

## CLINICAL PROFILE OF NEONATES WITH RESPIRATORY DISTRESS BORN TO COVID POSITIVE MOTHERS

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### Abstract

**Background:** There are various physiological changes occurring during pregnancy. COVID-19 infection can make the pre-existing conditions worse and hence can increase complications in mothers and neonates. Hence, we conducted a study on outcome in newborns born to Covid-19 Positive mothers. **Objectives:** To study clinical and demographic data of neonates having respiratory distress born to Covid-19 positive mothers. **Materials and Methods:** Total 60 neonates born to COVID-19 positive mothers (by RTPCR or Rapid Antigen Test for SARS-CoV-2) from Aug 2020 to Aug 2021 were included, clinical profile was studied and analysed. **Results:** Majority of neonates presenting with respiratory distress were followed up. Majority of them had short duration of hospital stay and a good discharge rate. **Conclusion:** From our study, it was found that full term neonates born to mothers infected with Covid-19 have an overall good outcome and favorable prognosis.

## INTRODUCTION

COVID-19 Pandemic has affected all aspects of general population.<sup>[1]</sup> The manifestations of COVID-19 in pregnant women are severe and varied, affecting them as well as their babies in utero, intrapartum and after delivery. Neonates born to Covid 19 Positive mothers are at a relatively higher risk than those born to Covid Negative mothers.<sup>[2]</sup> COVID-19 infection is relatively hypoxic state for mothers. It has indirect and direct impact on respiratory status of neonates. There is no evidence of transplacental transmission of active Covid infection, but neonates born to mother with Covid-19 Positive status are predisposed to relative hypoxia in utero which leads to increase in incidence of respiratory distress, birth asphyxia and meconium aspiration in babies born to them. So, we conducted a study on clinical profile of neonates admitted to NICU presenting with respiratory distress at birth, born to COVID positive mothers.<sup>[3,4]</sup>

### Aim

To study the clinical profile of neonates presenting with respiratory distress born to Covid-19 Positive mothers.

### Objectives

To study the Demographic profile, Length of Hospital Stay and Outcome of neonates presenting with respiratory distress born to Covid-19.

## MATERIALS AND METHODS

Neonates born to COVID-19 Positive mothers (by RTPCR or Rapid Antigen Test for SARS-CoV-2) from August 2020 to August 2021 were included in the study. All term neonates presenting with respiratory distress at birth, born to COVID-19 Positive mothers were included in the study. The demographic details including age, sex, hospital stay, associated co-morbidities and the outcome were noted retrospectively from the medical records kept at the medical record section. The data was analyzed for the desired results.

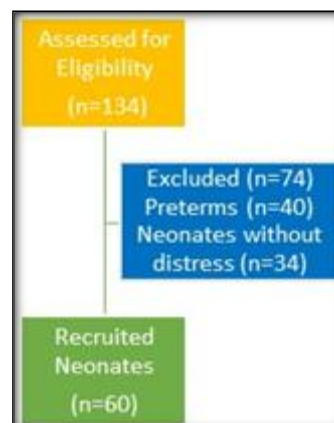


Figure 1: Study flow chart

**Materials**

**Setting:** Level III NICU, GMC Miraj

**Study design:** Retrospective Observational Study

**Study Period:** 12 months

**Sample Size:** 60 (As shown in figure 1)

**Study Population:** Newborns admitted in NICU born to COVID-19 Positive Mothers.

**Inclusion Criteria**

1. All neonates born to covid positive mother and admitted to NICU
2. Term Neonates with Respiratory distress

**Exclusion Criteria**

1. All preterm babies
2. Term babies without respiratory distress

3. Full term neonates admitted for neonatal hyperbilirubinemia.

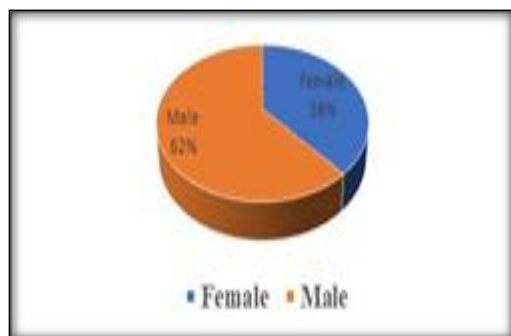
**RESULTS**

In our study, 60 neonates presenting with respiratory distress at birth born to COVID-19 positive mothers were included. Out of total patients 37(61.67%) were males and 23(38.33%) were females. In the present study, all neonates were tested for Covid-19 infection (RT-PCR) had negative reports which suggests that there is no evidence of transplacental transfer of Covid-19 infection.

