



COVID-19 Pregnancy Cases in India

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Abstract

Introduction: The novel coronavirus infection (COVID-19) is a global public health emergency. Since its outbreak in Wuhan, China in December 2019, the infection has spread rapidly to different cities in China as well to other countries and territories across the globe. In this article, we study four cases of pregnant women infected with COVID-19 in India and investigate their clinical characteristics. Moreover, we sought to explore whether the COVID-19 can be vertically transmitted from mother to baby.

Objective: To investigate vertical transmission of COVID-19 during pregnancy and its effects on fetal outcome.

Study Design: Case study.

Materials and Methods: We studied four pregnancy cases of COVID-19 in India with pharyngeal swabs testing positive by real-time reverse-transcription polymerase chain reaction assay. However, whether the cases indicate vertical transmission from mother to child remains to be confirmed.

Results: We studied the four cases of SARS-CoV-2 infection in India where the mothers were diagnosed with COVID-19. The clinical manifestations of the mothers and the baby were both mild and the baby's prognosis was good. However, one death of pregnant woman has been accounted in India due to respiratory failure. Whether the cases indicate intrauterine vertical transmission or not remains controversial. The results of nucleic acid detection of cord blood and placenta of all the cases were negative, which do not support the diagnosis of intrauterine transmission.

Conclusion: Based on current evidences, it appears that pregnant women in India are not at greater risk than the general population. Both the pregnant woman and the infant showed fewer adverse maternal and neonatal outcomes.

Keywords: COVID-19; Pregnancy, SARS, MERS, Clinical manifestation, Vertical transmission, Fetal outcome

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Introduction

The novel coronavirus (COVID-19) is a public health emergency of international concern and a pandemic (enemy of all humanity) declared by WHO on January 30th, 2020, and March 11th, 2020, respectively [1]. As of April 17th, 2020, the deadly virus has spread over 210 countries and territories, and approximately 2.2 million persons have been diagnosed with COVID-19 globally, causing 1,57,000 deaths, together with 585,838 recovered, including 15,000 cases have been reported in India. Coronaviruses are single-stranded RNA, non-segmented, enveloped viruses which infect the respiratory, hepatic, gastrointestinal and neurologic systems. The outbreaks of previous two corona viruses SARS-CoV-2003 and MERS-CoV-2012 which belong to the same Beta-coronavirus genus, have endorsed the transmission from animal to animal, and human to human, respectively. However, the COVID-19 have shown evidence of human to human transmission, contact with infected people through respiratory droplets, fomite or faecal methods [2].

Pregnancy is a physiological state that predisposes women to viral respiratory infections due to the rise in progesterone levels which invigorate the brain's respiratory centre and creating a functional state of hyperventilation while extending gravid uterus changes lung volumes and, subsequently, pregnant women might be more susceptible to COVID-19 infection than the general population [3-6]. As of now, it is ridiculous to state whether an infected COVID-19 pregnant woman can pass the infection to her fetus or baby during pregnancy, delivery or after birth or the COVID-19 can increase the risk of premature delivery, stillbirth, preterm delivery, fetal tachycardia and fetal distress [7-10]. Till date, no infants born to mothers infected with COVID-19 have been accounted positive throughout the globe including India. However, only four cases of pregnant

women infected with COVID-19 have been reported from India up until this point.

Case Presentation

Case I

On April 02, 2020, a 34-year-old female at 36 weeks gestation from the national capital of India (New Delhi), reported to the All India Institute of Medical Sciences (AIIMS) for general obstetric examination. She was asymptomatic and reported no underlying medical condition. She was afebrile and breathing normally, and did not have cough or chest pain. She had no travel history but unfortunately, her husband was found to be infected with the coronavirus who was a medico by profession. Based on the patient's history of contact with an infected husband, a nasopharyngeal swab was collected and tested following WHO guidelines for real-time Reverse-Transcription Polymerase Chain Reaction (RT-PCR). The results were positive whereas other viral respiratory pathogens were all negative and, and then she went into isolation at the hospital. Chest CT showed multiple patchy lung consolidation bilaterally and ground-glasslike opacities around the border and the sub-pleural distribution was prevailing, which are the typical manifestations of COVID-19. Then she was kept in the isolation ward at the hospital. On admission, the physical examination revealed a body temperature of 36.0°C, high blood pressure (140/90 mmHg), normal pulse, and normal respiratory rate. Lung auscultation revealed no alterations. After a one day hospitalization, she was stable, remaining under observation. An obstetric ultrasound revealed that there was little amniotic fluid and intrauterine distress as possible. Considering her physical condition, an emergent caesarean delivery was decided. On 3rd April, C-section was done and a mother delivered a healthy baby. His birth weight was 2.5 kg. His nasopharyngeal and blood samples tested by SARS-CoV-2 RT-PCR were negative. This is the first couple who was tested COVID-19 positive and has been blessed with a healthy baby boy in the national capital of India. In this case, we reported that a mother with COVID-19 gave birth to a healthy baby with no evidence of COVID-19 during her 36 weeks of pregnancy. The RT-PCR tests were all negative, suggesting the infant was unaffected by COVID-19, and all healthcare workers taking care of him had remained asymptomatic.

Case II

A 30-year-old woman who hailed from Nallasopara died at Nair Hospital in Mumbai on April 04th, 2020. The pregnant woman was admitted to the hospital after she complained of breathlessness. The woman was also suffering from other respiratory complications. She was referred to Nair Hospital by a local hospital in Nallasopara after her condition deteriorated. She was pregnant at the time she died, making her the first in India to die during her pregnancy. The cause of death was given as respiratory failure with acute respiratory distress syndrome and suspected COVID-19. Doctors were unable to save the baby which had died in the womb itself before she was taken to the hospital.

