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Neonatal Medicine

COVID-19 Infection in Premature Twins: A Case Report

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Abstract | **Case Report**

The new coronavirus, SARS-CoV-2, responsible for acute respiratory distress syndrome, was able to infect children, especially newborns. In this article, we report the case of two twins born to a mother who was infected with COVID-19 two days before her cesarean operation for retroplacental hematoma. In both cases, these were 32-week premature newborns who had respiratory distress in the first hour of life and whose PCR tests performed after 24 hours were negative but turned positive on the 12th day. After applying resuscitation measures associated with antibiotic therapy, corticosteroid therapy, immunoglobin and vasodilators, the evolution was marked by a clinical improvement for one case and death on the 20th day of life for the other. According to the study of these cases, it is probable that this is a neonatal infection with COVID-19 by vertical transmission.

Keywords: Prematurity, twins, COVID 19, SARS-CoV-2, vertical transmission.

INTRODUCTION

The pandemic of the new coronavirus SARS-COV2, discovered in China in December 2019, marked the history of epidemics experienced by humanity. The virus's ongoing evolution has necessitated constant medical system adaptation in the impacted countries [1].

The newborn is susceptible since this virus spreads to people of all ages.

Through the study of these cases, we can say that it is a neonatal infection to COVID-19 by possible vertical transmission.

PATIENTS AND OBSERVATIONS

We report the case of two preterm twins of different sexes, born at 32 weeks of amenorrhea (WA) and whose mother was affected by COVID 19, two days before the extraction, which was made in urgency by cesarean because of a retroplacental hematoma.

1st Case

A preterm female with a birth weight of 1400g and an Apgar score of 8/10 was admitted at the first hour of life for respiratory distress at 3/10 according to the Silverman score. PCR COVID-19 at 24 hours of life was negative.

The chest x-ray showed no pulmonary focus (Figure 1) while the biological assessment was normal.

The newborn was initially put on Cpap (Continuous Positive Airway Pressure) and intravenous antibiotic treatment with ceftriaxon, amoxicillin for 5 days, and gentamicin for 3 days.

A control PCR was performed on the 12th day of life, which was positive. The newborn was put on azithromycin for 5 days with a good evolution: eupneic, apyretic, tonic and reactive newborn with an output weight of 1700g (Figure 2).

Figure 1: Thoraco-abdominal radiograph (TAR) of female preterm infants at 32 weeks of amenorrhea (WA)

Figure 2: Photograph of a female newborn following clinical improvement.

2nd Case

A preterm male with a birth weight of 1600g and an Apgar score of 7/10 was admitted in the first hour of life for respiratory distress, 4/10 according to the Silverman score. PCR COVID-19 at 24 hours of life was negative.

The initial chest X-ray showed thoracic distension with horizentalisation of the ribs (Figure 3). The preliminary biological tests were normal.

The newborn was initially put on Cpap and intravenous antibiotic therapy based on ceftriaxon, amoxicillin for 5 days, and gentamicin for 3 days.

On the 12th day of life, respiratory distress worsened and a fever appeared. The chest X-ray showed a bilateral infiltra of the 2 upper lobes and right basal area suggestive of COVID-19 involvement (Figure 4), which was confirmed by PCR.

The biological workup showed thrombocytosis of 71000/ µl; CRP of 27.1 mg/l; pro-calcitonin of 0.63 ng/ml; fibrinogen of 6g/l and D-dimer of 600 ng/ml.

Cardiac echocardiography showed pulmonary arterial hypertension (PAH).

The newborn received an immunoglobulin infusion, azithromycin, solumedrole, and inhaled sildenafil and nitric oxide for his PAH. He was then intubated and died on day 20 of life.

