Clinical Features and Obstetric and Neonatal Outcomes of Pregnant Women with Covid-19: A Prospective, Single Centre Study

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Abstract

Aim: This study aims to describe the clinical features, obstetric and neonatal outcome of pregnancies complicated with COVID-19 infection.

Methods: This is a longitudinal, single center, observational study conducted on all COVID-19 positive pregnant women who were admitted in our institution from July 2020 to June 2021. During the study period, a total of 195 pregnant women with COVID-19 infection confirmed by RT PCR test, were admitted and included in the study. Data were collected about the demographic profile, clinical characteristics, maternal and neonatal outcomes.

Results: The mean age was 26 years (SD = 3.48). Majority patients (75.4%) were asymptomatic and 21.5% had mild symptoms. Only 2(1.02%) women had severe COVID pneumonia. Majority (89.6%) were admitted in 3rd trimester. Cesarean section rate in COVID-19 infected pregnant women was 60%. Most neonates were asymptomatic and only 2 of them tested positive on testing within 48 h of birth.

Conclusion: There is no major effect of COVID-19 infection during pregnancy on maternal and neonatal outcome.

Keywords: COVID-19; Obstetric outcome; Neonatal outcome; Pregnancy.

INTRODUCTION

In December 2019, a number of pneumonia cases with no known origin surfaced in Wuhan, China;

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the cases' clinical manifestations were similar to those of viral pneumonia. A novel coronavirus that was eventually identified as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or COVID-19 was discovered through analysis of nasopharyngeal and oropharyngeal tissues. Since then, the illness spread quickly throughout the world, including India, and the WHO declared it to be a pandemic. There were 1.6 million deaths and 76 million cases worldwide as of December 2020. 9.6 million cases and around 145,000 deaths have been reported in India, and the figure rose daily. Most studies on the outbreak caused by the 2019 novel coronavirus disease (COVID-19) are based on the general population. At the time, information regarding the epidemiology, clinical features, obstetric and neonatal outcomes in pregnant women infected with COVID-19 is scarce

and limited data is available for pregnant women with COVID-19 infection. Hence the need for the study. The study aims to evaluate the clinical characteristics, obstetric and perinatal outcome of pregnant women with COVID-19 infection.

AIMS AND OBJECTIVES

i) To study the epidemiological and clinical characteristics of pregnant patients with COVID-19 infection.

ii) To evaluate maternal and perinatal outcome of COVID-19 infection in pregnant women.

MATERIALS AND METHODS

This is a longitudinal observational study done in the Department of OBG, ESIC Medical college PGIMSR and Model Hospital, a tertiary health care hospital and medical college in Rajajinagar, Bengaluru. Pregnant patients who presented to the Department of OBG between July 2020 and June 2021 and tested positive for COVID-19 (SARS CoV-2 infection confirmed using RT-PCR or Rapid Antigen test) comprised the study population. All eligible pregnant COVID-19 positive patients admitted to the hospital during the study period were included in the study through universal sampling. As the period of study coincided with the peak of the covid pandemic, all pregnant women were tested for COVID-19 irrespective of their symptoms as per hospital protocol.

All pregnant women who were diagnosed with COVID-19 infection by the real time RT-PCR test and who were admitted in the hospital's isolation ward were included in the study. On admission, a routine antenatal history was taken and clinical examination done. Apart from this, a thorough history of COVID-19 exposure was taken and signs and symptoms of COVID-19 were looked into. Routine ANC investigations were done. Other specific investigations done were C-reactive protein, D-dimer, LDH and S. Ferritin. (Inflammatory Markers). Written informed consent was taken from all patients. A predesigned proforma was used to obtain demographic and clinical information like Age, Parity, SE status, Gestational age, obstetric history, presence of co-morbdities like anaemia, hypertension, diabetes and hypothyroidism. Exposure to COVID-19 persons, living or travel to containment areas, presence of covid symptoms like fever, cough, sore throat, shortness of breath, diarrhoea were recorded. Mode of delivery, intra or postpartum complications were noted. Neonate's birth weight, Apgar score at birth was seen. All neonates were tested for COVID-19 by real time PCR. Any neonatal complications were recorded.

