ABSTRACT

A major barrier to achieving HIV eradication in the pediatric setting is latently infected CD4+ T cells (memory T cells) during active infections. While latently infected CD4+ T cells are known to harbor HIV, the biology, replication, and persistence of the integrated provirus has not been adequately characterized. This study follows patients over time to determine if evidence of proviral DNA is detectable and/or of consequence to the overall T cell population.

BACKGROUND

Several groups have investigated the presence of HIV provirus, 2’-5’ oligoadenylate synthetase (2’-5’ OAS)–mediated innate immune response, and other measures of HIV persistence. There have been studies on the role of HIV–1 RT-PCR and ddPCR in Western Blot (WB) as a biomarker of low HIV RNA levels and persistence of viral reservoirs. Our study aims to determine the level of HIV proviral DNA and 2’-5’ OAS–mediated innate immune response in latently infected CD4+ T cells (memory T cells) during active infections.

RESULTS

Background:

- Study design focused on HIV-1 reservoirs in pediatric patients with perinatal HIV infection.
- Study timeline included two similar time points for each patient.
- ddPCR analysis performed on blood samples from perinatally infected children.
- Western Blot (WB) performed at two time points.

HYPOTHESIS

Effective cART early in infancy limits development of HIV reservoirs compared to stable persistence with cART initiation in children. However, recent studies have shown that the presence of HIV provirus may be reduced in infants treated early with cART.

STUDY DESIGN

- Study aimed to assess the level of HIV proviral DNA and 2’-5’ OAS–mediated innate immune response in latently infected CD4+ T cells (memory T cells) during active infections.
- Study timeline included two similar time points for each patient.
- ddPCR analysis performed on blood samples from perinatally infected children.
- Western Blot (WB) performed at two time points.

LABORATORY METHODS

- ddPCR analysis performed on blood samples from perinatally infected children.
- Western Blot (WB) performed at two time points.

SUMMARY & DISCUSSION

- Study findings suggest that HIV proviral DNA and 2’-5’ OAS–mediated innate immune response may be reduced in infants treated early with cART.
- Study results support the hypothesis that effective cART early in infancy limits development of HIV reservoirs compared to stable persistence with cART initiation in children.

IMPLICATIONS

Further studies with ddPCR in conjunction with WB may be useful in this population.

REFERENCES