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Original Research Article

Clinical characteristics and outcomes of pregnant patients with COVID-19 at BPKIHS, a prospective study

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ABSTRACT

Background: Coronavirus disease (COVID-19) can vary in presentation, women present with a spectrum of clinical manifestations that range from mild symptoms and signs to severe illness, may require immediate advanced critical care support. Therefore, a hospital-based study was conducted to evaluate the effect of COVID-19 on maternal and perinatal outcomes of COVID-19 infected pregnant women.
Methods: This was prospective descriptive study conducted at B. P. Koirala institute of health science. Total duration of study was one year from September 2020 to August 2021. This study was done in 70 pregnant ladies with confirmed SARS CoV2 infection. Different clinical presentation, mode of delivery, treatment given, need of oxygen, need of ICU admission, maternal outcomes, neonatal outcomes were observed.
Result: The most common symptom was fever in 38 (54.2%) patients, followed by cough in 22 (31.5%) patients. Eighteen (25.71%) had mild degree of pneumonia with fall in oxygen saturation below 95% and required oxygen via face mask. Three patients (4.28%) develop sever pneumonia and required mechanical ventilation two (2.85%) had maternal mortality due to covid pneumonia. Most common mode of delivery was LSCS 21(61.76%). Seven (10%) patients had preterm delivery.
Conclusions: Most of the COVID-19 positive pregnant women remained asymptomatic or had mild infections. COVID-19 infections in late pregnancy might lead to an increased incidence of caesarean deliveries as observed in the present study. Adverse perinatal outcomes are mostly due to delayed presentation of patient to the hospital during COVID pandemic. High maternal mortality rate has been seen in present study. So proper intensive care is must for the management of such patient during pandemics. Also, efforts to limit exposure to COVID-19 of pregnant women should be strengthened for saving mother and child.

Keywords: COVID-19, Maternal, Perinatal outcomes

INTRODUCTION

The Coronavirus disease (COVID-19) pneumonia pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has become a major global health threat. Since its first identification in Wuhan, China, in December 2019. COVID-19 has spread globally at an accelerated rate with rapid increases in cases and mortality.[1,2]

Viral pneumonia is one of the leading causes of pregnancy deaths worldwide.[3] Physiological changes during pregnancy, such as reduced functional residual volumes, diaphragm elevation, and oedema of respiratory tract mucosa, as well as changes in cell immunity can lead to increased susceptibility to viral infections and can have worsened outcomes.[4]

Pregnant women have a disproportionately high risk of complications from other types of viral pneumonia. Pregnant women are uniquely susceptible to severe illnesses caused by viral infection, possibly due to the shift from cellular to humoral immunity during pregnancy and the puerperium.[5]

With regard to COVID-19, the limited data currently available do not indicate that pregnant individuals are at an increased risk of infection or severe morbidity (e.g., need for intensive care unit admission or mortality) compared with non-pregnant individuals in the general population. An intense inflammatory response has been reported as one of key features of severe COVID-19, and as there is relative immunosuppression in pregnancy this may partly explain why many pregnant women do not develop severe respiratory symptoms. However, pregnant patients with comorbidities may be at increased risk for severe illness consistent with general population with similar comorbidities.[6]

Coronavirus disease (COVID-19) characteristically presents with fever, cough and fatigue. The presenting symptoms can vary, and women present with a spectrum of clinical manifestations that range from mild symptoms and signs to severe illness, including pneumonia with or without acute respiratory distress syndrome (ARDS), renal failure and multi-organ dysfunction may require immediate advanced critical care support.[7]

METHODS

This was prospective descriptive study conducted at B. P. Koirala institute of health science. Total duration of study was one year from September 2020 to August 2021. This study was done in 70 pregnant ladies with confirmed SARS Cov2 infection. All the pregnant patient with confirmed COVID-19 infection were included in this study and only patients who do not give consent to participate were excluded from the study.

