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A RETROSPECTIVE STUDY OF INCIDENCE OF OBSTETRIC COMPLICATIONS IN COVID 19 POSITIVE PREGNANT WOMEN AT A TERTIARY CARE CENTRE

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ABSTRACT

BACKGROUND: COVID 19 pandemic has affected the health care system globally. The knowledge about the effect of COVID 19 infection on pregnancy and vice versa is emerging. The aim of this study is to determine incidence of various obstetrical complications in COVID 19 infection.

Materials and methods: A single center retrospective observational study was conducted among 200 pregnant women who presented to our hospital with COVID 19 infection over a period of 1 year from May 2020 to May 2021 at all gestational ages and followed up for 10 days for observation and management of obstetrical and COVID related symptoms and complications.

Results: 5 patients out of 200(2.5%) had a miscarriage, 7out of 200(3.5%) had a spontaneous preterm labor. The incidence of hypertensive disorders of pregnancy was found to be as high as

29 %. 2.5% of already diagnosed cases of Gestational diabetes mellitus were found to be COVID 19 infected. 4% patients had oligohydramnios and 7% had fetal growth restriction.

Conclusion: There seems to be a higher incidence of Hypertensive disorder of pregnancy in COVID 19 infection. The management of various obstetrical complications is comparable with routine management in non-infected patients.

INTRODUCTION:

The coronavirus disease 2019 (COVID-19) pandemic has created a major impact on the world. The knowledge about the disease has evolved almost as fast as its global expansion. Obstetrics and neonatology practice has undergone profound changes to adapt to the pandemic. In addition, there are aspects specific to COVID-19 and gestation that should be identified in order to correctly diagnose the infection during pregnancy, classify the severity, and take the most appropriate management decisions .The impact of COVID 19 infection on pregnancy and confinement and vice versa needs to be studied.

AIM: To study the incidence of obstetrical complications in COVID 19 infected pregnant women.

OBJECTIVES:

- To determine the incidence of the various obstetrical complications in COVID 19 positive pregnancies.

METHODOLOGY:

- The study was conducted at Krishna hospital, Karad among 200 COVID 19 POSITIVE pregnant patients admitted during May 2020 to May 2021. Respiratory samples: If not previously performed, a swab of the upper respiratory tract (nasopharyngeal) for PCR testing (COVID-19, seasonal influenza, and syncytial respiratory virus) was done. In cases highly suggestive COVID-19 infection with a previous negative PCR, retesting of a lower respiratory tract sample (sputum) was done.

After obtaining a written, informed consent, symptomatic and asymptomatic pregnant women who were found to be COVID 19 positive on RTPCR, were admitted in a well equipped isolation ward in Krishna hospital, which is a dedicated COVID hospital for observation and management. Patients were followed up for 10 days on an average on indoor basis for development of COVID related and obstetrical complications. Patients who were remote from term and did not develop any COVID related or obstetrical complications were discharged and followed

up in obstetric OPD for routine antenatal care.

- Taking relevant medical and obstetrical history, General physical, systemic and obstetric examination was done.

Cardiotocography and fetal ultrasound was used depending on gestational age and maternal symptoms to confirm fetal viability or well-being.

- If there was a clinical indication (respiratory rate > 20 bpm, SPO2 < 96%, presence of breathlessness, or basal body temperature ≥38 ° C):
  - Chest X-ray: Measures of fetal protection (abdominal apron) was done .If required, High resolution CT scan of thorax was done.
  - Basal electrocardiogram (repeat after 48 h if medications that may have an effect on the QT interval are administered, such as Hydroxychloroquine sulphate, Azithromycin, or Lopinavir/Ritonavir).
  - Blood sample COVID-19 profile: for haematology, biochemistry, coagulation, and severity markers (ferritin, troponin-I, D-dimer [increased 2–3 times at third trimester]; procalcitonin [if bacterial superinfection was suspected]).

ASYMPTOMATIC COVID 19 POSITIVE PREGNANT WOMEN:

1) Pregnant women without any COVID related symptoms and general or systemic changes were admitted in isolated ward and observed for 10 days for development of any symptoms, hematological and clinical or radiological pulmonary changes. Fetal heart rate monitoring was done regularly. Patient was kept on routine antenatal care. Anti-viral agents were not started.
   a) In preterm gestations, if no obstetrical complications were observed, patients were discharged and advised home isolation for 14 days. Routine antenatal visits thereafter were advised.
   b) In term gestations, termination of pregnancy was considered as per the obstetric indications.

ASYMPOMATIC COVID 19 POSITIVE WOMEN POST PARTUM

Postpartum, patient was followed up for 10 days for postpartum care and development of any symptoms or complications. Patients with reassuring repeat hematological investigations and radiological (HRCT chest) findings were not started on any antiviral agents and discharged after 10 days.

