

Maternal SDF1 3'A polymorphism is associated with increased perinatal human immunodeficiency virus type 1 transmission

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Abstract:

Genetic polymorphisms in chemokine and chemokine receptor genes influence susceptibility to human immunodeficiency virus type 1 (HIV-1) infection and disease progression, but little is known regarding the association between these allelic variations and the ability of the host to transmit virus. In this study, we show that the maternal heterozygous SDF1 genotype (SDF1 3'A/wt) is associated with perinatal transmission of HIV-1 (risk ratio [RR], 1.8; 95% confidence interval [CI], 1.0 to 3.3) and particularly postnatal breastmilk transmission (RR, 3.1; 95% CI, 1.1 to 8.6). In contrast, the infant SDF1 genotype had no effect on mother-to-infant transmission. These data suggest that SDF1, which is a ligand for the T-tropic HIV-1 coreceptor CXCR4, may affect the ability of a mother to transmit the virus to her infant. This suggests that a genetic polymorphism in a gene encoding a chemokine receptor ligand may be associated with increased infectivity of the index case and highlights the importance of considering transmission as well as clinical outcome in designing chemokine-based therapies for HIV-1.