ORIGINAL RESEARCH

An observational study on the clinical characteristics, maternal and perinatal outcomes of COVID 19 in a tertiary care centre during November 2020 to October 2021 (second wave)

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ABSTRACT
Introduction: With over a million individuals infected, the global pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 has been growing at an accelerating rate. The increasing mortality rate warrants identification and protection of the vulnerable populations in society. The knowledge gained from previous human coronavirus outbreaks, namely, the severe acute respiratory syndrome coronavirus(SARS-CoV) and the Middle East respiratory syndrome coronavirus (MERS-CoV), suggests that pregnant women and their fetuses are particularly susceptible to poor outcomes. The aim of this systematic review was to report pregnancy and perinatal outcomes of coronavirus spectrum infections, and particularly coronavirus 2019 (COVID-19) disease because of severe acute respiratory syndrome-coronavirus-2 infection during pregnancy.**Aim:**To observe the maternal outcomes of COVID 19 During the second wave of COVID 19 and to determine the fetal Outcomes of COVID affected Mothers and to Study the clinical Characteristics of COVID Pneumonia in Pregnant mothers.**Methodology:**At admission of the patients detailed history of maternal and COVID symptoms is taken. Their clinical parameters such as saturation and blood pressure were monitored.Periodic clinical assessment of their liquor status, placentation and fetal heart was done.Baseline investigations such as Hemoglobin, Total count, Platelet, C reactive protein and chest x ray was done.Based on the clinical severity and Chest x-ray severitytreatment was initiated with either IVsteroids and or LMWH/Remdesivir.Their fetal Outcomes was closely followed up. The factors such as Maternal mortality, common clinical presentations of COVID pneumonia in pregnancy,frequency of requirement of Ventilatory care, Incidence of Oligohydramnios,Subgroup of individuals with varied modalities of delivery such as instrumentation,LSCS was documented.They were followed up till discharge.**Results:**108 Patients were included in our study, mean age was 24 years,mean gestational age was 38 weeks,mean duration of hospitalization was 11 days,57% were primigravida,31% had their second pregnancy,13% had GDM, 3% were obese,5% had Anemia complicating pregnancy.66% of the patients were symptomatic at admission,among whom 55% had fever 18% had diarrhea, 12% had dyspnea as the presenting complaint. 57% had less than 25 % lung involvement hence fell into the mild disease category, whereas 43% had more than 25 % lung involvement hence fell in the moderate to severe disease category.NRM mask therapy requirement in the severe disease group was statistically significant.Our patients had a higher prevalence of oligohydramnios when compared to the general population (38%), which didn't reflect when comparing the mild and severe groups.6 dismal neonatal outcomes were recorded.LSCS rates in our study was 64%. Linear comparison analysis showed that the LSCS rates for Severe disease cohort was significantly higher. Mean CRP was significantly higher in the Severe disease cohort thus serving as a marker of severity.
Key words: Covid,pregnancy, maternal outcome and fetal outcome

INTRODUCTION

With over a million individuals infected, the global pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2 has been growing at an accelerating rate. The increasing mortality rate warrants identification and protection of the vulnerable populations in society. The knowledge gained from previous human coronavirus outbreaks, namely, the severe acute respiratory syndrome coronavirus(SARS-CoV) and the Middle East respiratory syndrome coronavirus (MERS-CoV), suggests that pregnant women and their fetuses are particularly susceptible to poor outcomes. Admission to intensive care is common and a case fatality rate of up to 35% has been documented.[1,2] The physiological changes occurring during pregnancy makethe mother more vulnerable to severe infections.[3] Anatomical changes such as an increase in the transverse diameter of the thoracic cage and an elevated level of the diaphragm, decrease maternal tolerance to hypoxia.[4] Lung volume changes and vasodilation can lead to mucosal edema and increased secretions in the upper respiratory tract. In addition, alterations in cell-mediated immunity contribute to the increased susceptibility of pregnant women to be infected by intracellular organisms such as viruses.[5] With regard to the fetus and the newborn, the immaturity of the innate and adaptive immune systems makes them highly susceptible to infections.[6] Dysregulation of factors such as cytokines and the complement cascade can have deleterious consequences for brain development and function.[7]

To find out whether an infectious agent can infect the fetus or newborn by vertical transmission is therefore of particular interest.[8] Pregnant women and t heirnewborns should be evaluated for being potential risk groups in the current COVID-19pandemic.

