Maternal SARS-CoV-2 infection associated to systemic inflammatory response and pericardial effusion in the newborn

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The emergence and rapid spread of SARS-CoV-2 have become a global public health problem. Transmission of the novel coronavirus mainly occurs through respiratory droplets, although other forms of transmission have been suggested. Pregnant women and newborns were higher susceptibility groups in viral epidemic scenario. After the case report of transplacental transmission of SARS-CoV-2 with neurological manifestations in neonates, the potential for vertical transmission was confirmed. The aim of this study is to report the case of 32-week gestational newborn of a 27-year-old mother with SARS-CoV-2 infection at the moment of delivery. Vertical transmission could be confirmed by detecting SARS-CoV-2 RNA in the newborn by oropharyngeal and nasopharyngeal of the newborn immediately after birth. For the accomplishment of this work, we used RT-PCR for the detection of viral RNA and serological tests for the detection of IgG / IgM in the newborn and the mother. Cytokine dosage was performed using a multiplex kit and phylogenetic analysis of the virus was performed using genomic sequence data deposited in GISAID. Unlike other studies, the newborn's symptoms were critical, with a severe inflammatory response evidenced by the presence of pericardial effusion. The virus was not detected in the pericardial fluid, suggesting

that tissue damage is a result of the inflammatory response. Pulmonary involvement was detected by tomography, which showed signs of a ground-glass opacity appearance. The mother had positive serology and signs of a controlled inflammatory response. Fragments from different placental regions were negative for SARS-CoV-2, while data obtained from the chorion were inconclusive, with amplification of a single viral target. Phylogenetic analyzes showed that the SARS-CoV-2 genome sequence obtained fits into one of the Brazilian transmission clusters. The substitution detected in the S protein of the virus is commonly observed in sequences from Europe and Brazil. Although residue 614 does not directly interact with the SARS-CoV-2 ACE2 receptor or cellular proteases, a possible role in protein S stability cannot be ruled out. The present work reports a case of neonatal pericarditis and systemic inflammatory response after maternal SARS-CoV-2 infection.

Keywords: COVID-19; pericardial effusion; severe acute respiratory syndrome coronavirus 2; vertical transmission.