

Paediatrics

KEYWORDS: Covid 19 ;
Neonate ; Sars Cov -2 .

**ANALYSIS OF THE AFTERMATH OF SARS COV-2
INFECTION ON NEONATES BORN TO COVID POSITIVE
MOTHERS : A CROSS-SECTIONAL DESCRIPTIVE
STUDY FROM THE TERTIARY CARE HOSPITAL OF
CENTRAL INDIA**



Volume - 8, Issue - 9, September - 2023

ISSN (O): 2618-0774 | ISSN (P): 2618-0766

Dr. Pragma Chaurasia

Post Graduate Resident, Department Of Paediatrics , M.G.M. Medical College & M.Y. Hospital , Indore, Madhya Pradesh, India

Dr. Gagandeep Shukla*

Post Graduate Resident, Department Of Paediatrics, M.G.M. Medical College & M.Y. Hospital , Indore, Madhya Pradesh, India. *Corresponding Author

Dr. Sunil Arya

Associate Professor, Department Of Paediatrics, M.G.M. Medical College & M.Y. Hospital , Indore, Madhya Pradesh, India

INTERNATIONAL JOURNAL
OF PURE MEDICAL RESEARCH**ABSTRACT****Background –**

A novel coronavirus, now named SARS-CoV -2 by the World health Organization, is currently causing a worldwide pandemic. Although its effects are severe in elderly, SARS –CoV-2 has been infecting younger patients too, including pregnant women . The effect of COVID-19- the disease caused by SARS-CoV-2 in pregnant women & its effect on their newborn children is unknown and the nature of perinatal transmission of SARS-CoV -2 too. Data on the status of newborn delivered from the Covid positive mothers is limited, hence this study was conducted.

Objective -

To evaluate the effect of COVID 19 on newborn born to COVID positive mother at the time of delivery.

Material & Method–

A cross sectional descriptive study was conducted from January 2021 to July 2021 in the pediatric department of a tertiary care hospital of Central India, including all newborns delivered to the covid positive mothers during this period. Relevant maternal and neonatal data were recorded & analyzed.

Result –

Total 68 pregnant covid positive women admitted, among them 69 babies delivered (1 twin delivery) to covid positive mothers during study period. Majority of newborn are asymptomatic, breastfeeding and rooming in allowed with mother while 5 newborns were shifted to NICU , 77 % newborns were term, 69% newborns had normal birth weight, no malformation was found, 7% newborn needed NICU care. Outcome of all the babies were good and were discharged (2 were stillborn). All the neonates covid samples were sent and all report came out to be negative.

Conclusion –

Newborn are mostly not affected by covid infection in covid positive mothers, majority of newborns were asymptomatic and babies who needed NICU care were due to some other illness.

INTRODUCTION:

SARS CoV-2 is caused by corona virus presented as severe acute respiratory distress syndrome in adults. Although the primary focus has been on vulnerable groups, and no serious infection was reported in newborns. Many pregnant female are infected with SARS CoV 2 infection and impact of SARS CoV 2 infection on newborn are still underreported. It is to study the effect of infection

on newborn of COVID 19 infected mother .This study was conducted to evaluate the effect of COVID 19 on newborn born to COVID positive mother at the time of delivery.

MATERIAL & METHOD:

A cross sectional descriptive study was conducted after getting clearance from the Ethics & Scientific Review Committee, in which 68 covid positive pregnant women & their 69 neonates who were delivered (1 twin delivery) in the pediatric department of the tertiary care hospital of a Central India from January 2021 to July 2021 were included in the study, to assess the effect of covid infection in neonates born to covid positive mothers. All newborns delivered in our tertiary center from reported covid test positive mothers in the mentioned study period were included in the study. It is a hospital based study and data was collected from medical records of patients. All relevant information regarding maternal history including - age, any co-morbidity, pregnancy duration, complications, treatment received, covid status, symptoms, oxygen saturation, type of delivery, hospital stay and any complication due to covid infection, any icu care needed were recorded in predefined proforma. Relevant neonatal data including - birth weight, gestational age, resuscitation requirement, type of care, need of NICU care, feeding, any symptoms during hospital stay, complication if develop, covid status and outcome were recorded in predefined proforma. In all neonates throat swab sample were sent within 24 hour of delivery for COVID status (RT-PCR) as per protocol.