Nasopharyngeal swabs of neonates of COVID 19 positive mothers were tested for the virus by RTPCR. Babies with a negative swab test were kept away from their mothers for 10 days in a separate isolation ward and top fed. Babies were not breastfed till viral load in the mother reduced. Babies were routinely vaccinated according to the National Immunization Program.

SYMPTOMATIC COVID 19 POSITIVE WOMEN

Postpartum, the patients with fever >38 F ,breathlessness, cough with or without expectoration , HRCT changes in the lungs were started on Tab Favipiravir 1800 mg single dose on day 1 followed by Tab Favipiravir 800 mg 12 hourly for 6 days.

Biweekly liver function tests were done to rule out toxicity.

Serum ferritin ,D-Dimer , complete blood count , Prothrombin time, INR, ESR, CRP were assessed at the end of the regimen .Repeat HRCT chest was done based on the symptoms.

OBSERVATIONS:

Table 1: Obstetrical outcomes in COVID 19 infected women

No. of patients	Vaginal delivery	LSCS	Miscarriage
200	94	100	5

Above table shows the obstetrical outcome of patients

Table 2: Gestational age at the time of delivery

No. of deliveries	Preterm (<37 weeks)	Term (37-42 weeks)	Post term (>42 weeks)
194	7	187	0

Above table shows the number of patients who delivered at, before or post term

Table 3: Incidence of obstetrical complications

Obstetrical complications	No. of patients
Missed abortion	4
Inevitable abortion	1
Hyperemesis gravidarum	1
Preterm labor	7
Hypertensive disorder of pregnancy	57
HELLP Syndrome	1
Oligohydramnios	8
IUGR	14
Antepartum haemorrhage	0
GDM	5
Meconium stained liquor	32
IUFD	3

Above table shows the number of patients with the various obstetrical complications

Table 4: incidence of neonatal infection

No. of COVID 19 POSITIVE neonates	No. of COVID 19 NEGATIVE NEONATES
2	192

Above table shows the rate of vertical transmission of COVID 19 infection

Table 5: APGAR score

	APGAR <7	APGAR >=7
APGAR Score at 1 min	20	174
APGAR Score at 5 min	9	185

Table 6: Neonatal outcomes in COVID 19 infected women

No. of patients	Liveborn	Stillborn	IUFD	Abortus
200	191	0	3	5

Above table shows the neonatal outcomes in COVID 19 infected women

RESULTS:

OBSTETRICAL OUTCOMES:

The mean age at admission for COVID Positive pregnant women was 24.85 years. Mean gestational age at delivery was 37+3 weeks.

One patient (accounting to 0.5%) presented at 13 weeks of gestation with complaints of excessive vomiting leading to dehydration with COVID 19 positive status. Serum electrolytes and urine ketones were monitored and patient was routinely treated with antiemetics and intravenous fluids and recovered well with no development of any systemic or further obstetric complications.

4 patients with first trimester miscarriage (missed abortion) and one with spontaneous incomplete abortion were incidentally found to be COVID positive (2.5%). They underwent uneventful manual vacuum aspiration with no operative or anesthesia associated complications. Postoperative follow up did not show any obstetric or COVID related complications.

7 patients (3.5%) had preterm onset of labor pains. The mean gestational age for spontaneous onset of preterm labor was 34+4 weeks. 3 of the 7 patients with preterm labor had preterm prelabor rupture of membranes. Induction of labor using PgE2 gel was done in these patients. All the 7 patients delivered vaginally without any postpartum complications.

Hypertensive disorder of pregnancy was increasingly observed in COVID Positive women. Of the 57 (29.2%) women with hypertensive disorder of pregnancy who were tested to be COVID positive, 24(42.10%) had gestational hypertension, 19 (33.33%) had non severe pre-eclampsia, 11(19.29%) had severe pre-eclampsia and 1(1.7%) had antepartum eclampsia. Routine pathological and biochemical investigations were done for all the patients. Fetal biometry, Doppler and NST (non stress test was done for all the patients. 29(50%) of these patients were posted for caesarean section on maternal request. 9(15%) patients were posted for caesarean section for failure of induction

after 2 PgE2 gel instillations done 12 hours apart. 5(8.7%) of them were posted for fetal distress. 14(24.56%) underwent vaginal delivery with instrumental (vacuum assisted) delivery in 4 patients. However, there was no observed deterioration in any of these patients.

