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Vertical transmission of antibodies in infants born from mothers with positive serology to COVID-10 pneumonia

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Dear Editor,

there is still much unknown regarding the impact of the disease on pregnancy. The majority of reported cases of COVID-19 infection in pregnant patients have shown a mild or asymptomatic course of the disease, with only few cases requiring intensive care unit (ICU) admission, and only a few reported cases requiring mechanical ventilation¹.

To date there is no certainty if the mother transmits serological protection through the placenta. We describe two cases of mother with positive IGG on peripheral blood test, and the evidence IGG testing positive in umbilical cord soon after delivery.

Serum samples were tested for Sars-CoV-2 antibodies by using a chemiluminescent microparticle immunoassay (CMIA) intended for the qualitative detection of IgG antibodies to SARS-CoV-2 in human serum. Patient samples were runned on an automated chemiluminescence analyzer (Architect Abbott) for the detection of specific serum IgG and IgM in response to SARS-

CoV-2 recent or prior infection². Positivity to Covid-19 was established by the real-time polymerase chain reaction (RT-PCR) on nasopharyngeal swab.

The first patient SJ was admitted in our clinic on May 15th 2020, resulting positive to nasopharyngeal swab and serology for Covid 19 IGG (Index 7.20). She was asymptomatic for Covid 19, without fever, cough, and dyspnea and diarrhea. At the admission she resulted positive to the serology for Covid 19 IGG (Index 7.20) and the real-time polymerase chain reaction (RT-PCR) on nasopharyngeal swab was positive too. She underwent cesarean section due to initial labor at 37 weeks and polydramnios in double previous cesarean section. The baby was admitted in NICU because of the onset of mild respiratory distress after 30 minutes. Serological testing on umbilical cord and peripheral blood were positive for Covid 19 IGG (index 7.03). Nasopharyngeal swab RT-PCR resulted negative for Covid 19. The baby was dismissed after 10 days of oxygen and antibiotic therapy, and her follow up has been so far negative.

The second patient GP was admitted in our clinic on June the 2nd 2020, resulting positive to the serology for Covid 19 IGG (index 8,01) but negative on naso-pharyngeal swab. She was asymptomatic for Covid 19, without fever, cough, dyspnea and diarrhea. Her obstetrical history was uncomplicated. She delivered spontaneously after amniotic rupture. During the birth serological testing on umbilical cord, amniotic fluid and baby's peripheral blood was performed, and they resulted positive for Covid 19 IGG (index 7.66).

In our cases SARS-CoV-19 IgG were detected in the maternal serum, and specific antibodies were detected in neonatal blood serum samples with elevated concentrations, similar to the IgG concentrations of their respective mothers, despite the babies' throat swab were negative.

IgG is passively transferred across the placenta from mother to fetus, beginning at the end of the second trimester and reaches high levels at the time of birth³, while IgM is not usually transferred from mother to fetus because of its larger macromolecular structure.

Some studies have been published demonstrating the presence of IgM in the newborn, suggesting that the baby had developed the intrauterine infection and he had produced the IgM autonomously. The human fetuses has been found capable to produce immunoglobulines but half life of IgM is five days⁴.

These findings update the case series published by Zeng ⁵ adding two cases We underline the need of further studies to deepen the serological characteristics of infants whose mothers had been infected with SARS-CoV-2, and their immunity to the virus.

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