All data were recorded in Microsoft excel sheet and analyzed with the help of SPSS 16.0 trial version. Descriptive and inferential statistics were used. Mean, ratio and rate were calculated . Result for continuous variable presented as mean +/-SD while categorical variable presented in numbers and percentage.

RESULTS:**Table 1 : Demographic details of neonates**

Serial No.	Demographic details	No. (%)	
1.	Gender	Male	32 (46%)
		Female	37 (54%)
2.	Religion	Hindu	55 (80%)
		Muslim	14 (20%)

During study period 68 covid positive pregnant females were admitted in our center & 69 newborn were delivered by covid positive mother (1 twin was born). 46% were male and 54 % were females. Male:Female ratio is 1:1.1 (Table 1)

Table 2: Distribution of maternal parameters

Serial No.	MATERNAL PARAMETERS	No. (%)	
1	AGE	<35years	65(96%)
		≥35 years	3(4%)
2	PARA	Primigravida	25(37%)

		Multigravida	43(63%)
3	Co-morbidities	Yes	12(17.6%)
		No	56(82.3)
4	Symptomatic(due to covid)	Yes	3(4.4%)
		No	65(95.5)
5	Delivery type	NVD	32(47%)
		LSCS	36(53%)
6	Spo2	≥94%	57(83.8%)
		<94%	11(16.1%)
7	ICU care needed	Yes	4(5.8%)
		No	64(94%)

As shown in Table 2, 37% mothers were Primigravida , 73% mother delivered after 37 weeks completion and 53% mother delivered by LSCS. . Mean maternal age 25 years, Mean duration of hospital stay were 5 days, Mean maternal spO2 97%.

Table 3: Distribution of neonatal parameters

Serial No.	Neonatal parameter		No. (%)
1	Covid status	Positive	Nil (0%)
		Negative	67(97%)
2.	Birth weight	≤2.5 kg	21(30%)
		>2.5 kg	48(69%)
3.	Gestational age	<37 weeks	16(23.2%)
		≥37 weeks	53(76.8%)
4.	Resuscitation needed	Yes	5(7.2%)
		No	62(89.8%)
5.	Spo2	<94%	23(33%)
		≥94%	44(66%)
6.	Feeding advised	Breast milk	62(90%)
7.	Symptomatic	Yes	5(7.2%)
		No	62(92%)
8.	NICU care needed	Yes	5(7.2%)
		No	62(92.7%)
9	Outcome	Discharged	67(97.1%)
		Still born	2(2.8%)

Newborn covid positive 0 %, Mean birth weight 2.6 kg, Preterm 23%, LBW 30%, resuscitation needed in 7.2% , SpO2 low in 33%, NICU care needed in 7.2%. 92% shifted to mothers, breast feed with in 1 hour given to 90 % , 92% observed during hospital stay remained asymptomatic(Table 3).

DISCUSSION:

In our study 68 COVID positive pregnant females had delivered during the study period and 69 babies were born (1 was twin delivery and 2 were still born). All neonates delivered to COVID positive mothers tested negative for COVID (Table 3). Similarly in a study done by Salvatore et al¹ out of 120 newborns born to COVID positive mothers none tested positive for SARS CoV-2, Zeng et al² reported 3 COVID positive newborns out of 33 born to COVID positive mothers and Pratima et al³ reported 7 COVID positive neonates out of 65 total tested newborn born to COVID positive mothers. Based on current evidence SARS CoV2 infection in neonates is uncommon.

