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Study of the Maternal and Perinatal Outcome in COVID-19 Positive Pregnant Women: Experience at a Tertiary Care Centre during First Wave

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Abstract: ***Introduction: Pregnant women may be more susceptible to COVID-19 due to their increased vulnerability to respiratory infection like severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). Most Covid-19 positive pregnant women (more than 80%) are asymptomatic. The present study was conducted to assess maternal and perinatal outcome in women who suffered COVID-19 [SARS Cov-2]. Materials and method: All antenatal and postnatal admitted pregnant women who tested covid positive were included in the study. Out of 250 covid positive pregnant women 50 presented in antenatal period and were discharged after successful treatment of COVID-19 and delivered elsewhere; In remaining 200 cases 13 had abortion, 83 delivered by caesarean section and 104 had vaginal delivery. Their Maternal and Perinatal outcome were studied. Data collected was analysed using SPSS statistical version 20.0. Results: The mean age of study subjects was 24.13±6.11yrs. Majority belonged to multigravida group (52.8%) whereas 47.2% cases were primigravida.80.0% females tested positive for infection in postpartum period and the most common symptom was fever.52% cases delivered vaginally, 41.5% by cesarean section and 6.5% had abortion (gestational age ≤ 20 weeks).42% had medical complications, 60% had obstetric complications and 35.82% had no complications. Out of 187 deliveries there were 178 (95.18%) live births and 9 (4.81%) still births/ IUFD.26.2% had birth weight ≥ 3kg and preterm delivery rate was 17.11%. Conclusion: In this study it was found that, maternal and perinatal outcome was not affected by covid19 infection during first wave of COVID19 pandemic.***

Keywords: COVID-19; Perinatal outcome; Maternal outcome; Pregnancy, coronavirus

1. Introduction

Coronavirus disease-2019 (COVID-19) is caused by SARS Cov-2 (severe acute respiratory syndrome) a newly emergent coronavirus, that was first recognized in Wuhan, China in December 2019. In India, the first case of COVID-19 was reported on 30 January 2020 in Kerala. Transmission of Sars cov-2 can occur through direct, indirect or close contact with infected people through secretions, which are expelled when infected person coughs, sneezes or talks. (1)

Reverse transcriptase polymerase chain reaction (RT-PCR) based diagnostic tests (which detect viral nucleic acids) are considered the gold standard for detecting current SARS cov-2 infection.

Pregnant women being special and vulnerable group are at risk of acquiring the disease with increased risk of complications to both mother and fetus with the risk of morbidity and mortality. (3) Pregnant women with Covid-19 are not at higher risk of developing serious illness like Covid-19 pneumonia than non pregnant women. However, Centre of Disease Control and Prevention (CDC) surveillance and advisory; and American College of Obstetrician and Gynaecologists (ACOG) suggest that pregnant women with Covid-19 appear to be at an increased risk of intensive care unit (ICU) admissions and mechanical ventilation with risk being more in black and Asian. There is increased risk of thromboembolism in COVID-19 pregnancy which should be looked for in all cases and low molecular weight heparin prophylaxis should be given in high risk or suspected cases.

Most studies have shown that COVID-19 in pregnancy especially without severe disease and comorbities is associated with normal perinatal and neonatal outcomes. (4) Although some studies have observed some adverse outcomes with COVID-19 pregnancies in the form of slightly increased risk of preterm delivery, premature rupture of membranes, maternal sepsis, pre-eclampsia and postpartum haemorrhage. But most of other studies have not shown any adverse effect of COVID-19 during pregnancy including on fetal growth.

Thus the present study was conducted to assess maternal and perinatal outcome in women who delivered at Government medical college kota and suffered COVID-19 [SARS Cov-2].

