

COVID-19 in Pregnancy: Experience at a Dedicated Tertiary Care COVID Facility in Western Uttar Pradesh

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Abstract: ***Introduction:** COVID-19 in pregnancy has put all perinatal services at a slog pace due to restricted movement and fear associated with the unknown challenges that the entire world is facing. At tertiary care centre, where majority of the cases are referred from adjoining areas, the incidence of complications encountered were more. The present study discusses the impact of COVID-19 in pregnant females and subsequent perinatal outcome. **Aims:** To study the perinatal outcome in COVID-19 diagnosed pregnancy. **Type of study:** Observational analytical study. **Methodology:** All the pregnant females with COVID-19 diagnosed pregnancy were studied for their demographic profile, symptomatology, laboratory results, obstetric outcome and neonatal performance between 18th June 2020 to 30th September 2020. **Results:** A total of 114 obstetric patients were admitted at this particular Level two facility centre. Out of this 21 were symptomatic, 22 delivered by cesarean, two cases of ruptured tubal ectopic pregnancy were seen, two cases of ruptured uterus were there, 9 cases were received in obstructed labour, 4 cases of incomplete abortion and three still births were reported at our centre. None of the neonate was tested positive for COVID-19. Oligohydramnios was seen in 25.4% of cases and thrombocytopenia was a significant finding in 33.3% of the patients. **Conclusion:** COVID-19 has affected obstetric population with varied outcomes all throughout pregnancy. Even in asymptomatic patients complications like Oligohydramnios and thrombocytopenia was seen. Obstetric services were poorly catered at periphery as many patients were received in emergency as cases of obstructed labor and ruptured uterus. COVID-19 has negatively affected each dimension of service care provisions and health and outcome of obstetric population.*

Keywords: COVID-19, Pregnancy, oligohydramnios, thrombocytopenia

1. Introduction

Corona virus in pregnancy has limited data since its first emergence in December 2019. The researchers all over the world have to pool the data so that the best practices can be established for easy reference and guidance while managing such cases. The experiences published from across the globe have claimed different outcomes and variable presentations. Regional data study is important to provide insights for making treatment protocols and understand its course in the pregnancy. Such an attempt is done in the present observational study where obstetric services were provided at level two dedicated COVID centre located in the western Uttar Pradesh.

Corona virus is highly pathogenic and causes varied symptomatology, which ranges from mild fever and sore throat to full blown respiratory failure. In the data presented by Sonja A Rasmussen (1), it was observed that clinical findings in pregnant females were similar to non pregnant individuals. Higher risk of preterm delivery, fetal distress, need for mechanical ventilation have been reported by different scholars. (1, 2)

In addition to the disease itself, obstetric outcome also depends on the level of services and obstetric care available in an area. The poor outcome is compounded by the delays in referrals and transfers. Our centre was catering to referred patients from adjoining Government and private centres. COVID-19 in pregnancy has put all perinatal services at a slog pace due to restricted movement and fear associated with the unknown challenges that the entire world is facing.

At tertiary care centre, where majority of the cases are referred from adjoining areas, the incidence of complications encountered were more. The present study discusses the impact of COVID-19 in pregnant females and subsequent perinatal outcome.

2. Methodology

Type of study: Longitudinal observational analytical study in 114 diagnosed COVID-19 obstetric patients. All the admitted patients between June 2020 to September 2020 were studied for their demographic parameters, obstetric profile, symptoms, gestational age at presentation, laboratory reports, gestational age at delivery, obstetric interventions and neonatal outcome. Frequency of complications like prematurity, postdatism, prolonged labour, post partum haemorrhage, associated medical or surgical disorders like HDP, DM, anemia or other hematological disorders were studied. The observations were compiled and interpretation was done in percentage method.