2 neonates(3%) are still born in our study(Table 3) while in a study by Pratima et al³ 4 are still born (2 are macerated & 2 are fresh still born) and in the study by Chen H et al⁴ no still born delivered. 53% pregnant females were LSCS delivered in our study(Table 2) while in a study by Pratima et al³ 38% were LSCS(lower section caesarean section) delivery. 3 mothers(4.4%) were symptomatic for covid infection in our study(Table 2) while in a study by Pratima et al³ 26% mothers were asymptomatic & 74% were symptomatic.

In our study 5 babies delivered to COVID positive mothers required NICU hospitalization - 2 babies were premature & had Respiratory Distress Syndrome, 1 baby had Meconium Stained Liquor, 2 babies required phototherapy on 2nd & 3rd PND(Table 3). Zeng et al² reported 4 newborns with shortness of breath and out of 3 COVID

positive newborns , 1 had Respiratory Distress Syndrome , 1 had Meconium aspiration syndrome & 1 had Sepsis rather than SARS CoV-2 infection. A study by Chen et al⁴ reported 1 out of 4 newborns delivered to COVID positive mother was asymptomatic, rest were mildly symptomatic and did not need oxygen support. Infection with SARS CoV-2 in newborns may be due to droplet infection from mother and/or caregiver and rarely severe infection has been ever reported.⁵

No neonatal death other than 2 still born was reported in our study (Table 3) , similarly in a study by Chen et al⁴ also no neonatal death was reported. In our study 16% neonates were preterm(Table 3) while in a study by Chen et al⁴ 4 out of 9 neonates(44%) were preterm. In our study 22% neonate were low birth weight(Table 3) while in a study by Chen et al⁴ 2 out of 9(22%) neonates were low birth weight.

In our study mean duration of hospital stay in newborn was 5 days while a study by Chen et al⁴ reported a mean hospital stay of 10 days. Neonates with underlying medical condition and prematurity may be at a higher risk of severe infection from SARS CoV-2.

CONCLUSION:

There is no vertical transmission of COVID infection from mother to fetus intrauterine. Newborns are mostly exposed to SARS CoV-2 infection in postpartum period due to droplet infection. Simple respiratory hygiene may be helpful to prevent it. Majority of exposed newborn remained asymptomatic and had good prognosis. Data is still limited and large epidemiological studies are needed for better understanding of the disease impact on neonates.

REFERENCES:

1. Salvatore CM, Han J-Y, Acker KP, Tiwari P, Jin J, Brandler M, et al. Neonatal management and outcomes during the COVID-19 pandemic: an observation cohort study. *Lancet Child Adolesc Health* [Internet]. 2020;4(10):721–7. Available from: [http://dx.doi.org/10.1016/S2352-4642\(20\)30235-2](http://dx.doi.org/10.1016/S2352-4642(20)30235-2)
2. Zeng L, Xia S, Yuan W, Yan K, Xiao F, Shao J, et al. Neonatal early-onset infection with SARS-CoV-2 in 33 neonates born to mothers with COVID-19 in Wuhan, China. *JAMA Pediatr* [Internet]. 2020;174(7):722–5. Available from: <http://dx.doi.org/10.1001/jamapediatrics.2020.0878>
3. Anand P, Yadav A, Debata P, Bachani S, Gupta N, Gera R. Clinical profile, viral load, management and outcome of neonates born to COVID 19 positive mothers: a tertiary care centre experience from India. *Eur J Pediatr* [Internet]. 2021;180(2):547–59. Available from: <http://dx.doi.org/10.1007/s00431-020-03800-7>
4. Chen H, Guo J, Wang C, Luo F, Yu X, Zhang W, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet* [Internet]. 2020;395(10226):809–15. Available from: [http://dx.doi.org/10.1016/s0140-6736\(20\)30360-3](http://dx.doi.org/10.1016/s0140-6736(20)30360-3)
5. Ovali F. SARS-CoV-2 infection and the newborn. *Front Pediatr* [Internet]. 2020;8:294. Available from: <http://dx.doi.org/10.3389/fped.2020.00294>