

Original Research Article

Mystery of perinatal outcomes by COVID-19

V. K. Das¹, Kaveri Pandya^{2*}, Bincy Mathew², Anjali Prajapati²

¹Medical and Health Services, Dadra and Nagar Haveli, Daman and Diu, India

²Department of Obstetrics and Gynaecology, Shri. Vinoba Bhave College of Nursing, Silvassa, Dadra and Nagar Haveli, India

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***Correspondence:**

Kaveri Pandya,

E-mail: kaveri486@gmail.com

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ABSTRACT

Background: The coronavirus disease is continuously affecting the lives of all people and it has grown into a pandemic. Understanding the impact of COVID-19 on pregnancy in terms of morbidity, mortality as well as perinatal-maternal and foetal outcomes is essential to propose strategies for prevention and infection control. In this study, an attempt has been made to assess the impact of COVID-19 on perinatal outcomes.

Methods: It was a retrospective analytical study. The case-files of 47 antenatal mothers who were RT-PCR positive & delivered during the course of treatment were taken for the study.

Results: Out of all samples, 91.49% were asymptomatic, 10.63% had pregnancy induced hypertension (PIH) as comorbidity, 88.10% had anaemia, 40.43% had WBC count more than 10,000/mm³. 97.87 % of the samples recovered from COVID-19 with routine obstetrical management and only one case was kept on BIPAP support. Perinatal complications like preterm deliveries (27.66%), foetal distress (27.66%), NRNST (19.15%), PROM (4.26%), decreased foetal movement (2.13 %), LBW (6.38%), APGAR<7 at 5 min (15.55%), still birth (4.26%), NICU admission (31.11%), neonatal death (2.13%) were identified. 68.89% neonates were breastfed. The RT-PCR of all neonates came negative on first day of delivery which indicates that there was no vertical transmission. In this study, the results show that the perinatal outcomes are mildly affected by COVID-19.

Conclusions: Although COVID-19 doesn't directly affect perinatal outcomes, it has indirect adverse effects on MCH services. Hence, emergency obstetric and neonatal care is an essential service to be continued with awareness of people while maintaining social distancing and personal hygiene.

Keywords: COVID-19, Perinatal outcomes, RT-PCR

INTRODUCTION

The COVID-19 pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has resulted in the collapse of many economies and health systems worldwide. Maternal and child healthcare services are of paramount importance for public healthcare delivery systems, especially in developing countries like India. Thousands of women in India die every year due to pregnancy and childbirth-related

complications while a significant number of children suffer from vaccine-preventable diseases. The ongoing corona virus disease (COVID-19) pandemic has challenged the resilience of the Indian Public Health System. It has emerged as a threat to public health, forcing countries to go into complete self-imposed lockdowns.¹ Owing to the pandemic, healthcare workers, equipments, and facilities have been transposed to cope with the rising number of patients having COVID-19. Hospital acquired COVID-19 infections have further

reduced the health workforce. Public health programs meant to deliver reproductive, maternal, new-born, child+adolescent (RMNCH+A) services (e.g., vaccinations, free ANC, etc.) were either paused or reduced in scale. Although mortality rates for COVID-19 appears to be low in women of reproductive age and children, these groups might be affected out of proportions due to shambled routine MCH services. The misinformation about the source of the disease, lack of trust in the health system and fear of contracting the virus at health facilities are creating breeding grounds that may reverse the progress achieved in maternal and child health indicators. Thus, understanding the effects of the measures taken on maternal and child health to control a pandemic and ensuring that essential health services are maintained while containing the pandemic, is the real challenge emanating from this situation. National programs should continue dispensing core maternal and child care services deemed essential to save lives, even while posed with the risk of COVID-19 transmission.²

With continuous emergence of new data, there is an increasing understanding of the mechanisms of the disease. Although studies about the effects of COVID-19 on pregnancy are expanding, there are still many unanswered questions. Data regarding COVID-19 and its effects on both mother and fetus or newborn are still scarce and the potential risk of vertical transmission is a major concern. It is well established that pregnant women, in general, are vulnerable to infections; therefore, both pregnant women and newborns should be considered at risk for COVID-19.³ Thus, it is important to understand the impact of COVID-19 on pregnant women in terms of morbidity, mortality, and perinatal maternal and fetal outcomes to propose strategies for prevention and infection control.⁴⁻⁹ Hence a retrospective study was undertaken to assess the impact of COVID-19 on perinatal outcomes. Here perinatal outcomes included maternal outcomes and neonatal outcomes. Maternal outcomes were assessed in terms of changes in the laboratory investigations, treatment provided and obstetric complications arise during the course of COVID-19 infection whereas neonatal outcomes were assessed in terms of birth weight, APGAR at 5 minutes, health status at the time of delivery, no. of babies required NICU admission, breast feeding initiated, COVID test (RT-PCR) result.

