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DEMOGRAPHICS AND CLINICAL CHARACTERISTICS OF NEONATES BORN TO SARS COV-2 POSITIVE MOTHERS DURING THE 2ND COVID-19 PANDEMIC IN INDIA: A CLINICAL ANALYSIS.

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ABSTRACT During the spring of 2021 India was swept off the foot with second wave of covid Pandemic. The most affected group this time were the young adults, children and pregnant women who were yet to be vaccinated. This study is done in a tertiary care hospital, which is 100 years old, has a maternity and NICU setup in the suburbs of Chennai. New-borns are at high risk of acquiring severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from their infected mothers; however, data remains limited. We aim to describe the unique experience from our Baby Friendly hospital at the epicentre of the 2nd COVID-19 pandemic wave**. Methods:** This is retrospective cross-sectional analysis of the clinical records, of pregnant women who were tested for SARS-CoV-2 from March 1st 2021 to May29 2021. Data regarding demographic and clinical characteristics, SARS-CoV-2 test results, symptoms and signs of COVID-19, rooming-in, breastfeeding, and new-born follow-up were obtained from review of electronic medical records. Descriptive statistics on the new-borns of positive mothers along with maternal data is presented as overall results and percentages. **Results:** There were 272 live births to women who were tested for SARS-CoV-2 infection. Of these,26 (9.5%) new-borns were born to positive mothers and 11(42.30%) births were vaginal. The majority of positive mothers,19 (73.07%), were asymptomatic. Seven (26.9%) new-borns were admitted to the neonatal intensive care unit (NICU) after birth due to prematurity4(15.3%) or suspected sepsis5(19.2%) and Respiratory distress 7(26.9%). A total of 18 (69.23%) new-borns roomed in with their mothers and 15 of the 18(61.5%) were breastfed. The average age at discharge was 5 (±2.3) days of life. Upon discharge, there was an 84.6% adherence (22 out of 26 discharged) to the initial in-person new-born visit. There was 100 % adherence to the tele visits within 3 weeks post discharge.

KEYWORDS :

INTRODUCTION

During the spring of 2021 India was swept off the foot with second wave of covid Pandemic. The most affected group this time were the young adults, children and pregnant women who were yet to be vaccinated. This study is done in a tertiary care hospital, which is 100 years old, has a maternity and NICU setup in the suburbs of Chennai. Increasing numbers of pregnant women with COVID-19 are being reported globally, and the potential for mother-to child transmission (vertical transmission) of SARS-CoV-2, either in utero, intrapartum or in the early postnatal period is of concern. In general, respiratory viruses, like SARS-CoV-2, are not easily transmitted in utero, with no evidence for in utero transmission of other respiratory coronavirus infections (SARS-CoV or MERS-CoV) and only few case reports for other respiratory pathogens like influenza (1). New-borns are at high risk of acquiring severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from their infected mothers who delivered during this period; however, data remains limited. (2) We aim to describe the unique experience from our Baby Friendly hospital at the epicentre of the COVID-19 pandemic.

MATERIALS AND METHODS

In this retrospective cross-sectional analysis of clinical records, we identified live births to women who were tested for SARS-CoV-2 from March 1st 2021 to May29 2021 at Sir Ivan Stedeford hospital, Chennai. Data regarding demographic and clinical characteristics, SARS-CoV-2 test results, symptoms and signs of COVID-19, rooming-in, breastfeeding, and new-born follow-up were obtained from review of electronic medical records. Descriptive statistics on the new-borns of positive mothers along with maternal data is presented as overall results and percentages. Ehrlich Neuberg laboratories were used for SARS-CoV-2 reverse transcriptase polymerase chain reaction (PCR) test. This study was approved local ethics committee, and the office of research administration.