- As shown in table no.01 and chart number 1, out of total patients 37(61.67%) were males and 23(38.33%) were females.

**Table 1: Distribution of neonates as per sex**

Gender	No. of Neonates	Percentage
Female	23	38.33
Male	37	61.67
Grand Total	60	100.00



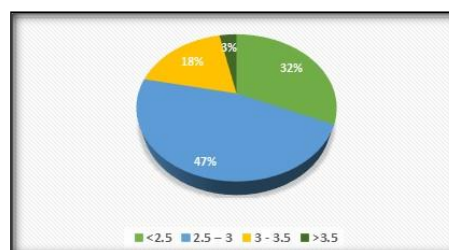
**Chart 1: Distribution of neonates as per sex**

Mean birth weight in present study was 2.67±0.42 kg. As shown in table number 2 and chart number 2, twenty-eight neonates (46.67%) were having birth weight between 2.5 – 3 kg.

**Table 2: Distribution of patients as per Weight**

Birth Weight	No. of Neonates	Percentage
<2.5	19	31.67
2.5 – 3	28	46.67

3 - 3.5	11	18.33
>3.5	2	3.33
Grand Total	60	100
Mean birth weight:		
2.67±0.42 kg		



**Chart 2: Distribution of neonates as per weight**

As shown in table number 3, out of 60 neonates, 39 (65%) were delivered by LSCS and 21(35%) were delivered by Normal Vaginal Delivery.

**Table 3: Distribution of patients as per mode of delivery**

Mode of Delivery	No. of Neonates	Percentage
LSCS	39	65.00
NVD	21	35.00
Grand Total	60	100.00

As shown in table number 4, in present study, out of 60 neonate maximum neonates 38(63.33%) were diagnosed with Transient tachypnoea of Newborn (TTN), followed by Meconium Aspiration Syndrome (MAS) - 11(18.33%), Hypoxic Ischemic Encephalopathy- 8 (13.33%), Congenital Heart Disease (CHD)- 2(3.33%) and Respiratory distress syndrome (RDS) - 1 (1.67%). While correlating mode of delivery with diagnosis we found that incidence of TTN was slightly more in LSCS born neonates than normally delivered neonates.

**Table 4: Distribution of patients as per Diagnosis and Mode of Delivery**

Diagnosis	Mode of delivery		Grand Total	Percentage
	LSCS	NVD		
CHD	2	0	2	3.33
HIE	6	2	8	13.33
MAS	7	4	11	18.33
RDS	1	0	1	1.67

TTN	23	15	38	63.33
Grand Total	39	21	60	100.00

In the present study, mean duration of hospital stay was  $3.35 \pm 0.42$  days. As shown in table no: 5, maximum 43 (71.67%) neonates were having duration less than 5 days, followed by 5 to 7 days.

**Table 5: Distribution of patients as per duration of stay**

Duration of stay	No. of Neonates	Percentage
< 5 Days	43	71.67
5 - 7 Day	15	25.00
7 - 10 Days	1	1.67
> 10 Days	1	1.67
Total	60	100.00

As shown in table number :6, out of 60 neonates 59(98.33%) were discharged and only 1(1.67%) neonate was death due to multiple comorbidities (Severe Birth asphyxia with metabolic derangement and shock).

**Table 6: Distribution of patients as per outcome**

Outcome	No. of Neonates	Percentage
Death	1	1.67
Discharge	59	98.33
Grand Total	60	100.00

## DISCUSSION

Covid infection being new to world, its manifestations in fetus and neonate are less known considering available data. Varied presentations are likely to be observed hence we must be vigilant about newer presentation of covid infections in fetus and neonates. Our study includes study of clinical profile and their outcome in term neonates born to COVID -19 mothers who presented with respiratory distress. All the neonates born to COVID-positive mothers included in this study who could be tested, were negative by nasopharyngeal swab RTPCR test done within 48 hours after birth.

