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Original Research Article

Clinical profile, maternal and fetal outcome in pregnant women with COVID-19 infection: a retrospective observational study in a tertiary care hospital of Himachal Pradesh

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ABSTRACT

Background: The aim of this study was to evaluate the clinical characteristics and outcomes of pregnant women confirmed with COVID-19 infections and their neonates to provide more reference to contribute in managing this noval viral disease.
Methods: We conducted a retrospective study over a period of six months; 20 March, 2020 to 8 October, 2020 at SLBSGMC Nerchowk (Himachal Pradesh). Total number of pregnant women who delivered in our hospital during the defined study period was recorded and analysed.
Results: The total number of women were delivered over the study period was 13, out of which caesarean sections (CS) were 7 and NVDs were 6 in number. All of them were diagnosed mild COVID-19, and none one of the patients developed severe COVID-19 or died. Their all newborns were recorded healthy except one was COVID positive and one neonate had birth asphyxia.
Conclusions: Apparently no difference was observed in relation to onset of disease, symptoms, cure rates or severity in pregnant women when compared to non-pregnant women and healthy men of similar age groups. Pregnancy does not seem to deteriorate the course and prognosis of the disease. Maternal and fetal outcomes are apparently favourable in these patients. Lastly COVID-19 is not an indication of cesarean section. More multicentre studies are the need of the hour to formulate the authentic management guidelines for this novel disease.

Keywords: Covid 19, Infection, Neonatal outcome, Pandemic, Pregnancy

INTRODUCTION

In December 2019, a novel corona virus called severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) has transmitted through human-to-human contact across China.[1] The World Health Organization initially classified the outbreak of the corona virus disease 2019 (COVID-19) as a Public Health Emergency of International Concern (PHEIC) and on March 11, 2020, they upgraded it to a pandemic.[2] Himachal Pradesh is a small state with a population of 68lakhs, till date Himachal Pradesh had 16977 confirmed cases of Covid 19 infection of which 13876 cases have recovered and 245 died. Our medical college hospital is a designated covid hospital (DCH) of Himachal Pradesh. Our institute is a referral centre for 5 districts of Himachal Pradesh those are Mandi, Kullu, Hamirpur, Kullu and Lahaul-Spiti.

We received 335 Covid positive patients here from peripheral institutes of these 5 districts and reported 35 deaths till date, amongst these 13 Covid positive pregnant women delivered here from 20 March 2020 to 8 October 2020. The number of pregnant women with COVID-19 is increasing and at present information regarding the epidemiology and clinical features of pneumonia in

pregnancy caused by COVID-19 is scarce.[3] The sequence similarity between SARS and SARS-CoV-2 is around 79%.[4] The mortality rate of SARS in pregnant women was 25%.[5] Some studies have reported that the mortality rate of pregnant patients with COVID-19 is about 1.4%.[6] There is growing evidence that COVID-19 infections in pregnant women are not more severe as compared to age-matched women with mild disease, and childbirth did not aggravate the course of the illness or chest computed tomography (CT) findings of COVID-19.[7-14]

This study was done because little is known about the maternal and neonatal outcome of pregnant women as well to find weather there is vertical or intrapartum transmission in these patients. Secondly to compare as pregnant women in previous studies across world and our country suggest that COVID-19 infections in pregnant women are not more severe than in women of similar age.

METHODS

The present study was carried out retrospectively over a period of six months- from 20 March, 2020 to 8 October, 2020 in the Department of Obstetrics and Gynaecology, SLBSGMC Nerchowk; a tertiary care institute which cares for over 3500 institutional deliveries per year announced as DCH after declaration of Covid 19 pandemic. The objective of the study was to analyse the clinical profile, maternal and fetal outcome in pregnant women with Covid 19 infection. As this was a retrospective study so after gaining permission from institutional ethical committee, we retrieved the record from department of Obstetrics and Gynaecology from labour room, department of Anaesthesia, emergency and elective caesarean section record from operation theatre from March, 2020 to October, 2020. During above said study period a total of 13 patients delivered including 7 caesarean section for various indications in this institute. Data was recorded, master chart framed and a statistical analysis of various parameters- demographic profile including age, parity, period of gestation, severity of disease, treatment required, indications for caesarean section in primigravida/multigravida, fetal outcome was done.

RESULTS

The total numbers of women delivered over the study period were 13, out of which CS deliveries were 7.

Table 1: Clinical profile of pregnant women with COVID 19 infection.