RESULTS

There were 272 live births to women who were tested for SARS-CoV-2 infection. Of these,26 (9.5%) new-borns were born to positive mothers and 11(42.30%) births were vaginal. The majority of positive mothers,19 (73.07%), were asymptomatic. Three (11.53%) well new-borns were placed in isolation room as a part of our initial practice early in the pandemic. Seven (26.9%) new-borns were admitted to the neonatal intensive care unit (NICU) after birth due to prematurity4 (15.3%) or suspected sepsis5(19.2%) and Respiratory distress 7(26.9%). A total of 18 (69.23%) new-borns roomed in with their mothers and 15 of the 18(61.5%) were breastfed with the initiation of breastfeeding within 1 h of birth. All the new-borns were tested for SARS-CoV-2 using a combined oropharyngeal and nasopharyngeal swab after birth within the first 24 hours of life. Testing from other sites such as rectal swabs was not performed. A total of 25 (96.2%) new-borns tested negative and 1(3.8%) tested positive (Fig1.). The lone new-born was monitored in the NICU until two consecutive tests obtained at least 24 h apart were negative and the baby was preterm VLBW (1940grams) with mild respiratory distress and required O2 for 12 hours, otherwise stayed in NICU fir preterm LBW care, thus suggesting transient colonization. 2 new-borns needed NICU admission for COVID-19-related symptoms like X-ray suggestive of infiltrates and one baby presented with shock and severe respiratory distress, though RTPCR done at 2 separate times were negative. The average age at discharge was 5 (±2.3) days of life. Upon discharge, there was a 84.6% adherence (22 out of 26discharged) to the initial in-person new-born visit. There was 100 % adherence to the tele visits within 3 weeks post discharge. On these visits, none of the new-borns were reported to have any symptoms consistent with COVID-19 and none had emergency department visits or hospital admissions related to COVID-19. Demographic and clinical data is summarized in Table1.

Table1: Demographic and Clinical Data

Maternal Characteristics	
Age (Median) years	27
Vaginal delivery no (%)	11(42%)
Caesarean Section no (%)	15(57.7%)
Length of stay(Median) days	5
Asymptomatic	18(61.2%)
Symptomatic	8(30.76%)

Symptoms	
Fever	3(11.5%)
Cough	5(19.2%)
Shortness of breath	nil
Others	1(3.8%)
ICU Admission	0
Treatment with medications	
Supportive (Paracetomol, vitamins etc.,)	8(30.76%)
Antibiotics	8(30.76%)
Remdesivir	0
New-born Characteristics	
Birth weight (Median) kg	2870 grams
Gestational age	
Term no(%)	20(76.9%)
Preterm no(%)	6(23.07%)
Sex	
Male no (%)	14(53.8%)
Female no (%)	12(46.15%)
Apgar 1Min (Median)	7
5Min(Median)	8
NICU Admission	7(26.9%)
Sepsis	5/7(71.4%)
Prematurity	4/7(57.14%)
Others(Respiratory distress)	7
Isolation	1(3.84%)
Breast feeding and Rooming in	
Rooming in no (%)	18(69.3%)
Breast feeding no(%) within 1 hour	16(61.5%)
RTPCR for SARS-COV-2- Negative	25(96.2%)
RTPCR for SARS-COV-2- Positive	1(3.8%)
Discharge	
Discharge home	26(100%)
Discharge to another hospital	00
Adherence to in person new born visit	22(84.6%)
Symptomatic on in person visit	00
Adherence to tele visit	26(100%)
Symptomatic on tele visit	00

