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Original Research Article

Study of maternal and fetal outcome in corona positive pregnant women

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ABSTRACT

Background: COVID-19 has spread globally at an accelerated rate with rapid increase in cases and mortality. Viral pneumonia is one of the leading causes of pregnancy death worldwide. Physiological changes during pregnancy, such as reduced functional residual volumes, diaphragm elevation, and odema of respiratory tract mucosa, as well as changes in cell immunity can lead to increased susceptibility to viral infections and can have worsened outcomes.
Methods: The study was conducted at SMGS hospital, GMC Jammu. It was a retrospective. All the corona positive pregnant women admitted in our hospital over a period of 6 months from July 2020 to December 2020 were included in the study.
Results: A total of 92 covid positive women were admitted during this period. The study population consisted of 45 (48.91%) women from 20-25 years, 33 (35.86%) women from 26-30 years and 14 (15.2%) women from above 30 years. There was history of exposure among all (100%) pregnant women with only 8(8.7%) having symptoms of covid. Out of 92 patients, 11 patients were anaemic, 6 had preeclampsia, 4 had previous 2 LSCS, 11 had previous 1 LSCS, 3 had PROM, 12 patients had fetal distress at admission. As per gestation, 6 women had pre-term delivery and 8 had post-term delivery. 34 (36.95%) women were primigravida and 58 (63.04%) were multigravida. The mode of delivery was LSCS among 62 (67.39%) and normal delivery among 30 (32.6%) women. 29 babies were born with Apgar score 8/10, 3 babies with Apgar score 6/10 and 60 with Apgar score with 10/10.
Conclusions: In our study, there were no maternal and fetal complications among pregnant women with COVID-19.

Keywords: COVID- 19, Maternal, Neonatal, Preterm delivery, Pneumonia

INTRODUCTION

The novel corona virus (SARS-CoV-2) is a new strain of corona virus causing COVID-19; first identified in Wuhan City, China, it has become an unabating global health threat.[1] On 11 February 2020, WHO announced a name for the new corona virus disease: COVID-19. The COVID-19 strain of corona virus infection has a high rate of transmission by respiratory droplet and through fomites.[2] The major cause for death during the pregnancy across the world is Viral pneumonia.[3] During pregnancy, there are certain physiological changes like decrease in the functional residual volumes, rise of the diaphragm, respiratory tract mucosa having oedema, along with cell immunity modifications which causes the susceptibility for more chances for viral infections leading to the worst possible outcomes.[4] Most commonly reported infections during the pregnancy is viral pneumonia, and linked to the maternal and neonatal morbidity and mortality.[5]

Atypical form of pneumonia caused by COVID-19 has been reported to be highly infectious and spreading at a fast pace across the world.6 There is compromised immune response during the pregnancy leading to higher chances for infectious diseases. Also, there are more chances of transmission from mother to fetus which might lead to the higher possibility of the infections among fetuses and neonates.[7] The clinical, radiological, and laboratory characteristics of COVID-19 pneumonia has been found in many research work as far among the

pregnant women. As such, not much scientific proof has shown the chances for the intrauterine transmission occurring vertically among the pregnant women.[8,9] Despite the large and rapidly rising number of cases of coronavirus disease 2019 (COVID-19) and resulting deaths, there are limited data about the clinical characteristics of pregnant women with the disease.[10-12]

Aims and objectives

Aims and objectives were to evaluate maternal and neonatal outcome among COVID-19 pregnant women and to evaluate the effect of disease on pregnancy.

METHODS

A retrospective observational study was carried out in SMGS hospital, GMC Jammu over a period of 6 months from July 2020 to December 2020.

A total of 92 COVID 19 positive pregnant patients were recruited in the study.

Inclusion criteria

COVID-19 test should be positive, pregnant mother and obstetrical indications for admission were included in the study.