3. Results

A total of 114 obstetric patients were admitted to our facility. Out of these 16 patients were postpartum and rest were antenatal. Mean age of the patients was 26.8 years and majority of the pregnant patients were of the parity 2.2. Out of total obstetric patients 18.3 % were symptomatic and grades of severity is presented in (Table no. 1). Majority of

the females were diagnosed at an average gestational age of 38.2 weeks

According to the complains at presentation, 14% of the patients reported decreased fetal movement perception, 7.8% leaking per vaginum, 19.2% labour pain, 6 patients were planned for elective cesarean delivery, 2.6 % came in shock and 4.3% came with bleeding per vaginum. **(Figure 1)**

When laboratory findings and USG were studied, 51 patients had anaemia (44.7%), 33.3% had thrombocytopenia, 25.4% had oligohydramnios, Leucocytosis was observed in 25.4% patients. **(Table no.2)**

In the patients who had mild symptoms on presentation, thrombocytopenia was a consistent finding, observed in 33.3% of the patients. Only one patient developed moderate to severe symptoms after admission. In the patients having moderate to severe symptoms, D-Dimer was elevated in 3.5% cases, leucocytosis was seen in 29 patients (25.4%) and 74% of these patients required Oxygen support at >12 Litre per hour. **(Table no.2)**

When we identified the time from diagnosis from COVID positive lab status to contact to level two services, the average time to reach was 4.5 hours. In some cases delay was as long as 11 hours. Timely diagnosis and intervention is the cornerstone for crisp management in emergency obstetric services. **(Table no.2)**

Neonatal transmission was not seen in any of the cases, tested by oropharyngeal swabs done immediately after birth. Rate of breast feeding saw a decline as only 67% of the delivered patients were breastfeeding. **(Table no.2)**

There were two still births in ruptured uterus cases and one still birth in obstructed labor case, referred late from the private set up. **(Figure 2)**

4. Discussion

Soon after the allocation of the levels of care by the government, tertiary care centers were converted to dedicated COVID care facilities, so that state of the art treatment can be provided to the patients suffering from this newly diagnosed virus. The diagnostic and treatment algorithms are being continuously revised under the light of evolving data. The place of current study is located in western part of Uttar Pradesh and we studied the impact of COVID-19 on obstetrical population admitted at our centre.

Many papers published since January 2020, have reported different outcomes and different rates of complications. Majority of the reports were observational and studied variable outcome parameters.

We had a total of 114 obstetric patients admitted from 18th June 2020 to 30th September 2020. Mean age of the patients was 26.8 years and majority of them belonged to second order of parity. According to the central registry data compiled by CDC, majority of the cases reported from all

over the world are in the age bracket of 25-29 years and our data is also consistent with this finding. **(2) (Table no.1)**

We analysed reporting complaints at the time of admission and found that majority (49.1%) of the patients had no complaints at the time of being admitted. Around 19.2 % of the patients presented with labor pain and 14% with decreased perception of fetal movements. **(Figure 1)**

Maximum patients were in the gestational age group of 37 to 42 weeks. A higher incidence of postdatism in 12.1% was seen in the present analysis. In 7% of the patients, babies were born prematurely. It has been reported by WHO report published on 1ST September 2020 also. **(3)** Only 18.3 % of the cases were symptomatic on admission, out of these, 4.3 % had moderate to severe symptoms. In the report published by WHO, it is discussed that in pregnancy with COV SARS, they may experience lesser symptoms like fever or muscle pain but in cases where severe disease is present, they are more likely to get ICU admissions when compared to non pregnant counterparts. **(Figure.2)**

When mode of birth was analysed, 56.8% (29) of the cases delivered vaginally and 43.1% were taken up for cesarean deliveries. It was seen that laparotomy for ruptured uterus was done in two cases and on two was done for ruptured Tubal Ectopic pregnancy. All four cases presented in Obstetric casualty in shock. In one retrospective study from 12 hospitals in Italy by Ferrazzi et al, it was observed that 57.1% patients delivered vaginally and cesarean delivery was performed in 42.9% of the patients. **(4)**

Our observational study also corroborates the same rates with respect to the mode of delivery.

The mean time taken from the primary test report to final arrival at our centre was 4.5 hours. But a delay of >8 hours was seen in 9 cases and all of these cases were received in casualty needing emergency interventions.