In present study, out of total patients 37(61.67%) were males and 23(38.33%) were females. Incidence of respiratory distress was more in males than females. Mean birth weight in present study was  $2.67 \pm 0.42$  kg. Maximum neonates 28 (46.67%) were having birth weight between 2.5 – 3 kg. Out of 60 neonates, 39 (65%) were delivered by LSCS and 21(35%) were delivered by NVD. Similar results were observed in a study conducted by Sharma Chalise SP et al., where they found that 52% were male and 48% were females. And mean birth weight was  $2.9 \pm 0.57$  kg. cesarean section rate was 60% which was similar to present study.<sup>[5]</sup>

SARS-COV-2 infection in the mother causes inflammatory changes in the placenta causing placental insufficiency and hypoxemia and hence causing premature births, low birth weight, and birth asphyxia, meconium aspiration syndrome. The most common presenting complaint was respiratory distress seen in 74% of neonates in this study. Out of 60 full term neonate maximum neonates 38(63.33%) were diagnosed with TTN, followed by MAS 11(18.33%), HIE 8(13.33%), CHD 2(3.33%) and RDS were 1 (1.67%). While correlating mode of delivery with diagnosis we found that incidence

of TTN was slightly more in LSCS born neonates than normally delivered neonates.

Similarly, a study conducted by Nagaraj M V et al., found that, out of 91 (59%) babies born, 20 (21%) babies were premature and required NICU care. Among 20 premature babies, 6(30%) babies required surfactant treatment because of early prematurity, 32-33 weeks gestation remaining 14 (70%) were late preterm required only NICU care. Out of full-term neonates 45(49%) babies were presented with respiratory distress. Among those 40(88%) were having TTNB, 5 (11%) had pneumonia like symptoms, and require respiratory support for longer period as compared to covid negative group and more likely to have abnormal radiological findings.<sup>[11]</sup> (12%) babies had some 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 II, later recovered, 6 (6.5%) newborns had polycythemia as well as jaundice were put on phototherapy and were treated for the same, 5(5%) newborns went to ventilator support due to shock features and treated with IV Ig, steroids and later recovered, no death was noted during the study.<sup>[6]</sup>

Newborns of mothers with asthma were more likely to be admitted to the NICU, to experience hyperbilirubinemia, and to have higher risk of respiratory complications, including respiratory distress syndrome, transient tachypnea of the newborn, and asphyxia.<sup>[7]</sup> This tells us that respiratory status of mothers affect respiratory status of babies as well.

## CONCLUSION

From our study, it was found that full term neonates born to mothers infected with Covid-19 have an overall good outcome and favorable prognosis. Majority of neonates were presented with respiratory distress were followed up. Majority of them have short duration of hospital stay as well as good discharge rate. Covid 19 infection being relatively hypoxic condition for mothers can lead to consequences like respiratory distress, birth asphyxia, meconium aspiration in babies.

### **Declaration of Conflicting Interests**

The authors declare no conflict of interest in preparing this article.

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This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### **Ethics**

Ethical permission was not applied for as this was a retrospective observational study. No intervention was done, so no ethical permission was needed

### **Consent**

Written consent from patient's parents/guardian was taken.

## REFERENCES

1. Harapan H, Itoh N, Yufika A, Winardi W, Keam S, Te H, Megawati D, Hayati Z, Wagner AL, Mudatsir M. Coronavirus disease 2019 (COVID- 19): A literature review. *Journal of infection and public health.* 2020 May 1;13(5):667-73.
2. Oncel MY, Akin IM, Kanburoglu MK, Tayman C, Coskun S, Narter F, Er I, Oncan TG, Memisoglu A, Cetinkaya M, Oguz D. A multicenter study on epidemiological and clinical characteristics of 125 newborns born to women infected with COVID-19 by Turkish Neonatal Society. *European journal of pediatrics.* 2021 Mar;180(3):733-42.
3. Chen H, Guo J, Wang C, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet.* 2020;395:809–815
4. Salvatori G, De Rose DU, Concato C, Alario D, Olivini N, Dotta A, Campana A. Managing COVID-19-positive maternal–infant dyads: an Italian experience. *Breastfeeding Medicine.* 2020 May 1;15(5):347-8.
5. Chalise SP, Mishra SK, Chalise BS, Rai P, Paudel S, Kansakar P, Ojha AR. Clinical profiles of neonates born to COVID-19 positive mothers in a tertiary care centre: a descriptive cross-sectional study. *JNMA: Journal of the Nepal Medical Association.* 2021 Jul;59(239):667.
6. MV Nagaraj, Jerry PK, Keertana TN, Gundluru M, Govindappa M, Nithin Raj MG, Dinakara N. Clinical profile and outcome of neonates born to COVID positive mothers. *Current Pediatric Research.* 2022.
7. Mendola P, Männistö TI, Leishear K, Reddy UM, Chen Z, Laughon SK. Neonatal health of infants born to mothers with asthma. *Journal of Allergy and Clinical Immunology.* 2014 Jan 1;133(1):85-90.