Objectives

Objectives of current study were; to assess the impact of COVID-19 on maternal outcomes and to assess the impact of COVID-19 on neonatal outcomes.

METHODS

Study design, approach and location

Current study was a retrospective analytical study with quantitative approach conducted at obstetrics and

gynaecology department unit of Shri. Vinoba Bhave Civil Hospital, Silvassa, Dadra and Nagar Haveli.

Sample size and sampling technique

In current study total 47 antenatal mothers were selected as participants who were admitted at Shri Vinoba Bhave Civil Hospital, Silvassa. The present study adopted non probability convenient sampling technique.

Inclusion criteria

Inclusion criteria for current study were; antenatal mothers with RT-PCR positive result, antenatal mothers who have undergone LSCS and neonates whose RT-PCR were done on first day of delivery

Exclusion criteria

Exclusion criterion for current study was; antenatal mothers who did not deliver during the course of COVID-19 treatment.

Data collection and analysis

Data collection for study was done from case files of all the antenatal mothers who were tested COVID (RT-PCR) positive and delivered at Shri. Vinoba Bhave civil hospital, Silvassa from the period of April to December 2020. The data was collected in the month of January 2021. Structured data sheet which includes the demographic variables, laboratory investigations of mother and new born, treatment provided, maternal and neonatal outcomes were prepared and analyzed using descriptive statistics i.e. frequencies and percentages and proportions were calculated.

RESULTS

Demographic variables

The demographic variables were collected in terms of age, gravida, gestational age at the time of delivery and any co morbidity (Table 1).

COVID associated symptoms

Only 4 samples from the 47 samples showed a few COVID associated symptoms. All the 4 samples had fever. A few had cough and dyspnoea (Table 2).

Laboratory investigations

Total 88.10% of the samples were anaemic on investigation. 40.43% samples showed elevated WBC count, 27.66% samples has decreased platelet count, 14.89% samples showed elevated lymphocytes count, 14.89% samples had elevated ALT and 17.02% samples had elevated AST during the course of treatment (Table 3).

Treatment provided

Total 97.87 % of the samples recovered from COVID-19 with routine obstetrical management only. Only one antenatal mother developed respiratory complication and kept on BIPAP support during the course of treatment (Table 4).

Table 1: Demographic variables (n=47).

Parameters	Category	N	%
Age (years)	≤19	5	10.64
	19-30	39	82.98
	>30	3	6.39
Gravida	1	17	36.17
	2	19	40.43
	>2	11	23.4
Gestational age at the time of delivery (weeks)	≥37	34	72.34
	33-36	11	23.4
	<32	2	4.26
Co morbidity	Hypothyroidism	1	2.13
	DM	1	2.13
	Gestational hypertension	4	8.15
	Eclampsia	1	2.13
	Oligohydramnios	1	2.13

Table 2: COVID associated symptoms (n=47).

Parameters	Category	Frequency	%
COVID associated symptoms	Absent	43	91.49
	Present	4	8.51
Symptoms which were present (n=4)	Fever	4	8.51
	Cough	1	2.13
	Dyspnea	1	2.13
	Myalgia	0	0

Table 3: Laboratory investigations (n=47).

Parameters	Category	N	%
Haemoglobin (gm%)	< 7	2	4.26
	7-11.5	38	80.85
	>11.5	7	14.89
WBC (per mm ³)	<4000	1	2.13
	4000-10000	27	57.45
	>10,000	19	40.43
Platelets (lakhs/mm ³)	< 1.5	13	27.66
	1.5-4.5	34	72.34
Lymphocytes (%)	<20	22	46.81
	20-40	18	38.3
	>40	7	14.89
ALT (IU/l)	1-42	40	85.11
	>42	7	14.89
AST (IU/l)	0-42	39	82.98
	>42	8	17.02

Table 4: Treatment provided (n=47).

Parameters	N	%
Routine obstetrical management	46	97.87
Need of ventilator care (BIPAP)	1	2.13

Maternal outcomes

From the 47 samples, 27.66% mothers had onset of preterm labour, 27.66% mothers had foetal distress, 19.15% mothers had non-reactive NST and 4.26% samples had premature rupture of membranes (Table 5).

Table 5: Maternal outcomes (n=47).

