Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Obstetrics and Gynecology Research

Journal homepage: www.ijogr.org

Original Research Article

Maternal and neonatal outcome in COVID-19 infection - A tertiary care centre study

S Senthilpriya[1], M Ilakkiya[1,*], B Jeyamani[1]

[1] *Dept. of Obstetrics and Gynaecology, Vinayaka Missions Kirupananda Variyar Medical College & Hospital, Salem, Tamil Nadu, India*

ARTICLE INFO

Article history:
Received 27-09-2021
Accepted 29-10-2021
Available online 14-02-2022

Keywords:
COVID- 19
Polymerase chain reaction
Pregnant women
Vaccination

ABSTRACT

Background: With exponential increase in the severe acute respiratory syndrome coronavirus 2 (SARS-CoV- 2/COVID-19) worldwide Pregnant women and their fetuses are more susceptible to infection and poor outcomes. The risks to the mother appear to increase during the last trimester. The aim of this study was to summarize the maternal and neonatal outcomes of pregnant women infected with COVID-19 during labour.

Materials and Methods: Eligibility criteria includes pregnant women positive for COVID-19 during the time of labour as detected by real-time polymerase chain reaction (PCR) or dual fluorescence PCR-confirmed SARS-CoV-2 infection.

Results: A total of 30 pregnant women positive for COVID-19 as confirmed by RT-PCR, were included in the study. 14 cases (46.6%) had preterm deliveries and LSCS was the preferred mode of delivery in 12 of 30 i.e., 40% cases. There was a tendency for low Apgar score at birth, higher rates of IUD, fetal distress, NICU admissions. There was 5 IUD and one neonatal death.

Conclusions: This study confirms that COVID-19 infection during pregnancy increases the risk of several adverse outcomes, including slightly higher rates of caesarean section, low birth weight, Preterm birth, IUGR, fetal distress, NICU admissions. Proper antenatal care, vaccination against COVID-19 for pregnant and lactating mothers should be encouraged to Prevent further spread of infection. Early diagnosis, referral and emergency management should be done to safeguard both mother and fetus.

1. Introduction

With the emergence of SARS-CoV-2 and its rapid spread, concerns regarding its effects on pregnancy outcomes have been growing.[1] Pregnant women are prone to a range of fetal and maternal complications that could impact the outcome of any concurrent infection.[2]

In pregnancy there is a switch over from Th1 to T-helper 2 cells in pregnancy. So mother is more prone and vulnerable to viral infections and susceptible to poor outcomes.[3,4]

Risk of transmission is by close contact with infected individuals within 14 days of onset of symptoms with mean incubation period of ~5 days.

Pregnancy is a state of immunosuppression and cardio-respiratory system is affected due to physiological, anatomical, mechanical changes in lung volume and vasodilation can all lead to mucosal edema and increased secretions in the upper respiratory tract which further contribute to the increased susceptibility of infection by intracellular organisms such as viruses.[5]

With regard to the fetus and the new- born, the immaturity of the innate and adaptive immune systems makes them highly susceptible to infections. Neonatal

* *Corresponding author*.
E-mail address: drilaks02@gmail.com (M. Ilakkiya).

https://doi.org/10.18231/j.ijogr.2022.018

infection from respiratory viruses can occur after delivery through such mechanisms as inhalation of the agent through aerosols produced by coughing from the mother, relatives or healthcare workers or other sources in the hospital environment.[6,7]

According to the ICMR guidelines (Indian Council and Medical Research), we have initiated Covid testing within 5 days of expected date of delivery.[8]

The Union health ministry announced that pregnant women are now eligible for Covid-19 vaccination which they can register on Co-WIN(covid vaccine intelligence network) web portal or walk in to nearest COVID vaccination centre(CVC). The decision empowers pregnant women to make an informed choice on taking the covid vaccination.[8–10]

Pregnancy registry can be used to track such cases and to determine pregnancy outcome. Adverse Event following vaccination should be reported immediately into Co-WIN, concerned Medical Officer / District Immunization Officer.[9]

The Royal College of Obstetricians and Gynecologists (RCOG) states that pregnant women should be offered the vaccine as that of general population.

Accordingly to WHO recommendation use of recombinant vaccine in pregnant women. The American College of Obstetricians and Gynecologists (ACOG) says Pregnancy testing is not required before receiving vaccination and vaccine can be administered to the people who consider future pregnancy.[9] However, women should be aware of the risk of getting thrombosis with thrombocytopenia syndrome.

Women during pregnancy often face several pregnancy-related complications acquiring COVID-19 infected at this stage, therefore, it may put them at further increased risk of developing adverse pregnancy related and newborn outcomes, including deaths;[11] Early diagnosis of COVID-19 infection status, proper treatment are important to combat the adverse consequences.[11]

2. Materials and Methods

It is an retrospective study undertaken at department of obstetrics and gynaecology in tertiary care centre. summarizes the maternal and neonatal outcomes of women who were infected with COVID- 19 during their pregnancy.

The study was conducted in 30 antenatal patients in labour who were tested positive for COVID-19 by throat and nasopharyngeal swab, detected by RT PCR from January 2021 to June 2021.

