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Case Series

## Analysis of fetomaternal outcome of COVID-19 antenatal mothers- initial experience

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### ABSTRACT

COVID-19 is an infectious disease caused by newly discovered single stranded RNA virus of *Coronaviridae* family. A retrospective study conducted in ABVIMS and RML hospital, Delhi in antenatal patients with COVID-19 infection detected by RT-PCR in nasopharyngeal and oral swab. It was found that patients with mean age of 27.2 years and mean gestational age of 39 weeks, mostly asymptomatic. Three patients undergone c section for obstetrical indications, while rest delivered vaginally. COVID-19 in pregnancy in small group of cases had good fetomaternal outcome but warrants further study.

**Keywords:** COVID-19, Antenatal, Feto-maternal outcome

### INTRODUCTION

COVID-19 is an infectious disease caused by newly discovered single stranded RNA virus of *Coronaviridae* family. Since the first case of COVID-19 in Wuhan, China, up to May 20, there have been 4,789,205 confirmed cases of COVID-19 and was declared pandemic by the world health organization on March 11, 2020.<sup>1,2</sup>

The COVID-19 virus spreads through droplets and fomites. Symptoms can appear within a week and patients show mild symptoms of flu like illness to serious conditions including pneumonia, acute respiratory distress syndrome, renal and cardiac complications, leading to morbidity and mortality. Progression of disease depends upon immune status, age and associated comorbidities.<sup>2</sup> Currently there are no vaccines or treatments for COVID-19. However, there are ongoing clinical trials searching for potential treatments.<sup>3,4</sup>

Pregnant women became more susceptible to disease and its severity due to cardiovascular changes and

immunological adaptation. Studies have been conducted to establish effect of COVID 19 on pregnancy and vertical transmission to the fetus since emergence of infection.<sup>5-8</sup>

By conducting this study, we will address the issues including effect of COVID19 infection on pregnancy, vertical transmission to fetus and obstetrical management. This study will help to make hospital policy for corona affected mother and better fetomaternal outcome. This retrospective study aims to present the initial experience of pregnancy outcome in women with COVID-19.

### CASE SERIES

This retrospective observational study was conducted in obstetrics and gynaecology department of ABVIMS and RML hospital at New Delhi after approval by the institutional ethical committee during initial months of COVID-19 infection. Medical records of all consecutive COVID-19 positive pregnant patients admitted in the hospital from March 2020 to April 2020 were obtained.

Lab confirmed cases were defined as positive result on quantitative reverse-transcriptase-polymerase chain reaction (q-RT-PCR) assay of maternal nasopharyngeal and throat swabs. All neonates were tested for COVID-19 with q-RT-PCR. Oropharyngeal and nasopharyngeal swabs were taken immediate at birth and after 48 hours.

Data was collected from case files of admitted patients by principal investigator and was cross checked by co investigators. All patients were managed as per labour room protocol and following variables were recorded:

**Study outcome**

*Maternal parameters:* Maternal age, parity, temperature, oxygen saturation, respiratory rate, symptomatic/asymptomatic, lab investigations, timing of COVID-19 test by RT-PCR, Gestational age at the time of delivery, obstetric complications, co-morbid events, ICU stay, symptom to delivery interval, labor-spontaneous/induced (indication), spontaneous vaginal delivery, operative vaginal delivery, caesarean section, treatment received for COVID-19 positive status

*Neonatal parameters:* Apgar score 1 and 5 mins, resuscitation with oxygen, ventilation after initial resuscitation, stay in nursery ICU if required, neonatal COVID-19 status on day zero and day three.

Primary outcomes include severity of COVID-19 in pregnant women, length of hospital stay and secondary outcome includes vertical transmission to neonate and need of NICU admission.

Five pregnant women with COVID-19 infection have been described in this retrospective study. Patients age varied from 21-40 years, while mean age of patients was 27.2 years. Patients gave no history of documented exposure to corona virus. Mean gestational age was 39 weeks and had associated comorbidities (Table 1).

One patient had lymphocytosis on day one of illness which subsided later while rest had no changes in lab parameters. One patient with rheumatic heart disease went to ICU and required oxygenation. No maternal death was documented.

All the postpartum patients were given hydroxychloroquine 400 mg twice a day, tab oseltamivir 75 mg twice a day, tab azithromycin 500 mg once a day for 5 days and paracetamol as antipyretic if required along with adequate nutrition and hydration. Patients were discharged after two consecutive negative RT-PCR test which was done after a week of symptom free period.

Neonatal samples were taken at birth to ascertain the possibility of intrauterine fetal infection. Out of five, four new born had good Apgar scores. One baby born to mother with rheumatic heart disease was growth restricted and had birth asphyxia with Apgar of 6,7 and required respiratory support for 1 week. All babies were shifted to nursery for isolation and were fed on expressed breast milk. All neonates were COVID -19 negative. All of our patients were admitted in the last trimester and most of them just before delivery. So, it is very difficult to rule out possibility of perinatal transmission.