	DOA	Age (years)	Parity	POG	Contact history	Symptoms	Mode of delivery
Patient 1	15-08-20	20	G2P1+0	38+2	None	Asymptomatic	LSCS
Patient 2	03-09-20	34	G2P1+0	39	None	Asymptomatic	FTVD
Patient 3	03-09-20	37	G4P3+0	33+3	None	Asymptomatic	PTVD
Patient 4	07-09-20	20	PGR	39+6	Yes	Asymptomatic	FTVD
Patient 5	10-09-20	25	G3P1+1	40	Yes	Asymptomatic	LSCS
Patient 6	11-09-20	27	PGR	38+3	None	Asymptomatic	LSCS
Patient 7	18-09-20	33	G3P2+0	38+1	None	Asymptomatic	LSCS
Patient 8	19-09-20	30	PGR	40+1	None	Asymptomatic	FTVD
Patient 9	21-09-20	29	PGR	39+3	None	Asymptomatic	FTVD
Patient 10	24-09-20	33	G5P1+3	39+3	None	Asymptomatic	LSCS
Patient 11	27-09-20	35	G4P3+0	38+3	None	Asymptomatic	FTVD
Patient 12	03-10-20	26	PGR	40	None	Asymptomatic	LSCS
Patient 13	04-10-20	27	G5P3+1	40+2	None	Asymptomatic	FTVD

Amongst 13 patients who delivered in our hospital, first covid 19 positive pregnant patient reported to us in mid August, 2020. The age group of patient was between 20-37yrs. A total 12 of them were above 37 weeks of gestation, 1 belonged to 33 weeks of gestation. All patients were asymptomatic and detected on testing done in suspicion with travel history outside the state,2patients giving history of contact and 3 of them giving history of covid testing done before planning their induction came out positive. A total 7 were multigravida and 5 were primigravida. A total 8 were multigravida and 5 were primigravida (Table1). Amongst total 5 patients had normal vaginal delivery with episiotomy, 1 had preterm delivery at 33+3 wks of gestation and 1 patient came fully dilated with breech presentation had assisted breech delivery. Induction of labor with prostaglandins done in 3 patients rest of them were in spotntaneous labor. Total 6 patients undergone emergency caesarean section due to various indications written in (Table 2), 3 of them were having history of previous caesarean section, 2 were severe IUGR, 2 were MSL with acute fetal distress, 2 were positive for Toxoplasmosis IgG antibody. 1 had intrahepatic cholestatic jaundice (ICP). Whether the distress was secondary to the effect of the virus remains to be corroborated with tests done on larger samples are required. Postoperative period was uneventful in majority except 1patient whose SpO2 fall to 89% on 2nd postoperative day, she was given oxygen inhalation, remdesivir and dexamethasone along with antibiotics and enoxaparin. Patient improved within 24 hrs and discharged after fulfilling criteria as per discharge policy issued by state government.

Table 2: Mode and time of delivery.

	Parity	POG	Vaginal birth	Indication of emergency CS	Any other obstetrical complications	Investigations
Patient 1	G2P1+0	38+2		Prev.LSCS and ICP	ICP and Prev. scar	LFTs ↑↑
Patient 2	G2P1+0	39	FTVD			
Patient 3	G4P3+0	33+3	PTVD			
Patient 4	PGR	39+6	FTVD			
Patient 5	G3P1+1	40		MSL and AFD		
Patient 6	PGR	38+3		Severe IUGR	ToxoIgG positive	
Patient 7	G3P2+0	38+1		Prev. LSCS and IUGR	Hypothyroidism and Prev. scar	
Patient 8	PGR	40+1	FTVD		Hypothyroidism	
Patient 9	PGR	39+3	Assisted breech delivery		Breech presentation	
Patient 10	G5P1+3	39+3		MSL and Prev LSCS	Prev scar	
Patient 11	G4P3+0	38+3	FTVD			LFTs ↑↑
Patient 12	PGR	40		AFD and Fetal tachycardia		
Patient 13	G5P3+1	40+2	FTVD		ToxoIgG positive	LFTs ↑↑

Table 3: Neonatal outcome.

	POG	Birth weight (gm)	APGAR (1minand 5min)	Amniotic fluid	Neonatal Asphyxia	Neonatal Death	Admission to NICU	Nucleic acid test of SARS-CoV-2
Patient 1	38+2	3400	8and9	Clear	No	None	None	Negative
Patient 2	39	2500	8and9	Clear	No	None	None	Negative
Patient 3	33+3	1900	7and9	Clear	No	None	Yes	Negative
Patient 4	39+6	2560	7and9	Clear	No	None	None	Negative
Patient 5	40	2700	8and9	Muconium	No	None	None	Negative
Patient 6	38+3	2300	7and9	Clear	Yes	None	Yes	Negative
Patient 7	38+1	2400	7and9	Clear	No	None	Yes	Negative
Patient 8	40+1	2760	8and9	Clear	No	None	None	Negative
Patient 9	39+3	2200	8and9	Clear	No	None	None	Positive
Patient 10	39+3	2800	7and9	Muconium	No	None	None	Negative
Patient 11	38+3	2700	8and9	Clear	No	None	None	Negative
Patient 12	40	3850	8and9	Clear	No	None	None	Negative
Patient 13	40+2	2800	8and9	Clear	No	None	None	Negative

