Case Report

A case report of neonatal coronavirus disease-19 infection in South India

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ABSTRACT

The global pandemic of coronavirus disease 2019 (COVID-19) has affected a significant population across all ages around the globe. In spite of the significant number of case reports on neonatal COVID-19 published across the world, there is a paucity of data on cases reported from India. We report a case of neonatal COVID-19 infection from Mangalore in South India. A term neonate was born to a 33-year-old nasopharyngeal swab real-time reverse transcriptase-polymerase chain reaction (rRT-PCR) severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (novel corona) virus-positive mother by emergency cesarean section. The baby was shortly handed over to the patient's bystander, who was tested 1 day before be rRT-PCR novel coronavirus negative and was kept in an isolation room nearby. The pharyngeal swab of the neonate tested at 48 h of life for rRT-PCR coronavirus was reported as positive. Following this, the baby was roomed-in with the mother to an isolation room and direct breastfeeding was initiated. No further investigations were done and the baby was discharged along with the mother on the 14th postnatal day. Whether the case is vertical transmission from mother to newborn, could not be ascertained. We had not done an rRT-PCR SARS-CoV-2 virus detection of cord blood and placenta in this case for supporting the diagnosis of intrauterine transmission, but the possibility of vertical intrauterine transmission is not ruled out.

Key words: Coronavirus, Neonatal coronavirus disease 2019, Pregnancy, Vertical transmission

The global pandemic of coronavirus disease 2019 (COVID-19) has affected a significant population across all ages around the globe. COVID-19, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has spread worldwide with substantial consequences on public health [1]. There is abundant information available on the effects and management of SARS-COV-2 in adults. However, there is inadequate information on the consequences of SARS-CoV-2 infection in pregnant women and neonates [2].

To the best of our knowledge, more than 100 scientific reports of SARS-CoV-2 infection in pregnancy have been published around the world. It gives an overall impression that neonatal COVID-19 infection may be uncommon. Most neonates born to mothers with confirmed SARS-CoV-2 infection were asymptomatic and discharged home well [3]. There is a postulation that neonates are mainly asymptomatic due to the relative immaturity of the angiotensin-converting enzyme 2 protein in neonates, which acts as a receptor for SARS-CoV in adults [4].

In spite of the significant number of case reports on neonatal COVID published world over, there is a paucity of data on cases reported from India. We report a case of asymptomatic neonatal COVID-19 infection from Mangalore in South India. However, we could not confirm whether the case is vertical transmission from mother to newborn. This case highlights the asymptomatic presentation of COVID-19 in a full-term neonate born to COVID-19-positive mother. With an understanding of the transmission patterns, parents and caregivers would be better equipped to limit the spread of the virus and protect the more vulnerable population.

Access this article online	
Received - 28 July 2020 Initial Review - 12 August 2020 Accepted - 15 August 2020	Quick Response code
DOI: 10.32677/IJCR.2020.v06.i08.014	

CASE REPORT

A 33-year-old G3P2L2 mother was seen by the obstetrician in the outpatient department at 37 weeks gestation for a routine check-up. She had regular antenatal visits and her pregnancy course was uneventful. The patient was asymptomatic with no history of cough, cold, or fever in the past 1 month. She had a history of contact with immediate relatives who have confirmed positive for SARS-CoV-2 (novel corona) virus real-time reverse transcriptase-polymerase chain reaction (rRT-PCR). Her nasopharyngeal swab for rRT-PCR coronavirus was asked for, which was reported positive. Two days later, the patient developed lower abdominal discomfort and hence was admitted for labor.

The patient was afebrile and her admission vitals were stable with a heart rate of 80/min, respiratory rate of 20/min, blood pressure of 120/80 mmHg, and saturation of 99% in room air.

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The fetal heart rate was 136/min and monitoring showed no abnormality. In view of non-progression of labor, emergency cesarean section under spinal anesthesia was done. All the health-care staffs were donned in full personal protective equipment (PPE) throughout.

The baby was born on July 11, 2020, at 4:38 PM. The baby cried soon after birth with a birth weight of 2900 grams. APGAR score was 8 at 1' and 9 at 5'. Skin-to-skin care was withheld to prevent contact transmission of the virus from the mother to baby. The mother had no close contact with the newborn and she wore an N95 mask during the operation. The baby had early clamping of the umbilical cord and early cleansing to remove contact with maternal blood and amniotic fluid. The baby was shortly handed over to the patient's bystander, who was tested 1 day before be rRT-PCR novel coronavirus negative and was kept in an isolation room nearby. The baby was nursed with full PPE and contact isolation precautions. Although expressed breast milk (EBM) with a top-up formula was advised, the baby was only on formula feeds as the mother refused to give EBM (fearing disease transmission).