2. Materials and Method

The present retrospective study was conducted in the Department of Obstetrics and Gynaecology, J. K Lon Hospital Government medical college Kota (Rajasthan), after taking permission from ethical committee of the hospital. Data was collected from the bed head tickets and registers of COVID-19 positive patients who were delivered at the institution or were admitted in 2nd trimester and early 3rd trimester for illness, were discharged but lost to follow up, from 1st March 2020 to 1st March 2021 (First wave). All antenatal and postnatal admitted pregnant women who tested covid positive were included in the study. Patients who were home quarantined on OPD basis and didn't get admitted in our COVID-19 dedicated hospital were excluded from the study.

All women admitted for delivery were being tested after admission and report was available after 48-72 hours. Hence by that time a significant number of women were delivered and therefore counted as postpartum cases. Out of 250 cases, 50 women tested COVID-19 positive in second trimester and early third trimester treated successfully for their illness and discharged from hospital in their antenatal period and lost to follow up. In remaining 200 cases 13 had abortion, 83 undergone for caesarean delivery and 104 had vaginal delivery. Their Maternal and Perinatal outcome was recorded.

Maternal outcome was studied using Gestational age at delivery, onset of labour [spontaneous /induced], mode of delivery [vaginal/instrumental/caesarean] and associated obstetric, medical and surgical complications. Perinatal outcome included Neonatal weight, Apgar score, Congenital anomaly, Intrauterine death and still birth, NICU admissions and Neonatal death. Data collected was analysed using SPSS statistical version 20.0.

Table 1: Gestational Age (WKS)

Gestational age (weeks)	Frequency (n=250)	Percentage
≤20	13	5.2
21-30	40	16
31-40	163	65.2
≥40	34	13.6
Mean	34.71±5.58	

Table 2: Mode of delivery

Mode of delivery	Frequency [n=200]	Percentage
Vaginal delivery	104	52
Caserean section	83	41.5
Abortion	13	6.5

Table 3: Distribution of study subjects according to presenting symptoms

Status	Frequency (n=250)	Percentage (%)
Asymptomatic	86	43
Cold	25	12.5
Cough	16	8
Diarrhoea	8	4
Fever	28	14
Myalgia	17	8.5
Respiratory distress	8	4
Vomiting	12	6

Table 4: Distribution of study subjects according to Maternal complications

Medical complications	Frequency (n=250)	Percentage (%)
Anemia	7	2.8
Diarrhea	2	0.8
Fever	3	1.2
DIC	2	0.8
HDP	64	25.6
Pneumonia	28	11.2
Obstetric Complications	Frequency (n=187) Deliveries	Percentage (%)
PPH	8	4.27
APH	4	2.13

IUGR	5	2.67
MSL	9	4.81
Post date	12	6.41
Preterm delivery	32	17.11
PROM	14	7.48
SPE	15	8.02
Wound infection	7	3.74
Puerpral pyrexia	5	2.67
IUFD/Still birth	9	4.81
No complications	67	35.82

Table 5: Distribution of study subjects according to Birth weight of newborns

Birth weight (kg)	Frequency (n=200)	Percentage
<1	15	8.02
1-1.5	15	8.02
1.5-2	32	17.11
2-2.5	40	21.39
2.5-3	49	26.20
≥3	49	26.20

Table 6: Distribution of study subjects according to neonatal complications

Neonatal Complications	Frequency (n=187)	Percentage
Preterm delivery	32	17.11
Neonatal jaundice	22	11.76
RDS	20	10.69
Septicemia	29	15.50
No complications	84	44.91

Table 7: Distribution of study subjects according to Perinatal outcome

Perinatal outcome		Mean/Frequency (n=187)	SD/Percentage (%)
Birth Weight (Kg)		2.48	0.86
Apgar Score (N=178) (Live birth)	Less Than 7	54	30.33
	More Than 7	124	69.66
Nicu Adm (178)	Not Required	110	61.79
	Required	68	38.20
Live birth		178	95.18
Still birth/IUFD		9	4.81

3. Results

Majority of cases belonged to age group 20-30 years accounting for 124 (49.6%), followed by 87 (34.8%) in age group of <20 year, 39 (15.60%) in age group 31-40 years, mean age being 24.13±6.11yrs.60.0% and 40.0% cases belonged to rural and urban areas respectively.68.0% and 32% cases were unbooked and booked respectively.

