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Maternal and perinatal morbidity and mortality in COVID-19 positive obstetrics patients in A tertiary care centre

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Abstract---Following the Covid-19 Pandemic, certain components of the public health system, such as women's and children's health services, are more likely to experience decreased efficiency. A single-stranded RNA virus is the coronavirus. It can cause respiratory conditions ranging from minor nasal congestion to life-threatening respiratory infections. From June 2020 to September 2021, 70 mothers participated in a retrospective study at the Department of Obstetrics and Gynecology to assess the impact of COVID-19 on maternal and perinatal outcomes. In our study Only 20% of the patients were older than 30 years old, and 80% of the patients were under 30 years old. Out of 70 patients, 10 had no symptoms, 57.1% had a fever, 52.8% had a cough, 24.3% had trouble breathing, 7.14 percent had a headache, and 14.2 percent had anosmia. 36 patients

(51.42%) had pneumonia with pleural effusion, 6 patients (8.57%) had ground glass opacity with consolidation, and 28 patients (40%) had minimal ground glass opacity. The maternal mortality rate was 12.8%, and 29 patients (41.42%) of the mothers required ventilator support or high flow oxygen (>12 l). 18 infants weighed more than 3 kg, 24 were between 2.6 and 3 kg, and 18 were under 2.5 kg. Our study leads us to the conclusion that, as a tertiary care facility, our facility treated all high-risk patients. The majority of patients had radiologic pneumonitis changes, necessitating intensive care, and they recovered well after giving birth. The neonatal result was very positive.

Keywords---coronavirus, COVID-19, high-risk patients, mortality, neonatal outcome, pandemic.

Introduction

The current coronavirus disease 2019 (COVID-19) pandemic, which is due to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has proven to be a global threat. First identified in Wuhan, China, in December 2019, COVID-19 has become a pandemic at a rapid pace with high chances of cases and mortality.^{1, 2} The World Health Organization has declared it a public health crisis. A global estimate of 10,094,801 human infections, 146,414 deaths, 9,656, 883 recovered cases reported worldwide as of December 22, 2020. The International Committee on Taxonomy of Viruses has proposed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as the name of the virus that causes COVID-19.³ Coronavirus belongs to the family Corona viridae. Coronaviruses have enveloped virions and contain a single strand of positive sense RNA (ribonucleic acid). It has a crown-like, or coronal, appearance due to the presence of Club-shaped glycoprotein spikes in the envelope. COVID-19 is a highly contagious disease. Respiratory droplets and direct contact is the main route of transmission. It infects both the upper and lower respiratory tract and can cause pneumonia. The diseases range from asymptomatic to symptoms like fever, cough, muscle aches, vomiting, diarrhea, nasal congestion, and loss of taste and smell. They can progress to shortness of breath and complications from pneumonia. It also infects pregnant women, but most patients experience only mild or moderate symptoms than other healthy adults.⁴ Pregnant women who are elderly, overweight, and have pre-existing medical conditions such as hypertension and diabetes, and heart disease (congenital or acquired) are at increased risk of developing severe disease. Current evidence suggests that the risk of vertical transmission (transmission from a mother to fetus antenatally or Intra Partum) is very low or absent.⁵ According to RCOG, there is no evidence that pregnant women are more likely to get seriously ill from COVID-19 but are at greater risk of developing severe morbidity and mortality. Hence, the present study attempts to evaluate the effect of COVID-19 on maternal and perinatal outcomes.

Material and Methods

This retrospective study was conducted in the Department of Obstetrics and Gynaecology, Government Medical College, Ratlam, from June 2020 to September 2021. Seventy mothers who tested positive for RT-PCR were included in this study. The eligibility criteria included only laboratory-confirmed COVID-19-positive pregnant women on admission. Pregnant women with negative throat swabs for COVID-19 were excluded. The patients were evaluated for medical disorders, clinical symptoms of COVID-19, maternal and fetal complications, and pregnancy outcomes.

Statistical analysis

Statistical analysis was done with SPSS, version 25.0. Frequency distribution was performed to prepare the tables. Categorical variables were expressed as a number of cases and percentages (%).

Results

Table 1 shows the General statistics of pregnant Covid-19 positive patients. Most of the patients were less than 30 years (80%) of age, and only 20% were more than 30 years old. Among 70 patients, 10 patients were asymptomatic, 57.1% had a fever, 52.8% had a cough, 24.3% had difficulty in breathing, 7.14% had a headache, and 12.85% had anosmia (Table 2).

