

# The first Jordanian newborn delivered to COVID-19 infected mother with no evidence of vertical transmission: A case report.

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## Case Report

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# Abstract

**Background:** COVID-19 has been recently declared by WHO a global health pandemic. Theoretically, it might affect all age groups but it is not known if vertical transmission during pregnancy occurs. We hereby report a case about the first Jordanian newborn delivered to COVID-19 infected mother.

**Case presentation:** A late preterm female was delivered by Cesarean section to COVID-19 mother who was diagnosed after presenting with a dry cough, nasal congestion, headache, and sore throat in the context of direct contact with other confirmed patients. The infant's clinical examination was reassuring throughout the hospital stay. COVID-19 was not detected by RT-PCR tests performed on the amniotic fluid and on two samples of the newborn's nasopharyngeal swabs indicating no vertical transmission of the virus. After 10 days of hospital stay and following two negative consecutive RT-PCR assays on the mother's nasopharyngeal swabs, both the mother and the infant were discharged home in stable clinical conditions.

**Conclusion:** Vertical transmission is not likely among the routes of COVID-19 transmission. However, data about more number of deliveries to COVID-19 infected mothers is needed to support this conclusion.

## Background

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), also known as Coronavirus disease 2019 (COVID-19), is highly contagious and causes life threatening disease with different routes of transmission. Contact and droplet transmission are the most common reported methods between humans[1, 2]. Data on the effect of this disease on pregnant women and their offspring is still evolving. Recently published report from China in February 2020 showed that the virus was not detected from samples taken from three infants born by caesarian section to infected mothers, suggesting that intrauterine transmission of this disease is unlikely[3]. On the other hand, Lam Dong et al. reported a possible vertical transmission of COVID-19 from an infected mother to her newborn where they found elevated specific IgM level in the infant's blood sample taken in the first day of life. However, the virus was not detected by RT-PCR testing performed on the baby's oral swab[4]. Few days ago, Zeng L et al. reported three cases of early-onset neonatal infection with COVID-19 among 33 neonates born to infected mothers suggesting a possible intrauterine vertical transmission of this virus[5]. However, in their case series, the amniotic fluid testing for COVID-19 was negative. In order to understand the transmission and the effect of this virus in the neonatal population, further reporting of neonates born to infected mothers at different gestational ages is needed. This is important to allow placing a guidance regarding counseling of pregnant women and establishing infection control procedures during delivery and while caring for the newborn infant to protect care givers as well as the newborn infants.

## Case Presentation

A 30-year-old pregnant woman at 35.4 week-gestation who was exposed to COVID-19 positive patients developed a dry cough, nasal congestion, headache, and sore throat with no documented fever for few days. On March 23, a RT-PCR assay on a nasopharyngeal swab for COVID-19 done by national epidemiological survey came positive. On March 24, the patient was admitted to King Abdullah University Hospital (KAUH) with the same symptoms, her physical examination was reassuring with no signs of respiratory distress. She received Hydroxychloroquine 400 mg every 12 hours for one day then commenced on 200 mg twice daily for additional 9 days. Her condition continued to be stable and didn't need antiviral or oxygen therapy.

On March 27, the mother developed spontaneous labor and a 2500-gram female infant was delivered by cesarean section at a gestational age of 36 weeks plus 3 days. Cesarean section was performed due to two previous uterine scars. APGAR scores were 8 at 1 minute and 9 at 5 minutes. At birth, the baby looked appropriate for gestational age. Her physical examination was benign apart from mild tachypnea with a respiratory rate of 70/ min. The neonate required supportive oxygen via nasal cannula at 2 liter per minute for less than an hour for a possible transient tachypnea, then weaned off oxygen and remained stable with no respiratory distress. Infant was then quarantined in an isolation room. RT-PCR test for COVID 19 was performed on amniotic fluid sample at the time of delivery, as well as on the baby's nasopharyngeal swab taken immediately after delivery and on a sample of expressed breast milk obtained right after delivery. All three tests were reported negative. Also, another RT-PCR test on the baby's nasopharyngeal swab was taken at the age of 4 days and was reported negative. Complete blood count, C-reactive protein, and liver function tests were done at the age of 48 hours and all were within normal limits. To avoid possible spread by direct contact, the infant continued to be isolated from her mother and was not offered direct breastfeeding. Her mother had two negative PCR tests for COVID-19 four days apart. The baby remained clinically stable, tolerated oral feeding of standard infant formula, had no concerning symptoms throughout the 7-day hospital stay and was discharged home in good general condition. The mother was given extensive counseling about contact precautions at home and an appointment with the health care providers was scheduled for follow up.

## **Discussion And Conclusion**

In this late preterm infant, intrauterine infection with COVID-19 through vertical transmission did not seem to occur. Negative RT-PCR for COVID-19 in the amniotic fluid sample and in the nasopharyngeal swab taken immediately after birth in this asymptomatic infant supports our conclusion. Other than a short lasting tachypnea which can be explained by late prematurity and cesarean section delivery, the baby continued to be asymptomatic.

Our finding in this case is consistent with the report made by Chen et al. who evaluated nine infants born to COVID-19 infected mothers where all reported infants did not have any clinical symptoms suggestive for a vertical infection[6]. In addition, the viral testing from different samples in 6 infants was negative for COVID-19. Given the recent appearance of this disease pandemic and lack of enough published data about routes of transmission, the question of a possible vertical transmission is still not answered. Zeng

et al. recently suggested that vertical transmission could be the case in 3 neonates who developed symptoms after birth and tested positive for COVID-19 by RT-PCR[5]. This study cannot confirm how the three infants contracted the virus. It is absolutely important that more data is reported about this disease before accurate recommendations regarding management of neonates born to COVID-19 infected mothers could be established. Our team elected to keep baby in isolation and not exposed to her mother without allowing direct breastfeeding so that horizontal transmission is prevented. Once the mother's test came negative to the virus in two consecutive samples four days apart, breastfeeding was initiated with continuation of applying contact precautions as possible. Our protocol of handling this case was later determined to be consistent with the guidance issued by the American academy of pediatrics on April 2<sup>nd</sup> 2020 regarding the options of infant's care and breastfeeding [7].

In summary, this is another case of a neonate born by cesarean section to a COVID-19 infected mother with no evidence of intrauterine transmission. However, data about more number of deliveries to COVID-19 infected mothers is needed to support this conclusion.

## Abbreviations

*SARS-CoV-2*: Severe acute respiratory syndrome Coronavirus-2.

*COVID-19*: Coronavirus disease 2019.

*RT-PCR*: Real time- polymerase chain reaction.

*KAUH*: King Abdullah University Hospital.

## Declarations

**Ethics approval and consent to participate:** An Institutional Review Board (IRB) approval was obtained from Jordan University of Science and Technology (IRB number 227-2020). The mother of the baby gave a written consent.

**Consent for publication:** Written informed consent was obtained from the mother of the baby. A copy of the written consent is available for review by the Editor-in-Chief of this journal

**Availability of data and materials:** The datasets used during the current study are available from the corresponding author on reasonable request.

**Competing interests:** All authors declare that they have no competing interest.

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contributed to manuscript writing. **FA** contributed to data collection and review of literature.

All authors have read and approved the manuscript

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