Case III

On April 05th, 2020, a 38-year old woman with a pregnancy of 39 weeks and 5 days was admitted to Specialty Hospital Mumbai with no significant obstetrical history or co-morbid conditions. She denied any contact or travel history. She developed a fever prior to her hospital admission, and a CT evaluation of the chest revealed bilateral ground-glass opacities and pulmonary consolidation,

nodules in the left lower lobe and patchy consolidation in the right middle lobe which are the typical manifestations of COVID-19 as per the guidelines framed by WHO. Nasopharyngeal swabs and sputum were positive for SARS-CoV-2 by RT-PCR assay, whereas other viral oropharyngeal pathogens were all negative, which were taken one day prior to delivery. In addition, the testing of breast milk, vaginal mucus and placenta were also negative with no lymphadenopathy. From the chest CT and RT-PCR assays, she was diagnosed with COVID-19. Considering her physical condition, an emergent Caesarean delivery was carried out at 40 weeks of gestational age under spinal anesthesia and a female infant was delivered (3 kg) with chronic fetal distress, chorioamnionitis, meconium-stained membranes but had good Apgar scores. Specimens from the infant including whole blood, plasma serum, umbilical cord blood and an oropharyngeal swab were negative for SARS-CoV-2 by RT-PCR. No medical staff involved in this case was found to be infected with COVID-19 subsequently.

Case IV

Amid the spike of COVID-19 cases across Jammu and Kashmir, on April 10, 2020, a 30-year-old female, who was full-term with a history of hypothyroidism presented to the hospital with labor pain at Jammu Maternity Hospital, where she delivered a baby boy (2.5 kg) *via* cesarean but soon developed symptoms of cough and fever that aroused the suspicion of the gynecologists inside the labor room.

On admission, obstetric per vaginal examination uncovered full dilatation of Os (8 cm to 10 cm). Physical examination revealed a body temperature of 37.8°C, blood pressure of 110/80 mmHg, the pulse of 94 beats per minute and a respiratory rate of 24 breaths per minute. Moreover, the lung auscultation uncovered little rhonchi over the left lower lung field, however, other laboratory findings included a leukocyte count of $10.65 \times 10^9/L$, albumin of 25.4 g/L, C-reactive protein of 20.1 mg/L, neutrophils of $9.18 \times 10^9/L$, lymphocytes of $0.90 \times 10^9/L$, Procalcitonin (PCT) of 0.271 ng/ml, lactate dehydrogenase of 565 U/L and N-terminal pro-brain natriuretic peptide of 325 pg/ml.

On April 10, 2020, oropharyngeal swab specimen was collected from the mother and after the collection; swabs were placed in viral transport medium. Later on, RT-PCR assay for SARS-CoV-2 alongside with chest CT scan was performed. The RT-PCR measures on oropharyngeal swab specimens were found positive, while the chest CT evaluation revealed bilateral infiltrates with worse on the left, including involvement of the upper lobe of the left lung, restricted emphysema in the right lower lobe and a couple of linear fibrotic changes in the middle lobe of the right lung. She tested positive a day after giving birth to a baby at the Hospital. This is the first case of a COVID-19 positive patient giving birth to a child in the winter capital of Jammu & Kashmir. Moreover, there was evidence of meconium staining of the embryonic membranes, whereas the Apgar scores at 1 and 5 min were 8 and 9, respectively were also observed. After delivery, the infant was immediately moved to a sealed incubator with a separate air exchange system in the neonatal ward and received initial care. Efforts were made during delivery to minimize and exposure to maternal blood and neonate washing was conducted in neonate ward. The infant was not breastfed. The infant was breastfed by her mother as there is no such evidence that breastfeeding increases the risk of transmission. All of the following samples of newborn tested negative for SARS-CoV-2, PCR, umbilical cord blood, plasma serum and oropharyngeal swab were collected on one day after delivery. The patient was transferred back to the maternity ward after delivery, where oxygen therapy, antiviral, antibiotics and anti-inflammatory

treatment were administered.

Discussion

We report the four cases of SARS-CoV-2 infection in India where the mothers were diagnosed with COVID-19. There have been several studies concerning the intrauterine vertical transmission potential of COVID-19 and its effects on newborns. The clinical manifestations of the mothers and the baby were both mild and the baby's prognosis was good. The results of nucleic acid detection of cord blood and placenta of all the cases were negative, which do not support the diagnosis of intrauterine transmission and 1 study showed that COVID-19 may have adverse effects on newborns, causing problems such as fetal distress, respiratory distress accompanied by death. Whether the cases indicate intrauterine vertical transmission or not remains controversial.

Conclusion

In this study our endeavor is to search for the possible adverse effects of the COVID-19 infection, its vertical transmission and fetal outcome among pregnant women in India. Although pregnant women are more prone to respiratory infections, no death among pregnant women due to COVID-19 has not been reported, however, one death of pregnant woman has been accounted in India due to respiratory failure. Also, no case of low apgar score and weight loss of infants has been reported to date. Based on current the study, it appears that pregnant women in India are not at greater risk than the general population. Both the pregnant woman and the infant showed fewer adverse maternal and neonatal outcomes. Therefore, early recognition with CT scan and real-time RT-PCR assay could be useful for the prevention of cross-transmission and may reduce potential obstetrical complications, for example, pregnancy loss, intrauterine growth restriction, preterm delivery, and may also be beneficial for improving pregnancy outcomes. Besides, it is advised that pregnant woman should take extra precautions in practicing good hygiene and social distancing to decrease the risk of getting COVID-19.

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