Gestational age of mothers was recorded at the time of infection (**Table 1**). Majority belonged to multigravida (52.8%) whereas 47.2% cases were primigravida. It was observed that 80.0% females acquired infection in postpartum period whereas 20.0% in antenatal period. Patients presented with various symptoms, the most common being fever (**Table 3**). It was observed that 52% cases were delivered vaginally, 41.5% by cesarean section and 6.5% had abortion (with gestational age ≤ 20 weeks). We found that 35.82% had no complications (**Table 4**). Out of 187 deliveries 178 (95.18%) were live births and 9 (4.81%) were still birth/ IUFD. We recorded birth weight of newborns, with maximum 26.20% with birth weight being ≥ 3kg (**Table 5**). We also observed neonatal complications, with maximum 17.11% cases having complication of preterm delivery (**Table 6**). We also recorded perinatal complications among study subjects (**Table 7**).

4. Discussion

The present study was conducted to asses maternal and perinatal outcome in women who suffered COVID-19 (SARS COV-2) in the period of study 1st March 2020 to 1st March 2021 (COVID-19 1st wave). We found that mean age of study subjects was 24.13 years with maximum number of women being 20-30 years of age. Similar to our study, Parpillewar M, Prashanthi S et al 4 found subjects with

mean age of around 26.91years, whereas higher age group was reported by Yu N. et al (32years) 5, Dingon M, Sobngwi et al (31 years) 6, Sadiq H, Sohailet al (25-35 years) 7, Singh V, Choudhary A et al (27.45 +-4.51 years) [8]

In the present study, maximum cases were from rural areas. In contrast to present study, Parpillewar M, and Prashanthi S et al 4 found that most of the cases were from urban areas. We observed that mean gestational age was34.7112 weeks. In accordance with our study, Singh V and Choudhary A et al[8] found gestational age being 35.83 weeks ± 6.23days. Dingom M, Sobngwi et al.6 reported gestational age >28 weeks whereas near term gestational age was quoted by Yu N et al (39weeks±1 day) 5, Parpillewar M, Prasanthi et al (38.1 weeks) [4]

In our study most of the cases were multigravida. Similar to our study, Yu N et al5, Dingom M, Sobngwi et al6, PapillewarM, Pasanthi S et al 4 also had more cases of multigravida. We found that Fever was most common symptom among patients. Similar findings were seen in 86% and 88% patients by Yu N, et al5 and Dingom M, Sobngwi et al6. respectively.

In present study 52% cases delivered vaginally, 41.5% by caesarean section and 6.5% had abortion. Similar results were found by Dingon M, Sobngwi et al 6. who report 45.45% vaginal deliveries, 36.36% caesarean section and 18.18% abortion. Singh V, Chaudhary A et al [8] report vaginal deliveries 35.4% and 64.6% of caesarean section, and Parpillewar M, Prasanthi Set al 4 who had 46.96% vaginal deliveries and 52.49% caesarean section; both report greater number of caesarean section than vaginal deliveries.

In our study, there was no covid positive baby. NICU admission was needed in 38.20% cases in present study whereas in 21.31% cases in study by Yu N, Li W et al5, Singh V, Chaudhary A et al [8]. Few babies tested positive in different studies; 1 case in Yu N, Li W et al 5, 2 cases in studies by Singh V, Chaudhary A et al [8]

5. Conclusion

In this study it was found that, maternal and perinatal outcome was not affected by COVID19 infection during first wave of COVID19 pandemic, however slight increase in the frequency of APH, preterm delivery and HDP in the mother and incidence of hyperbilirubinemia, septicemia in neonates may be because our institution is Tertiary Care Institute where complicated cases are referred from periphery

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