Administration of maraviroc, a CCR5 receptor antagonist, in infant rhesus macaques blocks CCR5 receptor but fail to prevent SIVmac oral transmission.

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**Background.** HIV maternal-to-infant-transmission (MTIT) accounts for >300,000 cases annually. New strategies of prevention are needed. SIV target cell availability at mucosal sites was reported to drive virus transmission. We investigated if CCR5 blockade with Maraviroc (MVC) impacts oral SIV transmission to infant rhesus macaques (RMs).

**Materials and Methods.** Nine infant RMs aged six months were included. Four RMs were untreated controls and five RMs received MVC (150mg/kg/bid/orally) for up to 6 months. Coreceptor occupancy was closely monitored and RMs were orally exposed to 10,000 TCID50 of SIVmac766XII every two weeks, for up to 6 times. Plasma viral loads and changes of immune cells were monitored by RT-PCR and flow cytometry.

**Results.** MVC was well tolerated, with no adverse reactions and efficiently blocked CCR5 coreceptor in RMs. All RMs in the control group and 60% of those receiving MVC became infected. No difference in the number of exposures needed to infect RMs in the two groups was observed. None of the treated or control RMs were infected with more than one viral variant, suggesting that the animals were not overexposed to virus, which might have offset MVC protective effect. Ramp-up viremia was significantly delayed in the MVC-treated RMs. Peak and postpeak VLs were similar in both groups. No significant differences in CD4+ T cell depletion or in the levels of immune activation were observed between the two groups.

**Conclusions.** MVC was efficient in blocking CCR5 and well tolerated in infant RMs. Blocking CCR5 with MVC did not significantly impact SIV oral transmission. Since SIVmac is more promiscuous than HIV-1 with regard to coreceptor usage (i.e., being able to use alternative coreceptors, such as BOB/GPR15 and Bonzo/STRL33), CCR5 blockade in humans might be more effective in preventing MTIT alone or in combination with other antiretroviral drugs.