

Transplacental transmission of SARS CoV-2 virus and antibodies in pregnant women and their new-borns according to the trimester of maternal infection: A French multicentre prospective study

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Abstract

Objective: To quantify the transplacental transmission of SARS-CoV-2 and antibodies in pregnant women and their new-borns according to the trimester of maternal infection. **Design:** This was a prospective observational multicentre study including pregnant women with positivity for SARS-CoV-2 by reverse transcription–polymerase chain reaction (RT-PCR) or positivity by serology from April to December 2020. The study was designed to perform a systematic collection of mother/new-born dyad samples at birth. **Setting:** Eleven maternity wards in Eastern France **Population:** Pregnant women with confirmed COVID-19 infection during pregnancy and their new-borns. **Methods:** The SARS-CoV-2 viral load was measured by RT-PCR. IgG and IgM antibodies to the receptor-binding domain of the SARS-CoV-2 spike protein were measured by enzyme-linked immunosorbent assay. Antibody concentrations and transplacental transfer ratios were analysed according to the term of maternal infection. **Main Outcome Measure:** SARS-CoV-2 viral load in maternal plasma or respiratory fluids and umbilical cord plasma and quantification of anti-SARS-CoV-2 antibody transfer. **Results:** Among 165 dyads enrolled, one congenital infection was confirmed (n=1 (0.63%) IC95% [0.02%; 3.48%]). Among 165 maternal sera tested, 107 (64.8%) were positive for IgG with a concentration > 25.6 BAU/ml. The average placental transfer ratio was 1.27 (95% CI [0.69–2.89]). The transfer ratio increased with increasing time between the onset of maternal infection and delivery (P value = 0.0001). **Conclusions:** We

confirmed very low SARS-CoV-2 transplacental transmission of less than 1%. Transmission of antibodies is more likely when the infection occurs in the first or second trimester of pregnancy.

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