2.1. Inclusion criteria

Eligibility criteria included pregnant women in labour tested positive for covid-19 as detected by real-time PCR or dual fluorescence PCR-confirmed SARS-CoV-2 infection.

2.2. Exclusion criteria

Pregnant women negative for COVID-19 during the time of labour. Outcome of the pregnancies was noted in terms of preterm delivery, IUGR, oligohydraminos, LSCS rates, low birth weight, meconium stained liquor and fetal distress, NICU admissions, maternal and fetal demise. Both mother and baby were followed up to two weeks after discharge from hospital.

2.3. Statistical analysis

Statistical analysis was done with SPSS, version 25.0. Categorical variables were expressed as number of cases and percentages (%). A P value of ≤ 0.05 was taken statistically significant.

3. Results

Table 1: Age distribution

Range	Numbers of patients	Percentage
<20	2	6.7
21-25	11	36.7
26-30	13	43.3
31-35	3	10
36-40	1	3.3
Total	30	100

.

Table 2: Shows that most of the pregnant women were in between 26-30 years

Gestation	Number of patients	Percentage
Preterm	15	50
Term	13	43.3
Postterm	2	10
Total	30	100

Here, In Table 2 the most of the patients were preterm 15 in number and 13 of them were term gestation.

Table 3: According to gravida

Obs score	No of patients	Percentage
Primi	13	43.3
G2	12	40
>G3	5	16.6
Total	30	100

Here, Table 3 shows that most of the patients was Primigravida, 13 in number.

Here, Table 4 shows headache, in 8 patients, bleeding per vaginum in 6 patients, 4 patient presented with breathlessness.

Here, Table 5 shows 5 of them had oligohydraminos and PIH, Sudden IUD in 5 cases, Postpartum hemorrhage seen

Table 4: Clinical features

Clinical features	No of patients	Percentage
Headache	8	26.6
Pedal Edema	5	16.6
Breathlessness	4	13.3
Cough	3	10
Bleeding PV	4	13.3
Fever	2	6.6
Loss of Fetal movements	2	6.6

Table 5: Distribution of diagnosis

Diagnosis	Numbers of patients	Percentage
Anaemia	6	20
Oligohydraminos	6	20
Gestational hypertension	4	13.3
GDM	4	13.3
PPH	3	10
IUD	5	16.6
Maternal Death	1	3.3
Cardiac disease and its complications	1	6.7

Table 6: Outcome of delivery

Procedure	Numbers of patients	Percentage
Vaginal delivery	11	36.6
Emergency LSCS	4	13.3
Elective LSCS	8	26.6
Instrumental delivery	5	16.6
Hysterotomy	1	3.3
Peripartum hysterectomy	1	3.3
Total	30	100

in 3 patients, GDM & Anaemia in 4 cases.

Here, the above Table 6 shows that 12 individuals underwent LSCS in that 8 had elective caesarean section, while 11 had vaginal deliveries.

Table 7: According to the level of care

	Number of patients	Percentage
Isolation ward	20	66.6
COVID ICU	7	23.3
CCU	3	10
Total	30	100

During this period, patients with symptoms of COVID-19 infection was transfered to isolation ward after stabilization. Table 7 shows 20 patients transfered to the isolation ward, 7 needs ICU treatment, 3 needs CCU treatment. As Patients who needed only obstetric care are transfered to isolation ward, i.e without the need for ventilator support,inotrophes while more severe cases are shifted to ICU and CCU.

Table 8: Neonatal complications

Outcome of Delivery	Numbers of babies	Percentage
Apgar score normal	21	70
Low	9	30
IUD/still birth	5	16.6
IUGR	8	26.6
Meconium stained liquor	5	16.6
Fetal distress	8	26.6
Neonatal death	1	3.3
Neonatal anaemia	3	10
NICU admission	8	26.6
Birthweight (< 2.5kg)	16	53.3
NICU stay (>2 weeks)	3	10

Here Table 8 shows the apgar score was normal in 21(70%) babies Sudden IUD in 6 of them, low birth weight in 16 babies(53.3%), Fetal distress in 10(26.6%), IUGR in 8 (26.6%), NICU stay >2weeks in 3 cases (10%).

4. Discussion

30 Obstetric cases were taken into study respective to the age, gravida, symptoms, and outcome of delivery in suspected COVID-19 obstetric emergency case. The mean gestational age was found to be around 34 weeks. The mean age was found to be 28 years.

In that Most of them were preterm of about 14(46.6%) and 11 (36.6%) were in term gestation. Most of the patients were Primi, 13(43.3%) in number.

There is a higher incidence of emergencies like Oligohydraminos in 5 cases, pregnancy induced hypertension and its associated complications in 5 cases & intrauterine fetal death in 5 cases.

A total 12 individuals underwent lower segment caesarean section in that 8 was Elective cases, while 11 of them had vaginal deliveries.10 % of the individuals needed blood transfusion, medically managed PPH, mgso4 therapy. Among the study group 20 (66.6%) patients were transfered to the Isolation ward for observation.7 (23.3%) patients were admitted in COVID ICU and while 3 (10 %) of them needed CCU.