RT-PCR on nasopharyngeal swab was used for the diagnosis in all patients. All patients were detected to be positive by the throat swab test. Amongst the collected data, the laboratory parameters were normal except the 3 patients who have raised SGOT and SGPT. CBC, TLC and DLC were normal at the time of admission and discharge of the patients beside their routine antenatal investigations (Table 2).

Birthweight amongst total 13 neonates, 1 was below 2000 gms, 3 were between 2000-2500 gms, 7 were having birthweight between 2500-3000 gms and rest 2 were having birthweight more than 3500 gms. All were having good apgar score. 1neonate delivered by emergency caesarean section due to severe IUGR had the birth asphyxia and admitted in NICU. Amongst all only 1 neonate was Covid 19 positive after 24 hrs of assisted breech delivery (Table 3).

DISCUSSION

We have observed thirteen cases of COVID-19 in late pregnancy with good outcomes for both mother and infant. Being a descriptive study on the clinical characteristics and obstetric and neonatal outcomes of pregnant women infected with COVID-19, only few cases of infected pregnant women have been reported during above mentioned period in our institute. Human corona viruses are amongst the most common pathogens that cause respiratory infection. SARS-CoV-2 has enveloped virions that measure about 50-200 nm in diameter with a single positive-sense RNA genome.[15]

COVID-19 is transmitted through respiratory droplets, physical contact, and aerosols, and also by human-to-human transmission.[16,17]

According to studies in china the number of male patients was found to be 2.4 times that of female patients. While males and females had similar susceptibility but males were at higher risk of dying. This could be due to lack of oestrogen which helps protect women against many chronic diseases.[18]

During pregnancy a women experience immunological and physiological changes, which make them potentially more susceptible to viral respiratory infections, including respiratory syncytial virus, influenza virus, and SARS-CoV.[19] But the course of the disease has been found to be milder in pregnant women in most case series from across the globe.[20]

It can be detected on oropharyngeal or nasopharyngeal swab by real time polymerase chain reaction (rt-PCR).[21] CT may also be helpful in symptomatic patients but is not routinely recommended.[22,23]

Because COVID-19 is novel viral disease, the definitive treatment for affected pregnant women has not been established till date. In our institute, most of patients were treated with hydroxychloroquine, remdesivir, corticosteroids, enoxaparin, antibiotics, vitamin, zinc supplements, antipyretics, intravenous fluid and oxygen therapy under ICU setting. There are few studies on their safety and efficacy in COVID-19 treatments for pregnant women have been published.

For full-term pregnant women, after consultation with a multidisciplinary team, delivering as soon as possible might be a better choice for the sake of safety considerations. Timely use of antibiotics to prevent secondary bacterial infections and strengthen immune support treatment can reduce complications and mortality.[24] COVID-19 pneumonia in pregnancy is a complicated clinical scenario so a multidisciplinary team of medical experts is needed for comprehensive management of these patients.[24]

In our study, among 13 women with confirmed or clinical diagnosed COVID-19 infection, 1 neonates were diagnosed with a COVID-19 infection when tested after 24 hours which suggests either vertical or intrapartum transmission.

Chen et al observed the clinical characteristics of COVID-19 infection in 9 mother–neonate pairs. Amniotic fluid, cord blood, neonatal throat swab, and breast milk samples were tested from 6 patients for SARS-CoV-2, and all were negative. In these case series or case reports, the majority COVID-19-infected pregnant women had mild symptoms and were delivered by CS.[7] Another study found that one neonate was infected 36 hours after a CS delivery after negative cord blood, amniotic fluid, and placenta SARS-CoV-2 RNA results.[25]

CONCLUSION

In conclusion, there is similarity in the clinical picture and management of pregnant women with COVID-19 infection to the non-pregnant adults with COVID-19 infection. We have presented thirteen cases of COVID-19 in late pregnancy with good maternal, fetal and neonatal outcomes, though small sample size is big limitation of our observational study. Working protocols to tackle such pregnancies efficiently, potential routes for mother to child transmission and long term outcomes still deficient in the absence of large scale data. So more multicentric studies with large sample size are required in future for better understanding of disease and till then these pregnancies should be managed with multidisciplinary team of medical experts in setting of HDU/ICU.

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