Figure 3: Initial TAR of a preterm male showing signs of respiratory distress

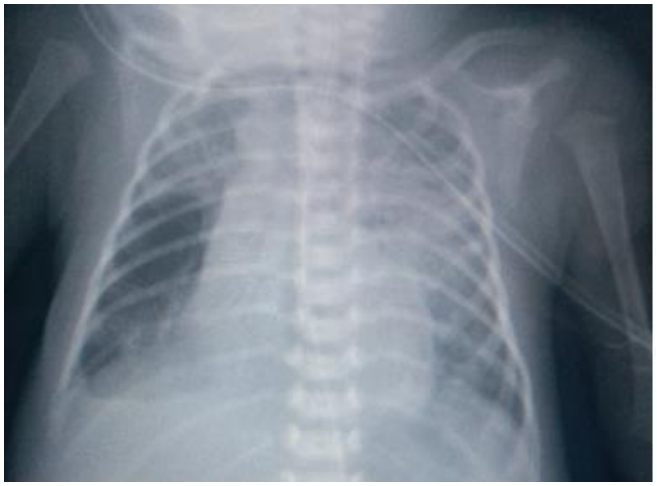

Figure 4: Chest X-ray showing COVID-19 pneumopathy

DISCUSSION

SARS-CoV-2 is a zoonotic single-stranded RNA virus of the betacoronavirus genus along with SARS-Cov and MERSA-Cov that belong to the Coronaviridae family [2].

Its transmission in newborns is most often horizontal, either by direct inhalation of viral particles contained in the cough aerosol (mother, father, or other family members or caregivers) or by contamination from the environment of an infected person.

Vertical transmission is less common, while transmission through the mother's milk has not been demonstrated. Breastfeeding is not contraindicated in the case of COVID-19 infection in the mother or newborn [3, 4].

A large Chinese cohort of mothers infected with SARS-COV-2 in Wuhan revealed a 21% increase in prematurity compared to national averages, with the COVID19 infection accounting for half of the increase.

In our cases, prematurity was caused not only by the mother's sars-cov-2 infection but also by the presence of a retroplacental hematoma [5].

Treatment of COVID-19 infection in newborns depends on the clinical presentation.

In asymptomatic case, no therapy is usually required, whereas supportive care and paracetamol are advised in mild to moderate cases. Intravenous immunoglobulin therapy may be used in cases of COVID-19(MIS-C)-related to multisystem inflammation.

In our study, sars-cov-2 damage was mild in the first case and severe in the second, necessitating reanimation measures, antibiotherapy, and respiratory support [6].

The mode of maternal-fetal transmission of SARS-CoV-2 is not well understood. However, it has been revealed that vertical transmission of COVID-19 from mother to fetus was mediated via receptor of angiotensin converting enzyme 2 (ACE2). The viral S (spike) protein binds to the cellular receptor, allowing SARS-CoV-2 to enter the cell.

The ACE2 gene is expressed in the endometrium as well as stromal cells and syncytiotrophoblasts.

A very low level of ACE2 expression was found in the trophoblast during the first trimester of pregnancy.

A very low level of ACE2 expression was found in the trophoblast during the first trimester of pregnancy. Its expression rises constantly during the pregnancy trimesters and is more capable to transmit the virus through the placenta to the fetus during the last trimester of gestation. This suggests that transplacental transmission of the virus is possible, specifically in the last weeks of pregnancy. In the case of our preterms, the vertical transmission of SARS-CoV- 2 is probable since the mother was infected with SARS-CoV-2 two days before deliveries without any skin-to-skin contact, the preventive measures were respected by the care team, and a COVID-19 PCR test was positive. However, no placental sampling was performed [7-9].

The SARS-CoV-2 virus infection is generally harmless, but it is more severe in pregnant women, causing severe respiratory distress that can lead to death, highlighting the importance of vaccinating pregnant women against the virus [10].

CONCLUSION

Despite the fact that epidemiological data on SARS-COV-2 infection in newborns are encouraging, there are some severe cases that require special attention. The best treatment is prevention through the

use of barrier measures and vaccination of pregnant women.

Conflict of Interest: None.

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