

A neonate born to an infected COVID-19 mother was tested positive just 24 hours after its birth.

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Abstract

Coronavirus disease (COVID-19) is a highly contagious disease with a rapid increase in cases and mortality all over the world. We report a neonate born to the pregnant woman with COVID tested positive for SARS-CoV-2 infection just 24 hours after its birth.

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Keywords: COVID-19, newborn, coronavirus, SARS-CoV-2, infection

Key Clinical Message

Coronavirus disease (COVID-19) is a contagious disease with a rapid increase in cases and mortality all over the world. We report a newborn of a pregnant woman with COVID-19, who was confirmed positive for COVID-19 by (rt-PCR) after a nasopharyngeal swab was taken at 24 hours of age.

Introduction

Coronavirus disease (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first detected in the city of Wuhan, the capital of Hubei Province, China, in December 2019¹.

Several articles report the outcomes of pregnant women infected in the present course of COVID-19 pandemic. However, established reports and findings of intrauterine infection attributed to vertical transmission in infected pregnant women with SARS-CoV-2 is limited.

Case report

We report a 37 weeks' gestation newborn who was confirmed by real-time-reverse-transcription polymerase chain reaction (rt-PCR) to be positive after a nasopharyngeal swab was taken at 24 hours of age.

The mother of the index case is a 16-year-old pregnant woman who presented to the maternal emergency department on June 13th, 2020, at 17:0 due to premature rupture of membrane (PROM). She was a primigravida, and her previous medical history was unremarkable of any medical or pregnancy-related illnesses. She was following up on her pregnancy in a private hospital. There was no history of suspected or confirmed individuals with COVID-19 among her family members.

Her initial assessment was body temperature 36.5 °C, blood pressure 112/66 mm Hg, respiratory rate 20 breaths per minute, heart rate 118 beats per minute, and oxygen saturation 95% in room air. She didn't have any upper respiratory symptoms (cough, sneezing, or sputum). Fetal heart monitoring was reassuring between 130-140 beats per minute, with no signs of abnormality.

The mother was admitted to the prenatal ward for observation and started on intravenous ceftriaxone because of premature rupture of membrane and amniotic fluid leakage.

Blood tests showed white blood cells count 10.8 x10⁹ cells /L, neutrophil 7.67x10⁹ cells/L, hemoglobin level 10 g/dl, platelet count 194 x10⁹ cells /L; coagulation profile (prothrombin time 11.8 sec, partial thromboplastin time 28.7sec, international normalized ratio1.1; erythrocyte sedimentation rate 6 mm/h, liver function tests: aspartate aminotransferase 22.6 U/L, alanine transaminase 9.8 U/L and ferritin level was 74.5 ng/ml.

At 00:20 on June 14th, 2020, the mother developed chills, felt feverish, and was complaining of back pain. Her body temperature was 37.8 °C. She was given oral paracetamol for fever. She was suspected of having COVID-19; thus, a nasopharyngeal swab for COVID-19 was taken at 04:30 the same day as per hospital policy. At 6:00, she continued to have fever 37.8 °C as well as mild dry cough and relative tachycardia. Her chest x-ray was unremarkable. Fortunately, at 8:30, her body temperature and tachycardia subsided, and fetal heart monitoring remained reassuring. Since the mother was suspected of having COVID-19, universal surgical masking and regular prevention measures for COVID-19 were practiced by healthcare workers who attended the delivery room.

Following the local guidelines, the delivery took place in the isolation room. A decision was made not to allow the skin to skin contact between the baby and her mother, neither breastfeeding.

The baby girl was delivered on June 14th at 17:00 via vaginal delivery without any complications. She was immediately shifted to a separate room where initial steps of resuscitation were applied. Apgar scores were 8, 9, and 9 at 1, 5, and 10 minutes respectively. Physical examination revealed a well-appearing baby.

Birth weight was 3070 grams (50th to 90th percentile), length of 52 cm (50th to 90th percentile), and her head circumference of 35 cm (50th percentile).

The newborn was admitted to the level-II neonatal intensive care unit (NICU) in an isolation room with a continuous cardiac monitor. She was afebrile, not distressed, and maintained her saturation above 95% on room air.

On June 14th, at 20.00 nasopharyngeal swab taken from mother came positive for COVID -19.

Nasopharyngeal swab sampling for the baby was taken at the age of 24 hours and also came positive.

