

CASE REPORT

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Neonatal COVID-19: Two Case Reports

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Introduction: Since its emergence in China in December 2019, a novel coronavirus disease (COVID-19) has rapidly spread all over the world and has been a major public health concern. This disease was pronounced as a pandemic by World Health Organization (WHO) and this highly contagious virus is named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Although children have mild clinical manifestations, data on the potential harm and long-term effects of the disease are limited in children, especially newborns. Eight cases of COVID-19 were followed up in our hospital, two of which were proven, and six were suspected. In the CT of the babies with COVID-19, there was a ground-glass opacity. However, during his close follow-up, no respiratory problems were observed.

Keywords: SARS-CoV-2, COVID-19, pandemic, newborn

Introduction

Since its emergence in China in December 2019, a novel coronavirus disease (COVID-19) has rapidly spread all over the world and has been a major public health concern. This highly contagious virus named severe acute respiratory syndrome coronavirus (SARS-CoV-2) and this disease was pronounced as a pandemic by World Health Organization (WHO) (1, 2). Globally, as of August 08, 2020, there have been 19.187.943 confirmed cases of COVID-19, including 716.075 deaths, reported to WHO (2). Infected children were 2% of cases

In China, 1.2% of cases in Italy, 1.7 % of cases in the USA, and 1% of cases in Turkey. Although children have mild clinical manifestations, data on the potential harm and long-term effects of the disease are limited in children, especially newborns.^{1,3} Herein, we report two newborns with late-onset SARS-CoV-2 infection and six neonates born to mothers with COVID-19.

Case Presentation

Eight cases of COVID-19 were followed up in our hospital, two of which were proven, and six were suspected. COVID-19 PCR (polymerase

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chain reaction) test taken by nasopharyngeal swab was applied to all cases and their parents. The mothers had no comorbidity factor. All six newborns who had negative PCR tests at birth and 48 hours on the postnatal period were term babies born from pregnant women diagnosed with COVID-19. Clinical and laboratory findings were completely normal at baseline and follow-up. Below are presented two newborns infected with SARS-CoV-2 as a result of close contact with their parents.

Case 1

For the last two days, a 12-day-old male infant who had complaints of restlessness, burrs in the eyes, unwillingness to suck was brought to the newborn outpatient clinic. The baby was born at the 37th week of gestation with a birth weight of 3590 g. In addition to mild hypotonicity and dacryostenosis, no additional features were found in the physical examination of the baby. Her mother had been receiving treatment for the last 3 days with the diagnosis of COVID-19 pneumonia. The baby was admitted to the NICU with late-onset neonatal sepsis and possible diagnoses of neonatal COVID-19.

Laboratory test results; WBC: 14310/mm³, PLT: 537.000/mm³, Hb: 17.8 g/dL, Hct: 52%, sodium: 135 mEq/L, calcium: 10.8 mEq/L, total bilirubin: 10 mg/dL, direct bilirubin: 0.4mg/dL, C-Reactive Protein (CRP): <0.1 mg/dL, procalcitonin: <0.5 ng/mL, BUN: 5mg/dL, creatinine: 0.5 mg/dL, AST: 37 U/L, ALT: 24U/L, aPTT:28.9 seconds, PT: 12 seconds. Blood gas resulted normally. There was mild paracardiac infiltration on the X-ray. However, in thorax computed tomography (CT), there was ground-glass opacity in both lungs' lower lobes (Figure-1). Nasopharyngeal swab samples were sent for influenza A, B, and COVID-19 PCR. Blood and urine cultures were sent. Since sepsis could not be excluded,

ampicillin and gentamicin were started. Parenteral fluid support was started due to insufficient enteral intake. On the second day of the hospitalization, the complaint of restlessness regressed and her oral intake improved. Influenza A and B PCR test was negative. On the third day of admission, the COVID-19 PCR test was positive. However, there was no pathological finding in his physical examination. Therefore, no additional treatment for COVID-19 was started. Antibiotic treatment was discontinued on the 5th day of the hospitalization, whose culture did not reproduce. COVID-19 PCR tests, which were sent twice as control from on the 3rd and 5th days of hospitalization were negative. The baby was discharged with healing on the 7th day of hospitalization.



Figure 1. Chest CT showed ground-glass opacity

Case 2

A 27-day-old male infant was brought to the hospital with complaints of decreased sucking and vomiting for the last day. The baby was born at the 39th week of gestation with a birth weight of 3760 g. A week ago, the parents' COVID-19 PCR tests were positive. Since the mother had no complaints and no pneumonia was detected in thorax CT, no treatment was initiated. However, the treatment of his father with severe cough was started because the

thorax CT imaging was compatible with COVID-19 pneumonia. The baby was admitted to the NICU with late-onset neonatal sepsis and possible diagnoses of neonatal COVID-19. On physical examination, there was no additional feature except mild hypotonicity.

Laboratory test results; WBC: 10930/mm³, PLT: 418.000/mm³, Hb: 15.3 g/dL, Hct: 42%, sodium: 136 mEq/L, potassium: 4.9 mEq/L, total bilirubin: 2.1 mg/dL, direct bilirubin: 0.2 mg/dL, CRP: <0.1 mg/dL, procalcitonin: <0.5 ng/mL, BUN: 6.6 mg/dL, creatinine: 0.35 mg/dL, AST: 26U/L, ALT: 19 U/L, aPTT: 32.4 seconds, PT: 11 seconds. Blood gas and complete urine analysis resulted normally. Adenovirus and rotavirus tests also resulted negatively. PCR was sent for influenza A, B, and COVID-19. Cranial and abdominal ultrasonography were observed as normal. Bilateral suspicious infiltrations were present on the X-ray. Multifocal ground-glass opacities were detected in both lungs following COVID-19 in thorax CT imaging (Figure-2). However, no pathological finding was found in the respiratory system examination.