Obstetric complications	N	%
Preterm labour	13	27.66
NRNST	9	19.15
Fetal distress	13	27.66
PROM	2	4.26
Decreased fetal movement	1	2.13

Neonatal outcomes

From the 47 newborns, 93.62% new-borns were healthy and active. 15.55% new-borns' APGAR were less than 7 at 5 minutes. 4.26% still birth and 2.13% neonatal death were reported. All the newborns were tested for COVID (RT-PCR) within 24 hours of birth and all were negative. 68.89% neonates were breastfed within 1 hour of delivery (Table 6). All the living babies were asymptomatic for COVID till the time of discharge from hospital. Current study results showed that perinatal outcomes were mildly affected by COVID-19.

Table 6: Neonatal outcomes.

Parameters (n=47)	Category	N	%	
Gender	Male	30	63.83	
	Female	17	36.17	
Birth weight of the baby (kg)	< 2	3	6.38	
	2-2.5	11	23.4	
	>2.5	26	55.32	
Health status	Healthy & alive	44	93.62	
	Neonatal death	1	2.13	
	Still birth	2	4.26	
Parameters (n=45)		Category	N	%
APGAR score at 5 Min	0-3	1	2.22	
	4-6	6	13.33	
	7-10	38	84.44	
NICU Admission	-	14	31.11	
Breast feeding initiated within 1 hour of delivery.	-	31	68.89	
COVID test (RT -PCR) result on 1 st day of delivery	Positive	0	0	
	Negative	45	100	

DISCUSSION

The results of a review conducted by Figueiro-Filho et al demonstrated that the maternal characteristics, clinical symptoms, maternal and neonatal outcomes of 10,996 cases of COVID-19 and pregnancy described in 15 different countries are not worse or different from the general population. The perinatal outcomes in all cases analyzed in this study were reassuring as live birth was present in 98% of reports, with majority (78%) resulting in term deliveries, with no newborn complications, and NICU admission of 20%. Fetal demise/stillbirth rates were low at 1.7% (19/11,130) and neonatal death described in 0.8% (9/1,137) of cases. No vertical transmission was identified in 98.4% of neonates (1,098/1,116).¹⁰

In present study, pregnancy induced hypertension was the most reported comorbidity in pregnant women with COVID-19. It is noted that the majority of the pregnant women did not have serious complications, with a low occurrence of NRNST (19.15%), premature rupture of membrane (PROM) (4.26%) and decreased fetal movement (2.13%) and premature rupture of the membrane (2.5%). However, incidence of maternal anaemia (88.10%) was high. Premature delivery (27.66%) and fetal distress (27.66%) were the most common adverse pregnancy outcome. Pregnant women are not more affected by the respiratory complications of COVID-19.

In contrast, 29.79% of newborns were admitted in the NICU. Fetal and neonatal complications including low birth weight (LBW) (6.38%), low APGAR at 5 minutes (15.55%), still birth (4.26%) and neonatal death (2.13%) were identified whereas no incidence of vertical transmission had been noticed. Moreover, 68.89% neonates were breastfed by their mother but no symptom of COVID-19 was identified till discharge among these neonates which shows that breast feeding is safe during postnatal period if all respiratory etiquettes are been followed.

The antenatal mothers whose RT-PCR were positive and delivered through LSCS in selected hospital of DNH, were taken for the study. This limitation can be relaxed taking normally delivered COVID positive mothers for the study. The transplacental transmission of SARS-CoV-2 can be identified by testing clear amniotic fluid prior to rupture of membrane, which was not done in the study.

CONCLUSION

Findings of the study suggest that perinatal outcomes are mildly affected by COVID-19. There was no evidence found for intrauterine infection caused by vertical transmission in women who develop COVID-19 pneumonia in late pregnancy. Among various comorbidities pregnancy induced hypertensive disorders were the most common. However, maternal anaemia,

premature delivery and fetal distress were the most common adverse pregnancy outcomes identified during the study. It is also important to notice the prevalence of still birth & neonatal death, though less in number. Considering the significance of this ongoing global public health emergency, although our conclusions are limited by the small sample size, it is believed that the findings reported here are important for understanding the clinical characteristics and vertical transmission potential of COVID-19 infection in pregnant women. But still, the pandemic is far from over, for, there is no specific treatment or proven efficient vaccine for severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), till date. Keeping this in mind, the government should plan to provide provisions for comprehensive maternal and child healthcare services along with the treatment of patients infected with SARS-CoV-2. Measures to allay apprehensions of getting exposed to the infection while availing care at a public health facility and reinvigorating the demand for routine care among the general public, should be formulated with utmost exigency.

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