Table 1: Demographic Profile

Age in years	N	Percentage	Mean
18-25	24		
26-33	47		
34-40	43		
			26.8
Parity			
1	39		
2	52		
>= 3	23		
			2.2
Gestational age at admission			
6- 27/6	19		
28-36/6	32		
37-42	47		
Postpartum	16		
			38.2
COVID symptoms			
Asymptomatic	93		
Mild	16		
Moderate -severe	5		
Mode of delivery			
Vaginal	29		56.8
Abdominal	22		43.1

Laparotomy	4		
Assisted vaginal	0		
Time from referral to reach hospital			
<4 hours	58		
5-8 hours	23		
>8 hours	33		4.5

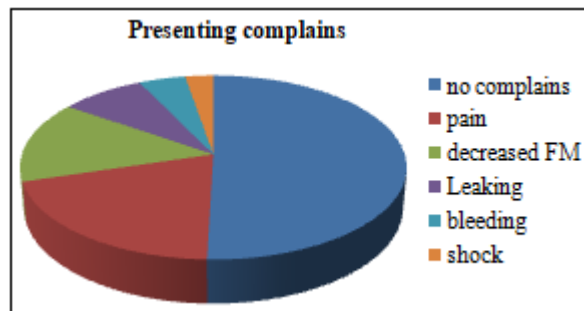


Figure 1: Complaints at Presentation

When an analysis on the frequency of maternal complications was done, it was seen that, apart from anemia seen in 44.7 % (51) of cases, thrombocytopenia was seen in 33.3% (38) cases. Out of these, 18.4 % (7) had platelet counts < 20,000, 31.5 % (12) had platelet counts < 80,000 and rest had < 1 lakh/cmm. There is no available consistent data to confirm our finding in the existing literature. We found leucocytosis in 25.4% cases. Positive D Dimer assay was found in four out of 9 ICU admitted patients in our analysis. (Table no. 2)

Elevated d Dimer level, increased neutrophil counts, elevated CRP level and Decreased lymphocyte count is quadrupled is associated with poor obstetric outcome according to the reports published in the study by Li Shi, BM, Ying Wang et al. however, we did not observe any consistent pattern in these four markers in the present analysis. (5)

In the fetal complications studied, it was observed that Oligohydramnios, AFI<8 was seen in 29 (25.4%) cases. After review of current literature, no corroborating data is available.

Three stillbirths observed at our place were not related to COVID-19 infection per se, as two were referred cases of rupture of pregnant uterus both with previous two cesarean scars and one case had IUD with obstructed labor, referred from a private set up.

Postpartum haemorrhage was seen in 13.4 % (7) cases, and other complications like prolonged labor, and sepsis were seen in a small proportion of patients. (Figure 2)

Owing to the novelty of Corona virus, it is difficult to emphasize whether the above mentioned complications occurred in increased frequency in pregnant females as compared to non pregnant females.

Table 2: Laboratory Parameters

Investigation	Number (n)	Percentage %
Maternal		
Anaemia	51	44.7
Thrombocytopenia	38	33.3
Leucocytosis	29	25.4
Deranged liver function	6	5.2

Deranged kidney function	2	1.7
Positive D Dimer assay	4	3.5
Chest radiograph changes	6	5.2
Fetal/Neonatal		
Oligohydramnios	29	25.4
FGR	3	2.6
Stillbirths	3	2.6
NICU admission	4	3.5
Positive Oropharyngeal swab for COVID	0	0
Number of breastfeeding patients	76	67

Complications observed

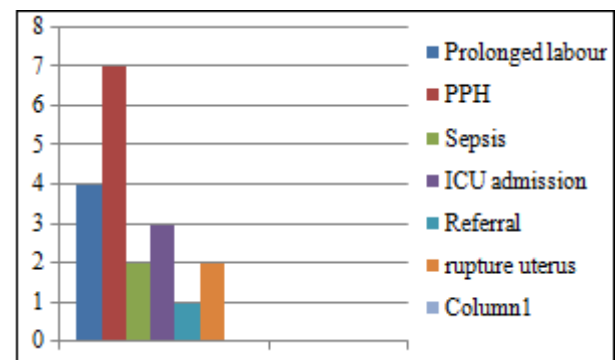


Figure 2: Rates of Complications observed

5. Conclusion

COVID-19 has set unprecedented challenges in all the dimensions of patient care. The challenges were faced both ways, as clinicians the management of COVID was a continuously evolving problem and on the other hand, patients were also finding it difficult to comprehend the seriousness of the disease. At our centre, which was dedicated to catering COVID affected patients, saw a variety of complications. Such complications were already reported from all over the world. We saw a steep increase in the incidence of anemia, thrombocytopenia, oligohydramnios.

All except one patient were discharged in healthy condition from our centre. It realigns the dictum of good care for better outcome of the patients.

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Legend/Key

Table 1- Demographic profile

Table 2- Laboratory parameters

Figure 1- Complaints at presentation

Figure 2- Complications observed