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SUSTAINED REMISSION IN A 4 YEAR OLD HIV INFECTED CHILD TREATED THE FIRST YEAR OF LIFE

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BACKGROUND

Very rarely children with vertically acquired HIV and given antiretroviral therapy (ART) soon after birth, which is then stopped, have extended periods without detectable HIV in peripheral blood. We report a child with vertically acquired HIV, who was maintained on combined antiretroviral therapy from 33 hours through 13 months of life and remains well and without HIV viremia detectable by routine testing over 3 years after discontinuing ART.

METHODS

In addition to routine clinical assays, HIV DNA was assayed using droplet digital PCR (ddPCR) for *gag* and *pol* using DNA extracted from CD4 lymphocytes purified by negative selection.

RESULTS

A healthy full term newborn was born vaginally at home to a woman with no prenatal care and a 6-year history of diagnosed, but untreated, HIV infection with 14,400 copies HIV RNA /ml and 27% CD4 on the day after delivery. The child was started on ART (zidovudine, lamivudine and nevirapine) at 33 hours of life. A blood sample submitted for HIV DNA on day of life (DOL) 1 and another for HIV RNA on DOL 2 failed due to technical issues. A DOL 14 blood sample tested positive for HIV DNA. Because of this finding dried blood spots from DOL 1 from routine newborn screening were tested for HIV DNA with a positive result (CDC, Zeh). ART was switched to lopinavir/ritonavir, lamivudine and zidovudine at DOL 16. The mother discontinued the child's ART at 13 months of age. From birth through 4 years old the child remained clinically well without opportunistic infections and with undetectable HIV RNA (<20 copies/ml) by routine laboratory testing. HIV specific antibodies using a fourth generation antibody-antigen method became and remained negative from 15 months of age.

Three years of persistent undetectable HIV viremia

in a 4 year old *vertically infected* child who received antiretroviral therapy 33 hours after birth until about 1 year of age.

RESULTS cont.

Testing by HIV ddPCR-DNA was performed at intervals beginning at DOL 114 and were intermittently positive with the most recent test showing <1 copy of *gag* and *pol* < 1 copy of *pol* DNA/million CD4 cells.

	Day of Life										
Outcome	**1**	**14**	**36**	**54**	**114**	**184**	**389**	**402**	**1017**	**1210**	**1274**
HIV DNA	**+***	**+**		**-**		**-**	**-**				
HIV ddPCR † *gag*					**<5**		**3**		**1**	**42**	**<1**
pol					**<5**		**2**		**1**	**31**	**<1**
HIV RNA‡			**Not Detected**	**Not Detected**			**Not Detected**	**Not Detected**	**Not Detected**	**Not Detected**	**Not Detected**
CD4‡ Percent				**33**							**34**
Absolute				**2170**							**1390**
HIV Ab ELISA‡							**+**	**-**	**-**		

*COBAS AmpliPrerp/COBAS Taqman HIV-1 Qual. test was validated by the CDC for DBS with a 100% sensitivity and 100% specificity.
†HIV ddPCR results are copies/10^6 CD4 cells. ‡ Results from clinical laboratory.

CONCLUSIONS

Children with vertically acquired HIV and transiently treated with ART from near birth may have subsequent extended intervals were HIV is not detectable in peripheral blood. Very few children with this pattern have been reported. It is unclear how rarely this occurs. The capacity of these children to control HIV viremia for extended intervals in the absence of ART raises questions of whether HIV viremia control results from viral competence, host immunity, host genetics or some combination.

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