**BACKGROUND**

The human placenta is an integral organ that links the mother to her unborn fetus. This transient organ is comprised of maternal and fetal tissue, which together form the foetal maternal (FM) interface. Numerous immune cell subsets have been described at the FM interface. These include regulatory T cells (Tregs). Defects in maternal Treg frequency and function could be a cause of pregnancy complications including preterm birth, possibly due to alterations in the maintenance of FM tolerance. HIV and/or antiretroviral (ARV) exposure may interfere with this tolerance but data are sparse.

Our data is on placenta collected from late-presenting (at or after 28 weeks’ gestation) HIV infected pregnant women, who were enrolled across multiple midwife obstetrics units in Cape Town, South Africa.

**AIM:** To characterize and identify Treg populations in decidua membranes and villous tissue from placenta collected at delivery from HIV-infected women compared to HIV uninfected mothers.

**METHODS**

HIV infected (n=16) and HIV uninfected (n=6) participants were enrolled from various midwife obstetrics units in Cape Town, South Africa. All placenta collected at birth and processed within 6 hours at the Division of Immunology, University of Cape Town.

**RESULTS**

1. Frequency of CD3+ T cells
   - CD3+CD4+ cells
   - CD3+CD8+ cells

2. Minimally defined CD4+ Treg frequency in the placenta: CD4+127+CD25+/FoxP3+

3. Using CD25 and CD45RA to delineate resting and activated Tregs in the placenta
   - Treg populations co-expressing CD38, CTLA4, PD1, TIGIT

4. Proportions of CD4+CD127+/CD25+/FoxP3+ Treg populations in CD3+ cells

5. On CD3+CD4+ cells

**SUMMARY & CONCLUSIONS**

- The maternal decidua membrane of the placenta mirror the adult systemic footprint in HIV infected mothers and characterized by a significant depression of CD8+ and an increase of CD4+ cells in the placenta. HIV infected and uninfected mothers.
- Generalized Linear Mixed Model revealed that TIGIT and CD45RA were key markers for differences in CD57+CD8+ cells between placental HIV-infected versus uninfected mothers.
- Unbiased analyses revealed unique T cell subsets in the placenta expressing TIGIT markers. There was a large difference of CD4+FoxP3+CD28+FoxP3+ in placenta from HIV infected mothers.
- The unique and multiple Treg signatures in the placenta which appear to be influenced by HIV exposure and ARV that warrant further investigation.

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