The data taken from patient's files and medical record section. A detailed history, complete physical examination and routine and appropriate investigations were done for all patients. The parameters which were measured were status of covid, severity of covid disease, symptoms suggestive of covid, age, parity, gestational age, blood investigations, x-ray, mother's condition, mode of delivery, Apgar score, neonatal infection status, post-delivery complication.

Statistical analysis

The data was entered into the Microsoft excel and the statistical analysis was performed by statistical software SPSS version 21.0. The quantitative (numerical variables) were present in the form of mean and SD and the qualitative (categorical variables) were present in the form of frequency and percentage.

RESULTS

Study population consisted of 45 (72.58%) women from 20-25 years, 33 (53.22%) women from 26-30 years and 14 (22.58%) women from above 30 years. There was history of exposure among all (100.0%) pregnant women with only 8 (8.69%) having symptoms of COVID-19 (Table 2). About 84 (91.30%) cases were asymptomatic at time of admission (Table 2) and more than 35 weeks of gestation.

As per gestational age, 6 (6.52%) women had pre-term delivery, 33 (53.22%) had normal term delivery and 14 (22.58%) had post-term delivery (Table 3). 34 women were primigravida and 58 were multigravida (Table 4). The mode of delivery was LSCS among 62 (67.39%) and normal delivery among 30 (32.60%) women (Table 4). There were no post-op LSCS/obstetric complications.

The indications of LSCS were, 11 cases had previous LSCS, 4 previous 2 LSCS, 3 were primi breech,4 cases of precious pregnancy, 3 cases of failed induction, 4 patients with IUGR, 2 patients had GDM, 24 cases had fetal distress at admission (Table 6).

Though, 3 cases were shifted at L2 level because of breathlessness on 3rd to 5th postoperative day, managed well and recovered. There was no mortality in our study population. All neonates were corona negative in this study so vertical transmission was 0%. Apgar score was more than 9 in 60(65.21%) cases and more than 7 in 29(31.52%) cases (Table 7).

Table 1: Age wise distribution of the study population.

Age (Years)	N (%)
20-25	45 (72.58)
26-30	33 (53.22)
>30	14 (22.58)

Table 2: Patients showing history of exposure and COVID symptoms.

Variables	N (%)
History of exposure	
Exposure	92 (100)
No exposure	0 (0)
COVID symptoms	
Yes	8 (8.69)
No	84 (91.30)

Table 3: Distribution according to the gestational age.

Gestational age (Weeks)	N (%)
<37	6 (6.52)
37-40	78 (84.78)
>40	8 (8.69)

Table 4: Distribution according to the gravidity.

Gravid	N (%)
G1	34 (36.59)
G2-G3	51 (55.43)
G4-G5	5 (5.43)
>G5	2 (2.17)

Table 5: Distribution according to mode of the delivery.

Mode	N (%)
Vaginal delivery	30 (32.60)
LSCS	62 (67.39)

Table 6: Distribution according to indications of LSCS.

Indication	N (%)
AFD	24 (38.70)
Previous LSCS	11 (17.74)
Previous 2 LSCS	4 (6.45)
IUGR	4 (6.45)
Precious pregnancy	4 (6.45)
Failed induction	3 (4.83)
Primi breech	3 (4.83)
GDM	2 (3.22)
Others	7 (11.29)

Table 7: Apgar score of neonates at birth.

Apgar score	N (%)
<7/10	3 (3.2)
7/10	29 (31.52)
9/10	60 (65.21)

DISCUSSION

Asper WHO report, no apparent difference between non-pregnant and pregnant women of reproductive age in risk of developing clinical symptoms.[13-15] It seems the pregnant women are also not at a higher risk of developing severe disease. Most commonly patients come with mild symptoms like fever, fatigue, cough, and shortness of breath; however, some may be asymptomatic.[8,9] In a retrospective review by Liu et al a comparison of 59 patients, which included both pregnant and non-pregnant adults, was carried out.[16] This review reported no significant difference between various groups regarding the development of clinical features of SARS-CoV-2.

