Efavirenz concentrations in HIV-infected Malian women and their nursing infants

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Breastfeeding increases the risk of HIV transmission by 14%. There is limited data on antiretroviral pharmacokinetics in breast milk. In this work, we measured plasma and milk levels of ARVs from HIV-infected mothers and their infants during breastfeeding.

Included patients were HIV-positive women receiving antiretroviral to 6 months postpartum and their breastfed infants. Blood samples were taken at delivery and month 1, 3 and 6 postpartum. The efavirenz concentrations were measured LC-MS/MS method. The limit of detection for the quantification of efavirenz was 0.216 mg/L. Plasma viral load was measured on M2000rt (Abbott). Viral load was determined at delivery and at 6 months postpartum for mothers and at 3 and 6 months postpartum for children. All children received nevirapine for 6 weeks after birth.

A total of 32 mother-child pairs were included: 32 mothers received tenofovir (TDF), lamivudine (3TC) and efavirenz (EFV). The median (IQR) duration of ART before inclusion was 57 (0-168) months. The median maternal plasma concentration (IQR) EFV was 3105 ng/mL (2450, 6595) at month 1; 3050 ng/mL (2060, 6685) at month 3; 2740 ng/mL (2150, 8080) in month 6. The median infantile plasma concentration (IQR) EFV was 356 ng/mL (282, 572.5) at month 1; 268 ng/mL (142, 464.5) at month 3; and 175 ng/mL (89.7, 331) at month 6. The median ratio (IQR) (infant plasma / maternal plasma) was 0.057 (0.031, 0.1133) at month 1; 0.072 (0.051, 0.091) at month 3 and 0.048 (0.033, 0.070) at month 6. The median (IQR) breast milk-to-maternal plasma ratio (BM:MP) of efavirenz was 1.16 (0.96-20.62), which corresponds to a relative infant dose of 2.46 % of the recommended weight-adjusted pediatric efavirenz dose at month 6. The median (IQR) apparent infant clearance (CL/F) of efavirenz was 0.146 (0.111-0.246) L/h/kg at months 6. No adverse reactions or drug-related toxicity to the mother were observed in any of the infants. One mother was presented with a viral load> 50 copies / mL at 6 months, had undetectable plasma concentrations of the drug at the same time. efavirenz was detectable in small quantities in the plasma of breastfed infants without side effects.