Some peculiar cases seen:

1) A 24 year old woman was admitted in Medical ICU as primigravida 36 weeks pregnancy with severe pre-eclampsia with peripartum cardiomyopathy. The patient was posted for LSCS for fetal distress. Post operatively, she recovered well. She was started on Inj Remdesivir, Inj Monocef, LMW heparin, Tab Dytor, Tab labetalol and supportive treatment. The baby tested COVID negative and was kept isolated from the mother under observation for 10 days without any adverse outcome.
2) Another patient, a primigravida full term pregnancy with severe pre-eclampsia with HELLP syndrome with initial COVID 19 negative status was posted for emergency LSCS for fetal distress. Postoperatively the patient developed fever and retest for COVID 19 was positive. Patient developed postpartum psychosis for which antipsychotic medication was started. She was started on Inj Remdesivir, Inj Monocef, LMW Heparin, Tab Labetalol and supportive treatment. The patient and the neonate recovered well.
3) A COVID 19 POSITIVE G3A2 34 weeks pregnant woman with severe pre-eclampsia underwent emergency LSCS for severe pre-eclampsia .Patient was started on Inj Remdesivir , Inj Monocef , LMW Heparin, Tab Labetolol and recovering well post operatively when she developed sudden desaturation on post operative day 16 . ACUTE RESPIRATORY DISTRESS SYNDROME and acute renal failure were established. She was put on ventilatory support but could not be revived. Baby was COVID negative and was discharged after 10 days of routine nursery care.
4) Patient was admitted as a Primigravida 36 weeks pregnancy with non severe pre-eclampsia with COVID 19 positive status with desaturation upto 85% on room air and suspected peripartum cardiomyopathy. Patient was intubated and was given ventilatory support but succumbed within 24 hours of admission.

5(2.5%) patients of GDM who were previously started on MNT (medical nutrition therapy) were diagnosed with

COVID INFECTION near term. 1 of them had to be started on Insulin for uncontrolled sugar levels. All of them underwent caesarean section for obstetrical indication with no adverse outcomes.

14(7%) patients with fetal growth restriction were observed in the study in the late third trimester.

10 of them had mild asymmetrical FGR and were followed till 37 weeks with weekly Doppler and fetal biometry and biweekly NST. 7 were posted for caesarean section for maternal request.

4 patients with severe FGR were posted for LSCS at around 34 weeks with good maternal outcomes. 5 neonates were shifted to NICU after RTPCR swab tested negative.

8(4%) patients with oligohydramnios were admitted for COVID positive status at term and 3 of them underwent caesarean section for non reactive NST. 3 out of 8 had fetal distress and were posted for Caeserean section and 2 delivered vaginally.

Meconium stained liquor was found in a high number of cases. 28 out of 32 cases were posted for LSCS with a good feto-maternal outcome. 4 patients delivered vaginally. Specialized nursery care were provided to the babies with respiratory distress.

3 patients had intrauterine fetal demise, 1 with thick meconium stained liquor and cause of which was unknown in 2 cases.

DISCUSSION:

FIGO recommends that pregnant women should follow strict isolation, good nutrition, hand hygiene, social distancing during this pandemic **[1]**.

Currently, we do not have enough evidence to show teratogenicity of the viral infection. No increased risk of miscarriage has been documented. There is a meagre incidence of vertical transmission of the virus **[2]**. 2 neonates were found to be COVID infected in our study.

RCOG recommends the use of LMWH (low molecular weight heparin) for all COVID infected pregnancies **[3]**.

There is no enough evidence to show a correlation between increased incidence of preterm labor or premature rupture of membranes in COVID 19 infection. Use of Dexamethasone for fetal lung maturity is recommended in early preterm pregnancies (<34 weeks) as is done in non infected patients **[4]**. In our study, 2 patients with early preterm labor were given 4 doses of Inj Dexamethasone 6 mg 6 hours apart.

Increased evidence of Hypertensive disorder of pregnancy is seen in COVID infections. However, anti-hypertensives routinely used in our institute, oral Labetolol and Nifedipine were sufficient in controlling BP in almost all the patients.

Gestational diabetes was seen in 5% of pregnancies and did not contribute to any increase in morbidity for the patients. Further follow up and extensive studies are required to look for long term effects.

No significant association was observed between COVID infection and fetal growth restriction and oligohydramnios.

Increased evidence of meconium stained liquor was seen which contributed to increased rates of cesarean section. The rate of cesarean section in our institute was observed to be 50%. Cesarean section rates were observed to be ranging between 40-90% **[5]**, most of which were performed in maternal and fetal interest. Neither vaginal delivery nor cesarean section has shown to confer a risk to the mother or the fetus in COVID infected women.

CONCLUSION:

Incidence of obstetrical complications in COVID 19 infected pregnant women were found to be comparable to that of routine non infected pregnancies. Management of the obstetrical complications is in accordance with the standard operating protocol as followed in the institute. Early detection of the infection and adequate management according to the severity of the symptoms yields good results. Routine antenatal and postnatal care should be provided to the COVID 19 infected pregnant women.

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