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Oral presentation

CD14+ cells are the main targets for HIV-1 infection in first trimester pregnancy human uterine mucosa

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During the first trimester of pregnancy, HIV-1 mother-to-child transmission (MTCT) is relatively rare despite the permissivity of placental cells to cell-to-cell HIV-1 infection. The invasive placental cells interact directly with the decidual cells (cells of the maternal uterine mucosa during pregnancy) in the first months of pregnancy; however the role of the decidua in the control of HIV-1 transmission remains unknown. The decidua has a characteristic leukocyte population containing natural killer cells (dNK), antigen-presenting cells (dAPC) and T lymphocytes. The aim of this study was to determine whether decidual cells could be potential targets to HIV-1 and could thus represent a risk for HIV-1 MTCT in utero.

To determine the permissivity of decidual tissue to HIV-1 infection, we adapted and validated a histoculture model for the decidua basalis and decidua parietalis (which are located at the implantation site and surrounded the uterus respectively). Deciduas were obtained from HIV-1 negative women undergoing elective abortions between 6–10 weeks of pregnancy. Infections were performed *in vitro* with HIV-1 primary isolates. Tissue sections over the course of the culture and a functional test based on TNF-a secretion upon LPS stimulation indicate that decidual histocultures remain viable for approximately 15 days. Decidual tissue is more susceptible to infection by an R5 tropic HIV-1 (BaL) than an X4 tropic HIV-1 (LAI). Moreover, we show that the level of infection is lower in the decidua basalis compared to the decidua parietalis. Infected cells were identified by flow cytometry analysis of isolated decidual mononuclear cells using CD3, CD14 and CD56 specific monoclonal antibodies. Double immunohistochemistry staining was also performed on infected decidual tissue sections to confirm *in situ* the flow cytometry analysis. The results show that subpopulations of dAPC expressing CD14 are the main target of HIV-1 infection in the decidua.

The permissivity of decidual tissue to HIV-1 infection *in vitro* suggest that *in vivo* a first level of control of HIV-1 *in utero* mother-to-child transmission occurs, preceeding and in addition to the control previously demonstrated by the placenta. The role of dNK cells in this control is currently under investigation.