One preterm women who is COVID 19 positive got admitted in ICU for ventilatory support immediately taken up for emergency caesarean section in view of deteriorating patient condition. Mother and baby was stable and discharged after 14 days. No intraoperative or postoperative complications. Many events occurred during this lockdown, mainly in patients without any of the risk factors due to irregular Antenatal visits because of various reasons like reduced hospital staffs, travel restrictions and the possibility of contracting the infection during hospital visits.

Pregnant women offered vaccine against COVID-19 infection.

1. Two types of vaccine are available which are safe during pregnancy namely Covaxin and Covishield. Both of them are administered as 0.5ml in the upper arm region the second dose of Covaxin is scheduled after 4-6 weeks after the first dose, while for Covishield vaccines it is 84 days or 12-16 weeks after the first dose. Efficacy after the second dose of covishield can vary from 70-90%,whereas Covaxin 78-95%
2. Sputnik V vaccine has been given emergency use authorization in India.
3. Sputnik third vaccine used in India against coronavirus. The interval between the 2 doses is likely to be 21 days. Efficacy - 91.6 percent and effective than covishield and covaxin.
4. Benefits of vaccination are
5. Reduction in severity of the disease in pregnant woman
6. Reduction in the risk of stillbirth and prematurity for the baby
7. Potentially reducing transmission to neonates and vulnerable household members.
8. Patients received COVID-19 mRNA vaccines during pregnancy (mostly during their third trimester) have passed antibodies to their fetuses, which could help protect them after birth and Breastfeeding people who have received COVID-19 mRNA vaccines have antibodies in their breast milk, which could help protect their babies. Additionally supplements like calcium, iron and folic acid were not taken regularly resulting in more number of cases with PPH, PIH, and anaemia.

5. Conclusion

This study confirms that COVID-19 infection during pregnancy increases the incidence of caesarean rates, oligohydraminos, low birth weight, preterm birth, IUGR, fetal distress, NICU admission and stay. So early diagnosis, referral and prompt management should be done to safeguard both mother and fetus. To protect themselves from acquiring COVID-19 infection by taking vaccination against COVID-19 during pregnancy or if not vaccination should be done immediately after delivery according to RCOG, ACOG, WHO guidelines. Awareness and alertness among treating doctors helps in early referral, and also reduction in morbidity and mortality rates.

Pregnant women are more likely to become seriously ill and have a higher risk of their baby being born prematurely if they develop COVID-19 in their third trimester (after 28 weeks), so women may have the vaccine before their third trimester.

6. Source of Funding

No funding sources.

7. Conflict of Interest

None.

8. Ethical approval

The study was approved by the Institutional Ethics Committee.

References

1. Campbell S, Lee C. Obstetric emergencies. In: Campbell S, Lee C, editors. Obstetrics by Ten Teachers. Arnold Publishers; 2000. p. 303–17.
2. Avery M. Obstetric emergencies. *Americ J Chine Medic*. 2009;6(2):42–6.
3. The Royal College of Midwives, Royal College of Obstetrics and Gynaecology, Royal College of Paediatrics and Child Health, Royal College of Anaesthetists. Coronavirus COVID-19 Infection in Pregnancy; 2020.
4. Centers for Disease Control and Prevention Coronavirus Disease (COVID-19). People who need extra precautions: Pregnancy and Breastfeeding. Available from: https://www.cdc.gov/coronavirus.
5. American College of Obstetricians and Gynaecologists. Novel Coronavirus 2019 (COVID-19) Practice Advisory. Available from: https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/03/novel-coronavirus-2019.
6. Zhao X, Jiang Y, Zhao Y, Xi H, Liu C, Qu F, et al. Analysis of the susceptibility to COVID-19 in pregnancy and recommendations on potential drug screening. *Eur J Clin Microbiol Infect Dis*. 2020;39(7):1209–20.
7. Abha S, Lily N. Obstetric emergencies: Role of Obstetric Drill for a better Maternal Outcome. *J Obstet Gynaecol India*. 2012;62(3):291–6.
8. Available from: https://www.icmr.gov.in/pdf/covid/techdoc/Guidance_for_Management_of_Pregnant_Women_in_COVID19_Pandemic_12042020.
9. Available from: https://www.mohfw.gov.in/pdf/OperationalGuidanceforCOVID19vaccinationofPregnantWoman.
10. 2021.
11. Guidance of management of pregnant women in COVID 19 Pandemic; Indian Council for Medical Research and National Institute for Research in Reproductive Health, Mumbai April 2020. Mumbai. Available from: https://www.icmr.gov.in/pdf/covid/techdoc/Guidance_for_Management_of_Pregnant_Women_in_COVID19_Pandemic_12042020.pdf.

Author biography

S Senthilpriya, Professor

M Ilakkiya, Final Year Post Graduate

B Jeyamani, Professor and Head

Cite this article: Senthilpriya S, Ilakkiya M, Jeyamani B. Maternal and neonatal outcome in COVID-19 infection - A tertiary care centre study. *Indian J Obstet Gynecol Res* 2022;9(1):95-98.