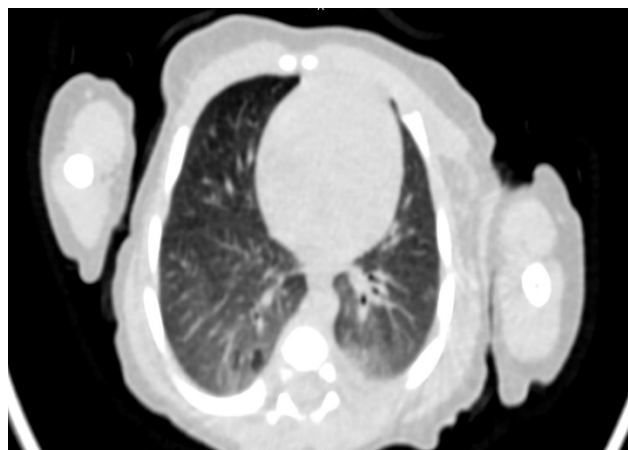


Figure 2. Chest CT showed ground-glass opacity

Since late-onset neonatal sepsis could not be excluded, antibiotic treatment was started. Parenteral fluid was started for the baby whose enteral intake was not sufficient. The

COVID-19 PCR test was positive on the 3rd day of treatment. The patient's oral intake improved and the parenteral fluid was discontinued. No additional treatment for COVID-19 was initiated for babies, whose physical examination was normal. Antibiotic therapy was discontinued on the 5th day as the cultures were negative. Control COVID-19 PCR tests sent twice, resulted in negative. The baby was discharged with healing on the 10th day of hospitalization.

Discussion

COVID-19 can be seen in all age groups and shows a very fast course. Data on the transmission of the disease, clinical and laboratory findings, pathogenesis, and long-term effects are limited. For this reason, the information about the newborn period where the number of cases is low is very important.

SARS-CoV-2 infection can be transmitted by droplets, environmental close contact, fecal-oral route among humans. Maternofetal vertical transition plays an important role in the transmission of many viral diseases to the baby during the neonatal period. However, no vertical transition has been shown from studies on SARS-CoV-2 infection so far (3,4). Similarly, in our cases, PCR the results sent from nasopharyngeal swab samples of newborns born from COVID-19 positive pregnant were negative. No pathological finding was observed during the follow-up. Two newborns with SARS-CoV-2 received virus in the late neonatal period with close contact from the environment.

The incubation period of the disease is on average 5-6 days. Frequent symptoms may be accompanied by fever, dry cough, weakness, shortness of breath, and sometimes signs of the gastrointestinal tract (GIS). However, there is no specific clinical finding for the neonatal period. It usually progresses with asymptomatic or mild

symptoms (5,6). Similarly, there is no specific laboratory finding in the neonatal period. Leukocytosis, leukopenia, thrombocytopenia, creatinine kinase, alkaline phosphatase, AST, and ALT elevations can be seen. Ground-glass opacity or infiltrative view can be detected radiologically on X-ray or CT imaging. In the first case of SARS-CoV-2 infection positive, there were nonspecific findings such as restlessness, nutritional problems, and in the second, vomiting. Laboratory findings were normal. In the X-rays of the babies, there was a pericardiac infiltration and a ground-glass opacity on thorax CT. However, during his close follow-up, no respiratory problems were observed. Since all these changes are not specific, the most valuable method for diagnosis is PCR positivity was sent from the nasopharyngeal swab sample (3,6-8). All infants with COVID-19 suspect who were followed up in our unit were PCR tested. The second control PCR test was performed 48 hours after the negative results.

The treatment of the disease is symptomatic. Although some antiviral agents have been tried in adult patients, unfortunately, there is no proven treatment or vaccine for SARS-CoV-2 infection yet. In newborns, usually, there is no need for antiviral treatment, but there is no insufficient evidence in this regard (3,4,6). In both cases, although parenteral fluid supplementation was started for 2-3 days due to gastrointestinal symptoms, discontinued early due to the rapid recovery of oral intake. Anti-biotherapy was stopped because the culture results were negative.

Breast milk is the most important food source for newborns. Although some viral diseases are known to be transmitted by breast milk, no SARS-CoV-2 infection has been reported to date. Therefore, breastfeeding can be

continued by taking the necessary isolation measures. If the mother is unable to breastfeed her baby, expressed breast milk can be given to the baby, following the hygiene rules (9,10). Although we have been informed in detail about the necessity of breast milk, families did not want to take any risks in this period when the COVID-19 pandemic was the most active and the mortality rate was high. For this reason, both newborns were given formula milk instead of breast milk for feeding purposes during their hospital stay.

In the literature, it is known that COVID-19 has been seen less frequently and more mildly in the neonatal period. However, what problems COVID-19 can cause in the long term period is not clear as there is insufficient data on this subject.

Acknowledgment

We would like to thank all our heroes actively working on this subject, both in the field and on the scientific platform, during these challenging days, where the COVID-19 pandemic has been experienced.

Conflicts of Interest

The authors declared no conflict of interest for the present article.

Ethical Statement

Informed consent was obtained for children from their parents. All the study procedures were approved by the Local Medical Ethics Committee.

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