Table 1
General statistics of pregnant Covid-19 positive patients

General Characteristics	Frequency
Antenatal cases	60
Postnatal causes	10
Asymptomatic cases	10
Patients with mild symptom	21
Patient with major symptoms	39
Mortality	9
Patients delivered	48
LSCS	10
Vaginal delivery	38
Abortions	12

LSCS: lower (uterine) segment Caesarean section

Table 2
Showing different characteristics of the study population

Characteristics		Number	Percentage
Age; years	<20	2	2.8
	20-25	36	51.4
	26-30	18	25.7

	31-35	9	12.85
	>35	4	5.7
Gestational age; weeks	<12	4	5.7
	12-24	18	25.7
	24-40	38	54.28
	Postnatal	10	14.28
Gravida	G1	30	50.0
	G2	14	23.3
	G3	11	18.3
	>G3	5	8.3
Parity	P1	35	58.3
	P2	16	26.7
	P3	12	20.0
	>P3	7	11.7
Symptoms	Fever	40	57.1
	Cough	37	52.8
	Difficulty breathing	17	24.3
	Nasal congestion	28	40.0
	Headache	5	7.14
	Anosmia	9	14.28

Twenty-eight (40%) patients had minimal ground glass opacity, 6 patients (8.57%) had ground glass opacity with consolidation, and 36 patients (51.42%) had pneumonia with pleural effusion (Table 3). Twenty-nine (41.42 %) of the mothers needed ventilator support or high flow oxygen (>12 l), and there was 12.8% maternal death. About 18 babies weighed more than 3 kg, 24 babies weighed 2.6 to 3 kg, and 18 babies weighed less than 2.5 kg.

Table 3
Radiological findings

Radiological findings	Frequency	Percentage (%)
Minimal GGO	28	40
GGO with consolidation	6	8.57
Pneumonia with pleural effusion	36	51.42

The majority of the women had normal vaginal delivery [42 (40%) compared to 18 (30%) women who had Lower segment cesarean section. Out of 70 women, 29 (41.4%) needed ventilator support. Majority of the babies who too birth had birth weight between 2.5 to 3kg [24 (40%) followed by 18 (30%) each who had birth weight >3g and <2.5 g respectively.

Discussion

Coronaviruses cause illnesses ranging in severity from the common cold to severe respiratory illness and death. Pregnant women are considered a high-risk group because of concerns about the effect of covid-19 on them during and after pregnancy and on their neonates.⁶ Pregnant women with acute infection were

reported to display a more activated phenotype.⁷ This study aimed to find the symptomatology, clinical courses, and outcomes of pregnant women with COVID-19 disease and to assess the vertical transmission potential of COVID-19 in pregnancy.

In the present study, 51.4% of the patients aged between 20 to 25 years, 30 of them were primigravidae while 40 were multigravidae. Maheshwari et al. reported that 60% of patients were multigravida, and 39.3% were primi gravida.⁸ Our results were comparable to the study done in China in June 2020 with a median age of 31 years; 52% of their patients were nulliparous.

The main complaints reported by patients related to covid-19 disease in the present study were cough and fever. The most common symptoms reported by the study by Chen et al. in 2020 were fever (75%) and cough (73%).⁹

Our study showed that 40% of patients had minimal ground glass opacity, 6 (8.57%) had ground glass opacity with consolidation, and 36 (51.42%) had pneumonia with pleural effusion. The study by Prasannalakshmi S et al. among 406 patients reported 72 (17.7%) patients to have minimal ground glass opacity, 21 patients (5.17%) had ground glass opacity with consolidation, 15 patients (3.69%) had pneumonia with pleural effusion.¹⁰

Cesarean section was done in 30% of patients in the present study for one reason, while 24% normally delivered through vaginal delivery. Ferrazzi et al. reported the cesarean rate for women with confirmed COVID-19 infection was up to 42.9%.¹¹ The rate has been reported to be as high as 91-92% in other studies.^{12,13}

The present study reveals that 30% of our patients delivered with a low birth weight below 2.5 kg and 70 % with adequate birth weight. A study by Prasannalakshmi S and colleagues observed that among 207 babies (1 twin) delivered, about 91 babies weighed more than 3 kg, 77 babies weighed 2.6 to 3 kg, and 31 babies weighed 2.1 to 2.5, 8 babies weighed less than 2 kg. Thirty-eight babies had low birth weight.¹⁰

Conclusion

Being a tertiary care center, majority of the patients received at our center are of high-risk. Most patients showed radiologic pneumonitis changes, requiring intensive care, and had good recovery postpartum. The neonatal outcome was highly favorable.

Acknowledgement

Nil

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