Statistical analysis: The data was collected in MS Excel and analysed using SPSS version 20.0. The continuous variables were summarized as mean with standard deviation or median with interquartile range based on the distribution of the data. The categorical variables were summarized as frequencies with proportions. *Ethical considerations:* The study was conducted after getting approval by the institutional ethics committee. Written informed consent was taken from all patients.

RESULTS

During the period of study, 195 pregnant women diagnosed COVID positive delivered in the obstetrical unit of our department.

The age of confirmed COVID-19 cases ranged from 18 to 35 years with the most common age group being 26-29 years (44.6%). The gestational age on admission ranged from 31 weeks to 40 weeks 5 days with the mean gestational age being 38 weeks 3 days. 80 (41%) women were primigravida and 115 (59%) were multipara. 47 (24.1%) women had a previous LSCS. Associated comorbidities in these women included GDM in 24 women (12.3%), PIH in 6 (3.07%), hypothyroidism in 36 (18.4%) and anaemia (Hb- <10gm/dl) in 9(4.6%).

Table 1: Baseline Characteristics

Age Mean (SD)	26.57 (3.4845)
18-20 years	8 (4.1%)
21-25 years	70 (35.9%)
26-29 years	87 (44.6%)
30-39 years	30 (1.5%)
Parity	
Primigravida	80 (41%)
Multigravida	115 (59%)
Gestational Age Mean (SD)	38.39 weeks (1.5368)
<34 weeks	5 (1.9%)
34-36.6 weeks	17 (8.4%)
>37 weeks	173 (89.6%)
Comorbidities	
GDM	24 (12.3%)
PIH/Hypertension	6 (3.07%)
Hypothyroidism	36 (18.4%)
Anaemia	9 (4.6%)
Oligoamnios/IUGR	18 (9.2%)
Previous h/o LSCS	47(24.1%)

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Clinical Presentation

Majority of patients ie; 147 of 195 (75.4%) were asymptomatic who were diagnosed on routine testing as per hospital protocol. 19 presented with cold and cough, 8 with fever, 5 with diarrhea, 10 patients had vague symptoms like headache, fatigue, loss of appetite. Over the course of isolation and treatment in hospital, 6 developed fall in Oxygen saturation with 1 patient requiring ICU admission but did not require ventilator support and all 6 recovered completely.[2] women developed severe pneumonia (case of IDDM with diabetic ketoacidosis) (GDM, anaemia, acute respiratory failure) needed ventilator support and succumbed to death.
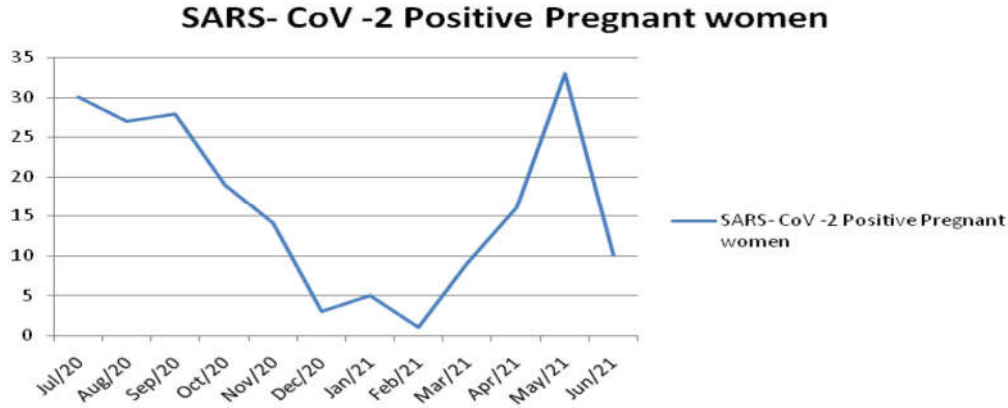

Fig. 1: Month wise number of Covid positive pregnant women

Table 2: Symptoms of COVID-19 (n=154)

Symptoms	Number
Asymptomatic	147 (75.4%)
Mild symptoms	42 (21.5%)
Moderate symptoms	4 (2.05%)
Severe symptoms	2 (1.02%)

Outcome in Covid +ve pregnant women:

Most Covid +ve pregnant women were either asymptomatic or in symptomatically mild category. They were started prophylactically on oseltamivir, ivermectin and multivitamins including zinc and vitamin C. Antibiotic (Azithromycin) were given to counter super added bacterial infections. 6 patients needed oxygen support out of which 2 women were started on LMWH to prevent thromboembolism. 2 of the patients deteriorated to ventilator support. There were 2 maternal deaths during the period of study with a case fatality rate of 1.02%

Obstetrical & Neonatal Outcome: (Table 2)

The mean gestational age at delivery for Covid + ve patients was 38.3 +/- 1.5 weeks. 74 (37.9%) women delivered vaginally, 4(2.05%) had vacuum assisted vaginal delivery and 117 (60%) delivered by caesarean section.

