



MEETING ABSTRACT

Open Access

Circularised 1 and 2 LTR DNA circles are present in freshly- and chronically-infected cell lines and patient PBMCs, indicating ongoing reverse transcriptase usage

James M Fox^{1*}, Silva Hibern², Lucy B M Cook³, Maria Antonietta Demontis², Aileen Rowan³, Fabiola Martin^{1*}, Graham P Taylor²

From 15th International Conference on Human Retroviruses: HTLV and Related Viruses Leuven and Gembloux, Belgium. 5-8 June 2011

Background

After cell entry, HTLV-1 RNA is reverse transcribed and integrated into the host genome using its own reverse transcriptase (RT) and integrase (IN) enzymes. However, some unintegrated DNA circularises into 1 or 2 LTR DNA. Little is known about these unintegrated HTLV-1 DNA circles. Similar to HIV an inhibition of RT should decrease, and an inhibition of IN increase the 1/2 LTR DNA levels.

Questions

Can 1/2 LTRs be detected in chronically infected MT2 cells and patient samples? Can 1/2 LTRs be detected in freshly infected CEM cells? Are 1/2 LTRs a marker of RT and IN activity? Can raltegravir (RGV), an IN inhibitor, prevent fresh infection?

Methods

Detection of 1/2 LTRs in MT2 cells and patient PBMCs (4 ATLL, 4 HAM/TSP, 4 AC) using nested PCRs. Co-culture of gamma-irradiated MT2 with uninfected CEM cells with and without 1 μ M RGV for 2 weeks. DNA was extracted from 1x10⁶ cells at days 3,7,10 and 14 for proviral load and 1/2 LTR DNA detection and quantification.

Results

1/2 LTRs were detected in MT2 (1LTR: 1 copy/600; 2LTR: 1copy/2000 cells); in all 16 patient PBMCs; in 3hr and day 14 infected CEM cells. Data on 1/ 2 LTR quantification in all patients and RGV inhibition study will be available for presentation.

Conclusion

Both 1 and 2 LTRs are detected in freshly (CEM) and chronically infected cells (MT2, patient PBMCs), indicating ongoing usage of RT. 2 LTR DNA circles are detected at significantly lower levels than 1 LTRs in MT2 cells.

Author details

¹Centre for Immunology and Infection, Hull York Medical School and Department of Biology, University of York, York, UK. ²Section of Infectious Diseases, Imperial College, London, W2 1PG, UK. ³Department of Immunology, Imperial College, London, W2 1PG, UK.

Published: 6 June 2011

doi:10.1186/1742-4690-8-S1-A51

Cite this article as: Fox *et al.*: Circularised 1 and 2 LTR DNA circles are present in freshly- and chronically-infected cell lines and patient PBMCs, indicating ongoing reverse transcriptase usage. *Retrovirology* 2011 **8**(Suppl 1):A51.

* Correspondence: fabiola.martin@hyms.ac.uk

¹Centre for Immunology and Infection, Hull York Medical School and Department of Biology, University of York, York, UK

Full list of author information is available at the end of the article