Pregnant women undergo variuos physiological changes, that can lead to altered immunity.[17] But, this does not necessarily make them more susceptible to viral infection; hence, their response to COVID-19 may be similar to any other viral infection. However, due to the modulated immune system, they may experience severe symptoms, albeit there is a low probability of this happening. According to one study, pregnancy itself does not worsen the symptoms experienced, nor the findings on a CT scan of COVID-19 related pneumonia.

All neonates were corona negative in this study so vertical transmission was 0%. Intrauterine vertical transmission was not reported by either Chen et al for COVID-19 or Wong et al for SARS.[14,18]

In our study, 6.52% women had pre-term delivery, 84.78% had normal term delivery and 8% had post-term delivery. Preliminary reviews reported high rates of preterm delivery, ranging from 41-47%.[19,20] While many of preterm deliveries iatrogenic and for maternal reasons, there are reports of fetal distress as indication in some cases and other obstetrical indications in other cases.[21] At present, there is insufficient evidence to determine any correlation between spontaneous preterm labour and COVID-19 infection in pregnancy although some reported cases of preterm premature rupture of membranes.[14,20]

Maheshwari et al reported that the preferred mode of delivery was caesarean section and only five women (6%) delivered vaginally; none of whose neonates was infected with COVID-19.[13,21] Intrapartum transmission was the main concern for choosing cesarean section. Since there is limited evidence about vertical transmission and vaginal shedding of virus, vaginal delivery in stable patients may be considered. In cases of caesarean section, the choice of anaesthesia needs careful consideration.[22] With regard to the mode of delivery, caesarean section was performed in the majority of cases and several authors cited fetal distress as the reason behind the decision.[10,15,22]

In current study, there was no mortality among study population. While Maheshwari B et al reported one case of maternal mortality.[14]

Neonates from COVID-19-positive women should be tested, isolated, and cared following droplet and contact preventive measures.[23] The WHO recommends for mothers with COVID-19 infection to be able to room in with their babies.[24] The mother should wear a surgical mask and practice hand hygiene when in close contact with her infant, particularly when feeding. Alternatively, if another healthy adult is in the room, they can care for the newborn. Asymptomatic newborns could be discharged after delivery and cared by an asymptomatic family member with the adequate isolation measures.

During this extremely delicate time of a rapidly evolving outbreak that has imposed a tremendous threat on public health, more attention should be given to the unique needs of pregnant women.[12] Further investigation and isolation should be considered for pregnant women with suspected COVID-19. In confirmed cases, prompt admission of mothers in a negative pressure isolation unit is crucial.[22] All the medical staff responsible for taking care of COVID-19 patients should utilize personal protective equipment, namely N95 masks, gloves, gown, and goggles. Standard protocol of the management of COVID-19 in pregnancy incorporates early isolation, controlling infection, administrating oxygen, detecting other viral infections, applying early mechanical ventilation in patients with progressive respiratory failure, and administrating antibiotics in cases of risk of bacterial infection. Monitoring of fetus and uterine contraction should be considered. Any planning on delivery of the patients and their conditions should be made through multispecialty consultations.

Limitations

Sample size in our study was small. Further investigations and follow-up studies of pregnant mothers infected by COVID-19 are warranted.

CONCLUSION

In conclusion, our report showed pregnant women are also susceptible to SARS-CoV-2 infection. SARS-CoV-2 may increase health risks to both mothers and infants during pregnancy. Efforts should be taken to reduce the infection rate of SARS-CoV-2 both in pregnant and perinatal period, and more intensive attention should be paid to pregnant patients.

In our study, there were no maternal and fetal complications among pregnant women with COVID-19. Overall, due to the lack of information on COVID-19 pneumonia in pregnancy, all suspected pregnant women should be systematically screened, monitored and followed up.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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