AIM AND OBJECTIVE

a) To observe the maternal outcomes during the second wave of COVID 19.
b) To determine the fetal Outcomes of COVID affected Mothers.
c) To Study the clinical Characteristics of COVID Pneumonia in Pregnant mothers.

METHODOLOGY

The study was done based on a convenient sampling method, wherein the number of patients included were the number of patients admitted at Institute of Social Obstetrics Kasturba Gandhi Hospital COVID 19 ICU with an O2 requirement within the specified time period. A total of 108 patients were included in the study and their clinical characteristics and maternal fetal outcomes were observed.

INCLUSION CRITERIA

Antenatal patients at any gestational age admitted at Institute of Social Obstetrics Kasturba Gandhi Hospital COVID 19 ICU during the period of November 2020 to October 2021 with swab Positive COVID 19 or Chest Xray Suggestive of COVID 19and warranting any mode of Oxygen therapy were included in our study.

Those patients who had either an adverse or uneventful maternal/fetal outcome during their period of hospitalization.

EXCLUSION CRITERIA

1. Antenatal Patients admitted with mild COVID pneumonia or those did not have either a maternal or fetal outcome.
2. Antenatal Patients admitted in COVID ward with swab negative and chest x-ray not suggestive of COVID Pneumonia.

STUDY OBSERVATION AND RESULTS

Table 1: Age Distribution

P value-0.09 non-significant.

Severity	Mild (n-62)	Moderate to Severe (n-46)
Mean Age in years	26	27
Gestational Age	35	34

P value > 0.05 Non significant

Table2: Obstetric formula:

Obstetric formula					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	G2A1	2	1.9	1.9	1.9
	G2P1L1	34	31.5	31.5	33.3
	G3P2L1A1	4	3.7	3.7	37.0
	G3P2L2	2	1.9	1.9	38.9
	G4P1L0A2	2	1.9	1.9	40.7
	LSCS	2	1.9	1.9	42.6
	Primi	62	57.4	57.4	100.0

Total	108	100.0	100.0	

P value > 0.05 non-significant

Table 3: Mean O2 Requirement

Severity	Mild (n-62)	Moderate to Severe (n-46)
Face Mask	53%	56%
Nasal Canula	35.5%	2.2%
NRM	8%	37%

Chi Square test-48.4, p value-0.0001Significant

Table4: Liquor Amni status

Severity	Mild (n-62)	Moderate to Severe (n-46)
Adequate Liquor	36(58%)	25(54%)
Oligohydramnios	20(32%)	21(45%)

P value-0.16, chi square test-1.91 non-significant

Table5: Discharge status

Severity	Mild (n-62)	Moderate to Severe (n-46)
Live Birth	61 (98%)	39(84.8%)
Adverse Fetal Outcome	1(1.16%)	5(10.9%)

P value-0.0004, Chi Square test-8.14

Table6: Severity of the Covid 19 vs Mode of Delivery

Severity	Mild (n-62)	Moderate to Severe (n-46)
Labour Naturalis	26(41%)	6(13%)
LSCS	33(53%)	35(76%)

Chi square-18.49, p value-0.007(Statistically Significant)

Table7: Remdesivir

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N	88	81.5	81.5	81.5
	Y	20	18.5	18.5	100.0
	Total	108	100.0	100.0	

DISCUSSION

The year 2019 2020 has been plagued by the gloom of COVID 19,which also has played havoc in the lives of pregnant mothers. Be it the level of care they are supposed to get or the difficulties they face in reaching their proper center of care, it has been a huge difficult time for them. There have been several attempts to bring out the difficulties faced by the pregnant women during this pandemic. Our institution ISO/KGH has catered to the CVOID affected women for the whole period of COVID. In our study we have included patients who have been admitted with mild or severe disease and whom warranted O2 therapy and either had an Outcome in the form of Deliver or death of the fetus. The presenting complaints of the patients, clinical features, maternal complaints, initial O2 requirement, further episodes of Desaturation, highest requirement of O2, modes of delivery, and the common indications of LSCS if done were analysed and statistics was applied.

