

Detection of HIV-1 RNA in Breast Milk from Subtype C HIV-1 infected women after single dose Nevirapine (NVP).

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Background:

HIV-1 in breast milk (BM) is a significant risk factor for HIV mother to child transmission (MTCT), particularly in sub-Saharan Africa where breast-feeding is the norm. Qualitative and quantitative measures of BM shedding may be obtained from lactoserum by nucleic acid amplification techniques. We compared Bayer Versant HIV-1 RNA 3.0 bDNA (bDNA) and ultrasensitive Roche Amplicor HIV-1 Monitor v1.5 (PCR) in 125 breast-milk samples obtained from 45 women with subtype C HIV-1.

Methods:

In the HPTN 023 study, women from Zimbabwe and South Africa, received single dose Nevirapine at labor. BM samples were collected at 8, 16, 20 and 24 weeks post-partum and frozen. Split aliquots from 45 women (1 to 5 samples/woman) were analyzed by bDNA and PCR, sample volumes 0.5 to 1ml. The lower level of detection (LLD) in the bDNA assay was 75-150 copies/ml, and 25-50 copies/ml by PCR.

Results.

Among the 125 BM samples, 81/125 (65%) had >25- 50 copies/ml by PCR compared to 36/125 (29%) with >75-150 copies /ml by bDNA. In 35 samples with detectable RNA by both methods, median values were 1972 copies/ml by PCR and 401 copies/ml by bDNA (Wilcoxin Signed-Rank, $p < 0.01$) and there was a significant correlation between bDNA and PCR $R=0.80$, ($p < 0.01$). In 62/125 (50%) of samples, PCR was greater than bDNA, while only 4/125 (3%) had higher bDNA than PCR values. Among the 45 women, one or more BM samples had quantifiable RNA in 37/45 (82%) by PCR vs 20/45 (45%) by bDNA.

Conclusion:

Ultrasensitive PCR appears more sensitive than bDNA in limited volume breast-milk samples for the detection of HIV RNA. However, among women with > 200 copies /ml of HIV-1 RNA in BM there was a close correlation between the two assays. Nucleic acid amplification techniques can detect and quantify breast-milk shedding in subtype CHIV-1 infected lactating women.