Her laboratory blood tests showed white blood cells 14.27×10^9 cells /L, neutrophil 9.39×10^9 cells/L, hemoglobin 17.4 g/dl, platelet 231×10^9 /L and hematocrit 57%; C-reactive protein 3.11 (positive >10 mg/L); blood gas analysis pH 7.4 with base excess -5.5; liver function tests: aspartate aminotransferase 16 U/L and alanine transaminase 2.9 U/L. Blood culture was negative. Chest radiography didn't reveal any abnormality.

The baby continued to be asymptomatic and maintained normal vital signs in room air. She was tolerating regular formula feeding orally. Repeated nasopharyngeal swab done at 48 hours of life was negative. Both baby and mother were discharged home on day 5 with no complication. The baby was monitored until day 28 of life, and she remained asymptomatic.

Discussion

The index case is a term newborn baby with nasopharyngeal swab sample testing positive by reverse-transcription polymerase chain reaction (rRT-PCR) for SARS -CoV-2 infection at 24 hours after birth. During the whole hospital course, the patient was stable.

Several studies in newborn infants are currently available, suggesting that infants usually have mild manifestations of the disease, which were consistent with our case report ²⁻⁴.

However, a reported clinical analysis proposed that infants with SARS -CoV-2 infection may present with premature delivery, respiratory distress, gastrointestinal symptoms, laboratory results abnormalities like elevated liver enzymes, thrombocytopenia, and increased mortality rate ⁵.

One of the primary risk factors of COVID-19 infection is considered close contact with an infected person within 14 days of symptoms onset and an incubation period ranging

between 2 to 14 days, an average of five days. Presently, the possibility of vertical transmission is a big question to neonatologists and obstetricians. There is limited evidence for mother-to-child transmission in women who developed SARS -CoV-2 in late pregnancy.

However, Wang et al. recently described cases of newborn infants with proven COVID-19 infection where the nasopharyngeal swabs were taken 36 hours after birth⁴.

A recently published cohort study identified three newborn infants with COVID-19. All these cases were delivered by the emergency cesarean section because of fetal distress and had confirmed maternal SARS -CoV-2 infection. All neonates had nasopharyngeal and anal swab positive for COVID-19 on day 2 of life despite strict infection prevention and control during procedures that were done throughout the delivery⁶.

Also, Lan Dong et al. reported a newborn baby with elevated anti-SARS-CoV-2 IGM antibodies two hours after the birth, and there was no physical contact with the COVID-19 positive mother ⁷. Detection of IgM is suggestive of the intrauterine infection. Interestingly, at the same time several requested nasopharyngeal swabs for COVID-19 were negative in the same baby.

All these neonates were isolated from the mother from the beginning, including our case, suggesting the possibility of vertical transmission in these reported cases. There is also other evidence supporting the ability of vertical transmission of SARS-CoV-2.

The latest reports identified the presence of SARS-CoV-2 in the villous chorion and amniotic fluid ⁸. The possibility of vertical transmission can occur during vaginal birth with exposure to maternal stool infected with SARS-CoV-2 ⁹. Additionally, SARS-CoV-2 nucleic acid was found in the blood samples¹⁰.

Unfortunately, no testing of intrauterine tissue samples as placenta, cord blood, amniotic fluid, and maternal milk was done in the index case to confirm that the SARS -CoV-2 infection occurred due to vertical transmission.

Conclusion

In order to exclude or support the possibility of congenital COVID-19, specimens from amniotic fluid, placental tissue, umbilical cord blood, gastric fluid, and maternal milk need to be additionally collected and analyzed in each neonate proven to be COVID-19 positive.

More evidence is needed before considering vertical transmission and the possibility of COVID-19 being a congenital infection.

Conflict of interest

None declared

Informed consent was obtained from parents for reporting this case.

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Author Contribution

Roya Arif Huseynova: wrote the clinical report, collected and analyzed the data.

Latifa A.Bin Mahmoud participated in the drafting and critically revising the manuscript.

Adli Abdelrahim contributed in critically revising the manuscript.

Mishary Almalkey participated in the collected and analyzed the data.

Oqtay Ilham Huseynov participated in the drafting and collected the data.

Haider Hussein Sumaily participated in critically revising the manuscript.

Ameen Amer Almotiri participated in the collected the data.

All authors approved the manuscript as submitted.

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