7. Cell-associated HIV-1 RNA was

detectable in only 3/51 CVS including 2 from viremic patients, whereas 28/51 plasma cell-culture supernatants were positive. Levels of cell-associated HIV-1 RNA were higher in blood samples of viremic individuals than in undetectable subjects ( $P = 0.01$ ).

### **Conclusion**

Therapy reduces viral production and shedding in genital and blood compartments but cell-free HIV-1 remains detectable in some aviremic patients. Level of genital cell-free HIV-1 RNA is influenced by systemic viral replication in contrast to genital cell-associated HIV-1, which may be influenced by local factors. The little amount of CD4<sup>+</sup> T cells observed in CVS suggests that sexual transmission occurs independently of HIV-1-infected cells located in CVS but involve intraepithelial cell-associated HIV-1 or cell-free virus.