Out of the 195 COVID-19 confirmed deliveries, only 2 (1.2%) of the neonates were found Covid positive on initial testing done 1st day of birth. Both babies tested COVID negative on repeat test after 7 days of the first test and were discharged from NICU.

Table 3: Obstetrical and Neonatal Outcome

Gestational age at delivery mean (SD)	38.39 weeks (1.5368)
<34 weeks	5 (1.9%)
34-36.6 weeks	17 (8.4%)
>37 weeks	173 (89.6%)
Mode of Delivery	
Vaginal	74 (37.9%)
Vacuum assisted	4 (2.05%)
LSCS	117 (60.0%)
Mean Birth Weight (gms) Mean (SD)	2796.116 (416.82)
>2.5 kg	138 (70.78%)
<2.5 kg	57 (29.22%)
Covid Status of Neonates	
Negative	193
Positive	2

DISCUSSION

Human corona virus is one of the most common pathogen that causes respiratory infection.

SARS-COV-2 is an enveloped vision that measure about 50-200 nm in diameter with a single positive sense RNA genome.

In the present study, 75.4% of pregnant Covid + ve patients were asymptomatic and the rest had mild symptoms only. These observations were similar to studies done on COVID-19 confirmed pregnant patients.[1,2] However, other studies have reported up to 88% and 67.4% as symptomatic at the time of presentation.[3,4]

Majority (89.6%) of COVID-19 positive pregnant women in our study presented in the late third trimester. This is similar to a study by Kumari et al.[5] where 75.6% patients presented in the third trimester. Another study reported median age on diagnosis to be 29 weeks and half of them were in third trimester.[3]

In our study, Gestational diabetes mellitus was found to be associated in 9.7% of COVID positive pregnant patients. Other study has also reported increased risk of GDM in pregnancy with SARSCoV2 infection.[6] Evidence of association of hypertensive disorders in pregnant women infected with COVID-19 is reported in some studies.[1] But in our study only 2.6 % of SARSCoV2 infected pregnant patients had hypertension.

Our hospital being a tertiary care referral hospital, number of cesarean sections in COVID positive pregnant women was relatively high (60.39%). Nayak et al.[1] reported a cesarean rate of 50% in COVID-19 infected patients. Ayed et al.[3] reported a cesarean rate of 47.8%. Another study suggested that majority of pregnant women had planned caesarean section to prevent neonatal transmission of the virus.[7]

In our study, only 2 (1.9%) patients had developed severe COVID pneumonia requiring ICU admission and succumbed with a case fatality rate of 1.02%. Various preliminary studies done on COVID positive pregnancies have also suggested low rate of ICU admission and mortality in proportion to the rates among general population.[8,9]

The neonatal outcome in our study was mostly reassuring in consistent with other studies.[5,10] The incidence of preterm births in our study was 8.4%% which is lower in comparison to 27% reported in UKOSS study.[6] Out of 154 deliveries, only 2 neonates tested positive for SARS CoV2 by RTPCR in their initial assessment.

Our study clearly demonstrated that COVID-19 infection in pregnancy did not affect mother and neonate significantly. The strength of our study is its relative large sample size. We acknowledge that the limitation of the study is the lack of a comparison group.

CONCLUSION

There is no major effect of COVID-19 infection in pregnancy on maternal and neonatal outcome.

The majority of expectant mothers infected with COVID-19 either had no symptoms at all or very mild ones, and they were discharged from the hospital without any issues. However, when COVID during pregnancy is complicated by medical conditions like diabetes, serious sickness may result. Larger studies are required to give a clear picture about vertical transmission and other maternal effects of COVID-19 infection. It is critical to monitor the disease's spread and be able to apply outbreak control and management measures as soon as the virus enters a community.

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