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Clinical profile and outcome of neonates born to COVID positive mothers.

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Abstract

Background: A new type of Corona virus that is SARS-COV-2 called COVID-19 had a huge pandemic worldwide. On January 30, 2020 the World Health Organization (WHO) declared the outbreak of COVID19 as a public health emergency of international concern.
Methods: Descriptive and retrospective study carried out at general hospital, Sapthagiri institute of medical science and research centre from September 2020 to September 2021.
Results: Among 153 tested neonates, 91 were SARS-COV-2 positive. Out of 91 (59%), most common symptom reported is respiratory distress in the form of TTNB (43%) and require respiratory support for longer period compared to COVID negative group.
Conclusion: 55% of neonates were symptomatic and reported higher incidence of NICU admission rates in SARS-COV-2 positive neonates born to SARS-COV-2 infected mothers which is comparable to our study.

Keywords: COVID 19, New born COVID, Vertical transmission.

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Introduction

A new type of Corona virus that is SARS–COV-2 called COVID 19 had a huge pandemic worldwide. On January 30, 2020 the World Health Organization (WHO) declared the outbreak of COVID-19 as a public health emergency of international concern [1]. The WHO announced COVID-19 as a pandemic on 11 March 20202. The knowledge about the epidemiology, clinical characteristics, prevention and treatment of COVID 19 is continuously evolving. Elderly and individuals with co-morbidities are more susceptible to the virus and pregnant women are one among the high risk group who requires particular attention but the disease can also be seen in childhood and neonatal period also severity of maternal disease and obstetric outcome can be attributed to the immunological and physiological alterations during pregnancy as well as pre-existing health condition as preeclampsia, diabetes that contribute to a higher risk of developing maternal and neonatal complications [2].

The information on vertical transmission from mother to fetus is still insufficient [3] also there is insufficient evidence regarding possible transmission via breast milk [4,5] but WHO, UNICEF, CDC continue to recommend breast feeding with basic hygienic measures [6-8]. COVID 19 infection during pregnancy is known to cause maternal complications like premature rupture of membranes, preeclampsia, hypertension and neonatal complications such as preterm, respiratory distress pneumonia, sepsis, low birth weight, asphyxia and prenatal death [9-11]. Hence this study aims to evaluate clinical characteristics, potential risk and outcome of newborn born to COVID 19 RTPCR positive mothers.

Methods

This is a hospital based descriptive and retrospective study carried out from September 2020 to September 2021 at general hospital, Sapthagiri institute of medical science and research centre, Bangalore, Karnataka, India. COVID testing was performed on all the pregnant women and the babies of the mothers who tested positive were followed up for complications and COVID testing was done on day 3 for these babies along with COVID antibodies , information regarding age of the mother, co-morbidities, history of contact, clinical features and lab investigations were recorded. The diagnosis was COVID was based on WHO and ICMR criteria. Data entry and statistical analysis were performed using excel SPSS software version 20 (SPSS, Inc, Chicago, IL).

Descriptive statistics were used to summarize the data. Continuous variables were presented as median and interquartile range while categorical data were summarized as frequencies and percentages Ethical committee approval taken from our institution

Inclusion criteria:

- All pregnant women who came for delivery.
- All pregnant women who were tested positive for SARS-COV-2 by Real Time-Transcription Polymerase Chain

Reaction (RT-PCR) from combined nasal and oropharyngeal swabs.

Exclusion criteria:

- Mothers with seasonal flu.
- Mothers with fever due to other proved causes (Table 1).

Signs and symptoms	Numbers(n=91)	percentage
RDS	20	21
TTNB	40	43
Pneumonia	5	5
NEC	2	2
Seizures	10	10
Jaundice	6	6
Shock	5	5

Table 1. Signs and symptoms of SARS COV-2.

Results

A total of 528 cases were admitted to the general hospital, SIMS and RC, Bangalore, Karnataka, India from September 2020 to September 2021 were statically analyzed. Of the total 528 deliveries during the study period 153 mothers were confirmed COVID 19 positive, of which 108 (70%) were LSCS and 45 (30%) were NVD. Among 153 tested neonates, 91 were SARS-COV-2 positive. The risk of transmission was not associated with mode of delivery. The Apgar score at 5th min was significantly lower in newborns with SARS-COV-2 compared with neonates without SARS-COV-2 and needed resuscitation at birth.

