

Poster presentation

P02-07. High concentrations of interleukin-15 and low concentrations of CCL5 in breast milk are associated with protection against postnatal HIV transmission

J Walter*¹, MK Ghosh², L Kuhn³, K Semrau⁴, M Sinkala⁵, C Kankasa⁶, DM Thea⁴ and GM Aldrovandi²

Address: ¹Plant Pathology and Microbiology, University of California, Riverside, CA, USA, ²Childrens Hospital Los Angeles, Los Angeles, CA, USA, ³Columbia University, New York, NY, USA, ⁴Boston University School of Public Health, Boston, MA, USA, ⁵Lusaka District Health Management Team, Lusaka, Zambia and ⁶University Teaching Hospital, Lusaka, Zambia

* Corresponding author

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Background

Natural variations in IL-15 concentration have not been investigated for an association with an immune-protection against HIV. Given IL-15's central role in anti-HIV immunity, we hypothesized that higher concentrations of IL-15 in breast milk may protect against postnatal mother-to-child HIV transmission.

Methods

In a case-control study nested within a clinical trial in Zambia, we compared IL-15 concentrations in breast milk of 22 HIV-infected women who transmitted HIV to their infants through breastfeeding with those of 72 who did not, as well as 18 HIV-uninfected women. Breast milk HIV RNA quantity, sodium, CXCL12, CCL5, and IL-8 concentrations were measured as well as maternal plasma HIV RNA concentrations and CD4 cell count. We used logistic regression modeling to adjust for potential confounders.

Results

Higher concentrations of IL-15 in breast milk (adjusted odds ratio [AOR]: 0.01 per log₁₀ pg/ml increase, 95% confidence interval [CI]: <0.001 to 0.3) were associated with protection against postnatal HIV transmission in univariate analysis and after adjusting for maternal CD4 cell counts, breast milk HIV RNA, CCL5, CXCL12, and IL-8 concentrations. Breast milk IL-15 concentration corre-

lated with breast milk sodium, the other cytokines and HIV RNA concentration. It was inversely correlated with infant birth weight and tended to be higher in 1 week than in 1 month *post-partum* samples. Breast milk CCL5 concentrations were associated with increased risk of HIV transmission (AOR: 12.7 95% CI: 1.6 to 102.0) in adjusted analysis. Breast milk CXCL12 and IL-8 concentrations were not independently associated with transmission.

Conclusion

High concentration of IL-15 were associated with a protection against breastfeeding HIV transmission after adjusting for other pro-inflammatory cytokines, HIV RNA in breast milk, and maternal CD4 cell count. These results corroborate a protective role of IL-15-mediated cellular immunity against HIV transmission during breastfeeding. They are informative for vaccination studies using IL-15 as an adjuvant.