

The maternal environment is rich in SARS-related receptors which could be protective for the fetus

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August 10, 2023

Abstract

Background: While risk of infection with SARS-CoV-2 is low to pregnant women and the fetus, there is increased risk of preterm birth and admission into ICU. The fetus is relatively protected against infection, with cases of vertical transmission being rare. Various receptors and accessory molecules which are known to regulate SARS-CoV-2 viral entry into host cells have soluble versions which could act as decoy traps. Following on from our previous findings regarding the abundance of some of these molecules in breast milk and amniotic fluid, we show the maternal-fetal interface is also rich in these molecules and how systemically they can be differentially expressed between males, non-pregnant females, pregnant females, and neonates. **Methods:** Archived placental samples from before the pandemic, and blood from participants in late 2020 who had not tested positive for COVID-19 were analysed for the presence of receptors by ELISA, immunohistochemistry, immunoblotting and flow cytometry. **Results:** We have confirmed that the placenta and membranes are particularly rich in CD26 and CD147 and gone on to consider if it is possible that shedding of these molecules into the maternal and fetal circulation occurs. However, except for sCD147 in umbilical cord plasma compared to all groups and sNRP-1 in pregnant women in comparison to men and neonates, the expression of soluble forms of these molecules is primarily consistent between the groups studied here. **Conclusion:** The maternal-fetal interface has potential mechanisms to protect the fetus from contracting SARS-CoV-2 by being rich with soluble versions of receptors involved in host cell entry of the virus, thereby limiting infection of host cells.

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