All pregnant women with confirmed COVID-19 infections by RT-PCR technique was included in the study after informed consent. A detail history of patients regarding age, gravidity was taken and period of gestation was calculated by LMP. She was also asked about symptoms related to COVID-19 infection like fever, cough, shortness of breath, headache, diarrhea, malaise. Her detail physical examination was performed, pulse rate, blood pressure, temperature, and oxygen saturation by pulse oximeter was recorded. Detail systemic examination was also be performed. Investigation like complete blood count, random blood sugar, renal function test, liver function test and other antenatal investigation if not done during antenatal periods. Chest X-ray and CT scan was done as per patient condition. she was managed as per clinical condition and hospital protocol. Treatment details were recorded. Obstetrics management was done as per department guidelines. After delivery of baby Apgar score was noted as well as the birth weight was taken. If any baby gets admission, indication for the admission was noted.

Ethical approval

Ethics approval was obtained from institutional review committee before conducting the study.

Statistical analyses

Statistical analysis was conducted with SPSS version 21 categorical variables expressed as percentage, and continuous variables expressed as a mean.

RESULT

During the study period 70 pregnant women were identified with confirmed SARS-CoV-2 infection. Maternal age was between 20 and 45 years and periods of gestation was between 7 weeks to 42 weeks. The majority of patients 60 (85.71%) had no pre-existing medical comorbidities, 2 (2.85%) patients had gestational diabetes, and 2 (2.85%) had PIH, 2 (2.85%) had chronic hypertension, 3 (4.3%) had anemia and 1 (1.4%) had hypothyroidism. The Majority of patients 57 (81.4%) were in their 3rd trimester, 10 (14.3%) were in second trimester and 3 (4.3%) were in first trimester. Additionally, only the minority of the patients6 (8.6%) were asymptomatic. The most common symptom was fever in 38 (54.2%) patients, followed by the cough in 22 (31.5%) patients (Table 1 and 2).

Table 1: Maternal demographic.

Demographic characteristics	N (%)
Maternal age (Years)	21-35
Single pregnancy	24 (34.28)
Trimester of pregnancy at infection	
First trimester	3 (4.3)
Second trimester	10 (14.3)
Third trimester	57 (81.4)
Maternal comorbidities	
Gestational diabetes	2 (2.85)
Pre-eclampsia	2 (2.85)
Chronic hypertension	2 (2.85)
Hypothyroidism	1 (1.4)
Anemia	3 (4.3)

Table 2: Clinical characteristics.

Clinical characteristics	N (%)
Asymptomatic at admission	6 (8.6)
Cough	16 (22.9)
Cough with dyspnea	6 (8.6)
Fever at admission	29 (41.4)
Fever and cough	4 (5.7)
Fever and dyspnea	5 (7.1)
Dyspnea	3 (4.3)
Diarrhea	1 (1.4)

The gestational age at birth was 35 to 42 weeks. Out Of them 34 (48.57%) women who had given birth, 21 (61.76%) had LSCS and 13 (38.23) had vaginal delivery. Seven (10%) patients had preterm delivery, among them 5 had history of previous LSCS and presented in latent stage of labour, one patient presented with pre labour rupture of

membrane and one patient was induced for severe pre-eclampsia. One patient (1.4%) had laparotomy for ruptured uterus with IUFD. Three patient (4.28%) had spontaneous abortion. One patient (1.4%) had ectopic pregnancy diagnosed at 6 weeks periods of the gestation was managed medically with the inj. methotrexate (Table 3).

Majority of pregnant lady recovered without any major complications. Eighteen (25.71%) had mild degree of pneumonia with fall in oxygen saturation below 95% and required oxygen via face mask. Three patients (4.28%) develop sever pneumonia and required mechanical ventilation. Among them two patients had mortality due to severe pneumonia as well as one patient recovered (Table 3).

Perinatal outcomes are shown in Table 4. Among 34 deliveries mean birth weight of neonate was 3.1 kg, and mean Apgar score at 1 min and 5 min was 6.18 (±2.12) and 7.12 (±2.3) respectively. Twentynine (41.42%) had live birth among them all baby were shifted to mother side and four (%) required NICU admission. Three neonate (4.28%) was admitted for respiratory distress and 1 (1.42%) neonate was admitted for prematurity. Four (5.71%) had IUFD and one (1.42%) had stillbirth (Table 4).