At 48 hours, the neonate was tested for pharyngeal swab rRT-PCR novel coronavirus, which was reported as positive. The baby was roomed-in with the mother to an isolation room and direct breastfeeding was initiated. The clinical condition of the mother and baby was monitored regularly and was found to be stable throughout. No further investigations were done for the mother and baby as they remained asymptomatic throughout the hospital stay. Repeat pharyngeal swab testing of the mother done on day 10 postpartum was reported negative. There was no fever, rash, respiratory or any other symptoms in both. No antiviral or other specific medications were given to both the mother and the baby as they were asymptomatic, in accordance with our hospital policy of instituting medications only in symptomatic COVID-19-positive patients. The baby was discharged along with the mother on the 14th postnatal day.

DISCUSSION

We report this case of neonatal COVID-19 infection whose mother was confirmed with COVID-19. Both the mother and the baby were asymptomatic. Whether the case is vertical transmission from mother to newborn, could not be ascertained. We had not done an rRT-PCR novel coronavirus detection of cord blood and placenta in this case for supporting the diagnosis of intrauterine transmission, but the possibility of vertical intrauterine transmission is not ruled out. We assume that the mode of transmission may be vertical as the newborn was not exposed to the virus infection peri/postpartum until the time test was done [5]. Vertical transmission can occur at three levels: Intrauterine transmission, intrapartum or early postnatal transmission, and superficial exposure to SARS-CoV-2 or transient viremia as clearly defined by Blumberg *et al.* [6].

The possibility of mother-to-fetus transmission of SARS-CoV-2, the cause of COVID-19, is currently a highly debated concept in perinatal medicine. Fortunately, the majority of neonates born to mothers with SARS-CoV-2 infection either do not become infected or exhibit mild symptoms at birth. However, the fact that a significant proportion of maternal and neonatal infections can be asymptomatic creates difficulty in ascertaining the disease burden on neonates and the possibility of transmission to health-care providers during resuscitation or admission to a unit [7]. Infants born to known COVID-19 mothers at the time of delivery should be considered as infants with suspected COVID-19. They should be tested and isolated from other healthy infants. As per the American Academy of Pediatrics recommendation attending clinical staff attending such newborn must wear full PPE, ensure newborns are bathed within a reasonable period after birth so as to eliminate any possible viral presence on skin [8].

A recent meta-analysis on the incidence of SARS-CoV-2 vertical transmission by Goh *et al*. [9] included 17 studies. Four hundred and two COVID-19-positive mothers delivered 405 newborns, of which 330 newborns underwent early RT-PCR tests. Nine of 330 newborns tested positive for SARS-CoV-2. The average pooled incidence of vertical transmission was reported to be 16 per 1000 newborns. There is enough evidence to suggest that rooming-in and breastfeeding are safe procedures when paired with effective parental education of infant protective strategies [1]. It is not known whether novel coronavirus-19 can be transmitted through breast milk. The majority of the data was not suggestive the same. Considering the advantages of breastfeeding and insufficient data to suggest the transmission of COVID-19 through breast milk, suspected or confirmed COVID-19 is not a contraindication to breastfeeding [10]. This is very reassuring, however, continuous monitoring of such neonates is essential to look for potentially serious complications as well as to prevent horizontal transmission.

There are a few limitations in our case report. We had not done antibody testing for the mother and baby. We did not test for the presence of virus in amniotic fluid, cord blood or placental tissue that could further substantiate the pathogenesis.

CONCLUSION

In spite of the significant number of case reports on neonatal COVID-19 published world over, there is a paucity of data on cases reported from India. Infants born to known COVID-19 mothers at the time of delivery should be considered as infants with suspected COVID-19. Most of the neonates born to COVID-19 positive mothers are asymptomatic, which was noted in our case too. Rooming-in and breastfeeding are reasonably safe procedures in these circumstances provided the basic precautions are taken.

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Funding: None; Conflicts of Interest: None Stated.

How to cite this article: Phadke AK, Kumble A, Varghese A, Sherigar B, Reddy R. A case report of neonatal coronavirus disease-19 infection in South India. Indian J Case Reports. 2020;6(8):461-463.