

POSTER PRESENTATION

Open Access

Functional characterization of HIV-1 *Tat* exon-1 variants from North India and their implications on HIV-1 transactivation and TAR interaction

Larance Ronsard^{1,2*}, VG Ramachandran², Akhil C Banerjea¹

From 2nd International Science Symposium on HIV and Infectious Diseases (HIV SCIENCE 2014) Chennai, India. 30 January - 1 February 2014

Background

HIV-1 virus is a rapidly evolving virus due to genetic variability through its rapid replication, mutation and recombination potential which is a major hurdle in vaccine development. One of the effective ways to modulate HIV-1 infection is to target viral proteins; among the viral proteins, *Tat* plays a major role in HIV-1 pathogenesis. It activates viral gene expression through TAR interaction. The aim of this study was to characterize genetic and functional variants of *Tat* exon-1 from HIV-1 patients from North India.

Methods

DNA was isolated from PBMCs and *Tat* exon-1 was PCR amplified with specific primers followed by cloning, sequencing and sequence analysis using bioinformatics tools for predicting subtypes, recombination events, conservation of domains and phosphorylation sites. Unique *Tat* exon-1 variants were functionally characterized for LTR transactivation, TAR interaction and cell death.

Results

Genetic analysis of *Tat* exon-1 variants revealed 90% subtype C and 10% B/C recombinants, and the functional characterization showed varying levels of LTR transactivation, TAR interaction and cell death. A single mutation (S46F) in *Tat* exon-1 variants showed enhanced LTR transactivation through strong interaction with TAR.

Conclusion

Possible role of *Tat* exon-1 variants in shaping the current HIV-1 epidemic in North India is discernible. Natural

substitutions across the conserved functional domains were observed. There is evidence for the emergence of B/C recombinants within *Tat* exon-1. The impact of genetic variations in *Tat* exon-1 on its pivotal functions is apparent. These are likely to have implications for HIV-1 pathogenesis and strategies of vaccine formulations.

Authors' details

¹Virology lab - II, National Institute of Immunology, New Delhi, India.

²Department of Microbiology, UCMS and GTB Hospital, New Delhi, India.

Published: 27 May 2014

doi:10.1186/1471-2334-14-S3-P81

Cite this article as: Ronsard et al.: Functional characterization of HIV-1 *Tat* exon-1 variants from North India and their implications on HIV-1 transactivation and TAR interaction. *BMC Infectious Diseases* 2014 14(Suppl 3):P81.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

BioMed Central

* Correspondence: laraphds@gmail.com

¹Virology lab - II, National Institute of Immunology, New Delhi, India
Full list of author information is available at the end of the article