Table 3: Maternal outcome.

Variables	N (%)
Obstetric outcomes	
Total deliveries among COVID-19 infected patients	34 (48.57)
LSCS	21 (61.76)
Vaginal deliveries	13 (38.23)
Preterm deliveries	7 (10.00)
Miscarriage	3 (4.28)
Lapartomy for rupture uterus	1 (1.42)
Medical management of unruptured ectopic pregnancy	1 (1.42)
Medical complications	
Severe pneumonia	3 (4.28)
Acute renal failure	1 (1.42)
Multiple organ failure	1 (1.42)
Haemorragic shock	1 (1.42)
High dependency unit admission	9 (12.85)
Intensive care unit admission	3 (4.28)
Maternal death	2 (2.85)
Treatment	
No treatment	46 (65.71)
Oxygen support	18 (25.71)
Antivirals	4 (5.71)
Antibiotics	18 (25.71)
Corticosteroid	14 (20)
Anti-coagulant	14 (20)
Mechanical ventilation	3 (4.28)

Table 4: Neonatal outcomes.

Neonatal outcomes	N (%)
Mean birth weight (kg)	3.1 (±0.6)
Mean Apgar score at 1 and 5 min	6.18 (±2.12) and 7.12 (±2.3)
Live birth	29 (41.42)
Still birth	1 (1.42)
IUFD	4 (5.71)
NICU admission	4 (5.71)

DISCUSSION

In this study, 70 pregnant women were identified with SARS-CoV2 infection. Most of the patients 64 (91.4%) were symptomatic, with the most common symptoms was fever in 54.2% patients, followed by cough in 31.5% patients. These findings are in accordance with a number of preliminary studies.[8-10] A systematic review revealed that the most dominant initial symptoms in pregnant women with COVID-19 were fever and cough.[11] On the contrary, a study found the majority of women being asymptomatic and afebrile at presentation.[12] Data from the preliminary studies found that majority of pregnant women with COVID-19 were in the late second or third trimester.[8] In our study, majority of women 81.4% were in their 3rd trimester.

Increased incidence of caesarean delivery (61.76%) was observed in COVID-19 positive pregnant women in the present study. High caesarean rates in COVID-19 infected pregnant women were also observed in some other studies.[8-10] Total of 10% cases of preterm birth were reported in this study with no case of early preterm birth (less than 32 weeks gestational age) was observed. Among them 5 had history of previous LSCS and presented in latent stage of labour, one patient presented with pre labour rupture of membrane and one patient was induced for severe pre-eclampsia. This in in contrast to other study where most of pre term are due to PROM.[8,9] We also found a case (1.42%) underwent laparotomy for ruptured uterus she had history of previous LSCS and was in labour. She was in home isolation and presented very late to our facility. We also had a case of ectopic pregnancy at 6 weeks periods of gestation who was managed successfully with injection Methotrexate. other systemic review had not mentioned such cases.

Three cases (4.28%) required ICU admission for severe COVID pneumonia. Out of them two cases died and one recovered. ICU admission rate is consistent with most of other studies but Maternal mortality rate was very high in our study compared with most of other studies.[8,13] other cases admitted to HDU were due mild to moderate pneumonia, hemorrhagic shock, renal failure and multiple organ failure.

Majority of patient did not receive any treatment (65.71%) which is consistent with a systemic review.[13] About 25.7% cases required oxygen support, and 4.28% required

mechanical ventilator, 20% received dexamethasone and anticoagulant, 5.71% treated with antiviral.

CONCLUSION

Most of the COVID-19 positive pregnant women remained asymptomatic or had mild infections. COVID-19 infections in late pregnancy might lead to an increased incidence of caesarean deliveries as observed in the present study. Adverse perinatal outcomes are mostly due to delayed presentation of patient to the hospital during covid pandemic. High maternal mortality rate has been seen in present study. so proper intensive care is must for the management of such patient during pandemics. Also, efforts to limit exposure to COVID-19 of pregnant women should be strengthened for saving mother and child.

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