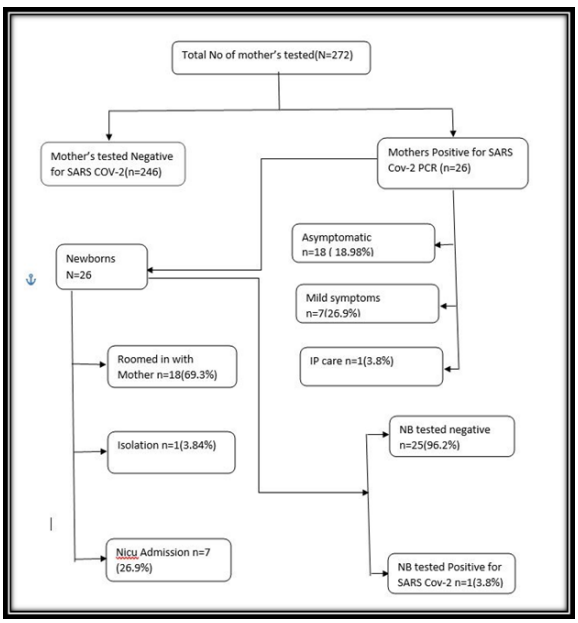

Figure1.Study Flow chart

DISCUSSION

In our experience of caring for new-borns at a centre with high incidence of maternal SARS-CoV-2, majority of the new-borns did not show signs of infection after birth. Moreover, we report no short-term adverse neonatal outcomes with skin-to-skin care, rooming-in, or breastfeeding in infants of SARS-CoV-2 positive mothers in our population. In contrast to early reports from China, the mode of delivery did not seem to be associated with the neonatal outcome of our new-borns born to mothers who were SARS COV-2 PCR positive [3]. A possible explanation for both of these observations could be the high number of asymptomatic or mildly symptomatic mothers in our study.

During the early period of the pandemic, our centre tested only symptomatic pregnant women for SARS-CoV-2 and new-borns of infected mothers were placed in isolation rooms based on the available literature at that time [4]. However, during the second peak to the dramatic surge in the number of SARS-CoV-2 positive mothers delivering at our centre after initiation of universal screening of all pregnant women admitted for delivery, the limited isolation spaces for the new-borns, routine rooming in and early breast feeding was promoted as per WHO protocol. Also, early planned postpartum discharges, we utilized shared decision-making and offered rooming-in of mothers with their new-borns [6]. Mothers were encouraged to provide skin-to-skin care and breastfeeding while rooming-in, following appropriate isolation precautions based on the Evidence based Protocol [6]. New-borns were discharged to a healthy asymptomatic caregiver and were closely followed-up for 2 weeks after discharge. Video consultation or Tele consultation was utilized in addition to initial in-person visits that showed that the new-borns remained asymptomatic after discharge.

Although our study has limitations of small sample size and only short-term outcomes, we believe that to date, our report is unique because of the setting of Tertiary care centre in the suburbs of a large city worst hit by pandemic, catering to a wide representative population. It is also one among the first few experiences in southern India of utilizing baby friendly practices when mother is tested positive for SARS-CoV-2. The detailed observational study concludes that, though due to outnumbering and excessive case load isolation of asymptomatic babies was not possible. Hence routine baby friendly practices like early rooming in and breast feeding was practised, after proper education to the family, but without any short-term adverse outcome in the new-borns. Thus, new-borns who are asymptomatic, born to SARS COV-2 positive mothers, can be safely roomed in and start breast feeding early, after educating the mother and family about Contact barrier methods. New-borns who were symptomatic also recovered very well with supportive NICU management with no mortality.

The practice of rooming-in and breastfeeding in our population, whose demographic and socio-economic characteristics mandated that, provided a critical educational opportunity for the new mothers to learn isolation precautions, safe distancing, personal protective equipment use, and safe breastfeeding or pumping of breastmilk to reduce the risk of transmission of SARS-CoV-2 to the new-born. This may have prepared the SARS-CoV-2 positive mothers to better care for their new-borns at home. Given the variations in the guidance and at times some conflict amongst the national and international organizations regarding rooming in and breastfeeding after delivery, our experience can help hospitals when planning around best practices for new born care during the COVID-19 pandemic [6]. At present, the extent to which SARS-CoV-2 vertical transmission occurs, and timing of such transmission, is unclear. Indeed, determining infection of the neonate, and when it occurs, has been challenging. Although two categorization systems have been proposed [7,8], there is a lack of standardized international consensus definitions. Such consensus definitions are key to enable comparison of data across studies, and to determine potential interventions to improve clinical outcomes (1)

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