



ORAL PRESENTATION

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Cell free HIV-1 virus can infect inner and outer foreskin polarized explants

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Background

In sexually insertive men, HIV is predominantly transmitted at the penile surface. We report two major advances in the study of HIV infections at the foreskin.

Methods

First, we have developed cryopreservation methods that allow infection of foreskin tissue explants after thawing (654 +/- 178.3 pg of p24/gr of tissue) and provide comparable infection rates to fresh samples (716.5 +/- 446pg of p24/gr of tissue). Second, we have developed an ex vivo assay that uses human foreskin explants to replicate the polarized viral entry. After 12h of polarized exposure, HIV entering the explant is amplified for 6 days of culture with activated PBMCs and measured using p24 ELISA.

Results

Preserving the epithelial barriers, we show that polarized infections permit the entry and expansion of less virus (68.28 +/- 10.65pg of p24/gr of tissue) than non-polarized infections (650.4 +/- 205.9pg of p24/gr of tissue) where the virus can enter the CD4 T cell rich epidermal-dermal interface (p=0.04). Using 10000 TCID50 of HIV-1Bal per explants, we can detect infection in 100% of the non-polarized assays and 69% of the polarized explants. Lastly, comparing foreskin tissue from 4 donors, we demonstrate that the inner and outer foreskin are both equally able to support cell-free HIV infection in polarized assays (inner 77.67 +/- 64.7 vs. outer 92.82 +/- 66.81pg p24/gr of tissue p=0.369) and in non-polarized assays (inner 730.9 +/- 323.7 vs. outer 625 +/- 301.2pg p24/gr of tissue p=0.41).

Conclusion

We hope that this approach could be used efficiently as a model to evaluate the efficacy of prevention strategies.

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