**Table 1: Clinical and demographic characteristics and outcomes of COVID-19 infected pregnant women.**

Parameters	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
<b>Maternal age (years)</b>	40	20	21	25	30
<b>Gestational age (weeks)</b>	39	39	40 And 3 Days	39	38
<b>Parity</b>	G <sub>7</sub> P <sub>5</sub> L <sub>0</sub>	Primigravida	Primigravida	Primigravida	G <sub>2</sub> P <sub>1</sub> L <sub>1</sub>
<b>Symptoms</b>	Moderate	Mild	Mild	Asymptomatic	Asymptomatic
<b>Fever/cough</b>	Fever, malaise breathlessness, cough	Fever, malaise dry cough	Fever, malaise dry cough	No symptoms	No Symptoms
<b>Comorbidities</b>	RHD (moderate MR, PAH, Mild MS), Pre-gestational hypothyroidism	Moderate anaemia (Hb-9.8 gm)	Gestational hypothyroidism	Nil	Gestational Hypothyroidism
<b>Symptom to delivery interval (days)</b>	1	1	2	1	1
<b>Blood pressure (mm Hg)</b>	120/70	98/60	108/66	100/64	110/80
<b>Heart rate (per minute)</b>	110	98	96	70	68
<b>Respiratory rate (per minute)</b>	20	16	16	14	14

Continued.

Parameters	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
<b>O<sub>2</sub> saturation%</b>	92% (room air) 96% (on oxygen)	100% (room air)	100% (room air)	100% (room air)	100% (room air)
<b>Temperature on admission (Degree fahrenheit)</b>	100	101	100	98	98.4
<b>Labor</b>	Spontaneous	Spontaneous	Spontaneous	Spontaneous	Induced
<b>Mode of delivery</b>	Vaginal	Vaginal	C-section	C-section	C-section
<b>Indication of C-section</b>	–	–	Fetal distress	Cephalopelvic disproportion	Non-progress of labor
<b>ICU stay (days)</b>	7 days	-	-	-	-
<b>Birthweight (kg)</b>	2.3 kg	2.4 kg	2.8 kg	2.9 kg	2.8 kg
<b>Apgar 1 and 5 mins</b>	6, 7	8, 9	8, 9	8, 9	8, 9
<b>Neonatal COVID status</b>	Negative	Negative	Negative	Negative	Negative
<b>Duration of hospital stay (weeks)</b>	4 weeks	2 weeks	2 weeks	2 weeks	2 weeks

(RHD-rheumatic heart disease, MS-mitral stenosis, MR-mitral regurgitation, PAH-pulmonary arterial hypertension).

## DISCUSSION

Clinical presentation of these pregnant patients was similar to other COVID -19 patients. Only one patient had severe illness although this patient was a known case of rheumatic heart disease and severity of disease could be due to pre-existing heart condition. Based on our data, it can be suggested that COVID-19 infection in third trimester of pregnancy is not associated with adverse fetomaternal outcome. Although data is very limited and further analysis is required for a conclusion. Similar results were reported in a study with COVID-19 pneumonia.<sup>9</sup> In our study the mean age was 27.2 year that could be the reason for favourable outcome.

Most of pregnant women with SARS infection were admitted to the intensive care unit, around 33% of them required mechanical ventilation, and the mortality rate was as high as 25%. In the current study none of them patients required mechanical ventilation. Although COVID-19 virus shows 85% sequence similarity with SARS virus but clinical disease is different.<sup>10</sup>

Three patients underwent caesarean section, all due to obstetric indication. As per RCOG guidelines mode of birth should not be influenced by the presence of COVID-19 unless the women's respiratory condition demands urgent delivery. ICMR guidelines also states that mode of birth should be discussed with the women, taking into consideration her preferences and any obstetric indication for intervention. Due to very few case reporting in neonates our centre made a policy to performed caesarean section only for obstetrician indication.

We have investigated the possibility of intrauterine transmission of COVID-19 infection. Neonatal samples were taken at birth to ascertain the possibility of intrauterine fetal infection. Babies were shifted to isolation and were fed on expressed breast milk. Previous studies on SARS have shown no evidence of vertical transmission. Similar results were obtained with COVID-19 infection.<sup>11</sup> All of our patients were admitted in the last trimester and most of them just before delivery. So, it is very difficult to rule out possibility of perinatal transmission, it could be happened if mother get infected in early pregnancy and there is possibility of effect on foetus like other congenital infection this requires a study with larger sample. This study is limited with very small sample size and retrospective design.

## CONCLUSION

COVID-19 is the latest in a series of disease and with limited data in our knowledge, there is need to stay up to date with latest experiences. In this retrospective study pregnant patients infected with COVID-19 infection had a good outcome. But, in this small group of cases and little evidence, the potential for vertical transmission is still uncertain and warrants further study.

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