Out of 91 (59%)babies born, 20 (21%)babies were preterm required NICU preterm care , among 20, 6 (30%)babies required surfactant therapy because of early preterm, 32-33 wks gestation remaining 14 (70%)were late preterm required only NICU care. 45(49%) babies were having respiratory distress. Among those 40(88%) were having TTNB , 5 (11%)had pneumonia symptoms, and require respiratory support for longer period compared to COVID negative group and more likely to have abnormal radiological findings.

11(12%) babies had Gastrointestinal symptoms in that 2(18%) babies had NEC features and resolved had recurrent intolerance to feeds , loose stools and vomiting. 10 (11%) newborn babies had presented with seizures among them 4(40%) had HIE staging -2, later recovered, 6(6.5%)newborn had polycythemia and jaundice was put on phototherapy and was treated, 5(5%) newborns went to ventilator support due to shock features treated with IV Ig, steroids and later recovered, there was no death noted during our study.

Discussion

We evaluated the outcome of 91 COVID positive neonates of the total 153 tested neonates (59%) and report the incidence of neonatal outcomes, type of symptoms and the morbidity associated. our study demonstrated that SARS-COV-2 positive neonates are more prone for respiratory distress and prolonged need for NICU care, respiratory support and longer hospital stay, but not associated with increased mortality compared to SARS-COV-2 negative newborns. In a systemic review by Raschetti et al. [12] 55% of neonates were symptomatic and reported higher incidence of NICU admission rates in SARS-COV-2 positive neonates born to SARS-COV-2 infected mothers which is comparable to our study.

Most of the neonates acquired the infection in the first 72 hrs after birth. 5(5.4%) neonates were tested positive on day one which is also observed in National Neonatology Forum registry [13]. Risk of transmission was more since the neonates are more susceptible and may be acquired in utero or in immediate peripartum period through amniotic fluid [14], potential vertical transmission has been reported by Vivanti et al. [15] and Zeng et al. [16] demonstrated virus in neonatal samples implying transplacental transmission those neonates who became positive on day three, would have acquired the infection postnatal from mothers, health care providers and family members. This higher incidence of infection in neonates who were roomed in with mother may be due to poor compliance to the precautions. The world health organization recommends neonates to be roomed-in with mothers and exclusively breast fed while following precautions to limit the spread of SARS-COV-2 infection to neonates [17].

The prematurity rate is 21% in our study which is lower compared to a systemic review which had 63.8% of preterm delivery [18] but similar rates of cesarean section (70%) and nicu admission (88%). In our study the most common symptom reported is respiratory distress in the form of TTNB (43%) and others was respiratory distress syndrome, requiring surfactant administration and pneumonia (5.4%). the duration of respiratory support was longer when compared to the babies born to non- infected mothers. These results are consistent with the data reported by Seniuk et al. [19] but the incidence is less (11%) compared with our study.

Wu and colleagues [20] observed that 10% neonates in their study were diagnosed with Necrotizing Entercolitis, in full-term infants and concluded that infants born to infected mothers are at risk of developing necrotizing enterocolitis. we

observed 12% babies had some feeding intolerance, loose stools and vomiting in the first few days of life of infants born to mothers with SARS-COV-2 infection and in that 2% of babies developed necrotizing enterocolitis which was lesser compared to study done by Wu et al. [20] the symptoms resolved in the following days of hospital stay which was similar to that reported by Senuik et al.

Conclusion

It has been widely established that neonates born to mothers infected with SARS-COV-2 have an overall favorable prognosis. In some cases, respiratory symptoms or distress findings may be observed. Further research and evaluation would be necessary to establish the consequences of vertical transmission of SARS-COV-2 to neonates born to infected mothers. So early intervention can help in reducing the severity and morbidity associated with SARS-cov 2 infected neonates.

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