Letter to the Editor: Neonatal Coronavirus Disease-2019: Presentation and Management

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Authors’ contributions

This work was carried out in collaboration among all authors. Author RP designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors AHMKB and SFS managed the analyses of the study. Author AS managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJRID/2020/v5i230164

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Complete Peer review History: http://www.sdiarticle4.com/review-history/61166

Received 01 September 2020  
Accepted 19 September 2020  
Published 02 October 2020

The coronavirus disease 2019 (COVID-19) has spread rapidly across the world. The pandemic is now exploding in developing countries including Bangladesh. The coronavirus disease is affecting all age groups including pregnant women and children but the severity of infection is less in infant and neonate. To our knowledge, there is no sufficient data about the presentation and management of COVID-19 in neonate [1].

The predominant mode of transmission is via droplet spread, when the infected person coughs, sneezes or talks, the virus is released in the respiratory secretions. These droplets may come in direct contact with the mucous membranes (mouth and nose) and cause infection. The virus in the droplets can stay on the different surfaces for a variable period, maximum being nine days [2]. So touching an infected surface and then touching of eyes,

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mound or nose can cause infection. The incubation period of COVID-19 is usually between 3 and 7 days on an average, with 1 day as the shortest and 14 days longest [3,4].

Usually, there is an epidemiological exposure history. There are only a few cases of COVID-19 in neonates and the youngest patient, 30 hours olds with COVID-19, has been reported in China. Aerosol particles carrying viruses may be another way of transmission, and there is still no evidence of vertical mother-to-fetus intrauterine transmission [3,4]. Various samples from infected mother (amniotic fluid, cord blood, neonatal throat swabs, placental swabs, genital fluid, and breast milk samples) who were tested negative for the virus [1,5-7]. But, there is a recent report in which the infant born to a COVID-19 positive mother was found to have SARS-CoV-2 IgM in serum at birth (which represents a neonatal immune response to in utero infection) [8].

Usually, the respiratory viruses cause less chance of intrauterine transmission of infection to fetus; therefore, the intrauterine transmission of SARS-CoV-2 is anticipated to be low [9]. Transmission of SARS-CoV-2, the virus that causes COVID-19, to neonates is thought to occur primarily through respiratory droplets during the postnatal period when neonates are exposed to mothers or other caretakers with SARS-CoV-2 infection [10].

Neonates with COVID-19 usually are asymptomatic or may have mild symptoms and Clinical presentation in neonates is nonspecific. So, suspected neonates with COVID-19 should be closely monitored for vitals, respiratory and gastrointestinal symptoms [10]. Clinical manifestations among neonates with SARS-CoV-2 infection include fever, lethargy, rhinorrhea, cough, tachypnea, increased work of breathing, vomiting, diarrhea, and poor feeding [11]. Neonate with mild respiratory distress did not require intubation and mechanical ventilation [1].

A neonate born to the mother with a history of 2019-nCoV infection between 14 days before delivery and 28 days after delivery, or the neonate directly exposed to any infected person with 2019-nCoV, or any symptoms of COVID-19 infection should be investigated [12]. Suspected neonate as COVID-19 positive should be admitted to hospital and should be kept at least 6 feet away from other neonate or place them in air temperature-controlled isolation area until proved COVID-19 negative [13]. Laboratory examinations may be nonspecific. A complete blood count may show leucopenia or leukocytosis with lymphopenia and thrombocytopenia. There may be raised C-reactive protein and raised procalcitonin levels in COVID-19 but these are increased in sepsis also. Blood culture should be done to differentiate from sepsis as for common presentation. Chest x-ray helps in diagnosis if there are bilateral opacities of lungs. CT scan of the chest can be done in severe cases [13].

The definitive test for 2019-nCoV is the detection of viral nucleic acid by real-time fluorescence polymerase chain reaction (RT-PCR) in the samples collected from the upper respiratory tract (URT; nasopharyngeal and oropharyngeal), lower respiratory tract (LRT; endotracheal aspirate or bronchoalveolar lavage), blood and stool. The samples should be collected from the symptomatic neonates as soon as possible and if negative, they should be repeated after 48 h [12,13]. Infants, who cannot be tested, should be treated as if they are positive for the virus for the 14 day observation period. The mother should continue to maintain precautions until she meets the criteria for noninfectivity [13].

Supportive treatment should be started in the newborn. All the supportive care (fluids, inotropes, and empirical antibiotics) should be as per unit protocol. Specific drugs in the form of chloroquine/hydroxychloroquine and adjunctive therapy in the form of systemic steroids/intravenous immunoglobulins are not recommended in neonatal management until further evidence. COVID-19 positive mother should express breast milk after wearing a mask and appropriate washing of breast and hand and caregiver who are not infected will feed the breast milk with cup and spoon when the baby will be stable via orogastric tube if the baby is not able to take orally [10,13].

Respiratory support in the form of Non Invasive Positive-Pressure Ventilation (NIPPV) and Heated Humidified High-Flow Nasal Canula (HHHFNC) should be avoided given aerosol generation. Though Continuous Positive Airway Pressure (CPAP) support also has the potential of aerosol generation as it has many benefits, especially in preterm neonates CPAP can be used with lowest possible flows [10,13].

The discharge criteria of neonates with COVID-19 are-

1) Temperature returns to normal for more than 3 days;
2) Respiratory symptoms and chest radiography improved dramatically; 
3) Nasopharyngeal and pharyngeal swabs, show negative for COVID-19 for two consecutive times (with at least a 24-h interval) [10,13].

Based on the limited evidence available at this time, the probable mode of transmission of neonatal-COVID-19 appears to be horizontal. An infected newborn can shed the virus through the respiratory tract as well as in stool. So, doctors and caregivers should take proper precaution. Thus, prompt recognition of illness in this population is essential to save them and limit further transmission in the community.

CONSENT
It is not applicable.

ETHICAL APPROVAL
It is not applicable.

COMPETING INTERESTS
Authors have declared that no competing interests exist.

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