ANALYSIS OF THE BASELINE CHARACTERISTICS

The mean age of the study population was 24.32years. A more systematic analysis by classifying the age groups did not reveal a significant difference in the severity of iollness based on age. The mean age of women with mild disease was 26 years and the mean age of women with moderate or severe disease was 27 years[vm1]. this showed no significant statistical value.

The mean gestational age of the cohort with mild disease was 38 weeks with 30% patients falling in that group. followed by 37 weeks. the mild vs moderate group was not statistically significant.Mean duration of admission was 11 days. The mean duration of hospitalization didn'tplay a major role in the outcome of pregnancy.

On analyzing the maternal obstetric formula 57% were primigravida, 31% were G2P1L1 and the remaining were insignificant. The severity of illness didn't vary much between the trimester of disease significantly. Patients with prior comorbidities were collected and 13 % had GDM, 3%were Obese,5.6% had anemia warranting iron sucrose of blood transfusion.94% of the patients were symptomatic at presentation, among whom 66% had cough as the presenting symptom,while 18% had diarrheaand 12% had dyspnea as the presenting symptom.The presenting complaint had not much statistical

significance in outcome of pregnancy.Based on the severity of the illness on chest x-ray 62 had mild illness whereas 46 had moderate to severe illness.Among the study population the average requirement of Oxygen was assessed which showed that 53% of patients in the mild group needed face mask therapy, 56% of those in the severe group needed Face mask, this didn't show statistical significance.Those in the severe group 37% warranted NRM therapy, whereas only 8 % of the mild group needed O2 via NRM mask this was statistically significant.38% of the patients in our study had Oligohydramnios, which Is very high when compared to the general population and is statistically significant, but when compared between theMild and Severe groups it doesn't show significant statistical difference.Maternal Outcome was positive in 100% of mild cohort, whereas 2 mothers expired in the severe disease cohort. Out of the 108 babies born 100 had a good neonatal outcome 6 babies expired due to various reasons and 2 2nd trimester abortions. In the mild disease cohort only 1% had an adverse fetal outcome when compared with the Severe disease cohort 10 % had an adverse fetal outcome which is statistically significant.LSCS rates in our study was 64% and labournaturalis was 29%. Linear comparative analysis between the two cohorts revealed that the severe disease cohort had a significantly higher rate of LSCS 76% when compared Oligohydramnios with 36 patients (50%).Mean birthweight among both groups was similar 2.2 to 2.5 kg.Mean CRP of the mild disease group was 14.54 and the severe group was 35 and proved to be statistically significant marker for severity of the illness.On analyzing the treatment, 90% received dexamethasoneand 18% received Remdesivir.

CONCLUSION

108 Patients were included in our study, mean age was 24 years, mean gestational age was 38 weeks,mean duration of hospitalization was 11 days, 57% were primigravida, 31% had their second pregnancy,13% had GDM, 3% were obese, 5% had Anemia complicating pregnancy.66% of the patients were symptomatic at admission, among whom 55% had fever 18% had diarrhea, 12% had dyspnea as the presenting complaint. 57% had less than 25 % lung involvement hence fell into the mild disease category, whereas 43% had more than 25 % lung involvement hence fell in the moderate to severe disease category.NRM mask therapy requirement in the severe disease group was statistically significant.Our patients had a higher prevalence of oligohydramnios when compared to the general population (38%), which didn't reflect when comparing the mild and severe groups.6 dismal neonatal outcomes were recorded. LSCS rates in our study was 64%.Linear comparison analysis showed that the LSCS rates for Severe disease cohort was significantly higher. Mean

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