



STUDY OF COVID 19 IN PREGNANCY IN A TERTIARY CARE HOSPITAL

Obstetrics & Gynaecology

Dr. Diya Mathen* Post Graduate in MS OBG Father Muller Medical College Hospital, Mangalore-575002.
*Corresponding Author

Dr. Sujaya V Rao Professor, Dept. of OBG Father Muller Medical College Hospital, Mangalore- 575002.

Dr Abhilash V Senior resident, Department of OBG Father Muller Hospital, Mangalore-575002.

ABSTRACT

BACKGROUND: The novel coronavirus SARS COV2 has caused a global pandemic. This study aims to study the affects of the virus on maternal and fetal outcome.

MATERIALS AND METHODS: This was a retrospective study done on pregnant women with COVID 19 in Father muller medical college between June 2020 and October 2020. Medical records of the pregnant women and the neonates were studied.

RESULTS: 321 women delivered during this period, 36 of whom were COVID positive. The incidence of pre term deliveries was higher in COVID 19 positive women compared to COVID negative women. The most common obstetric complaint was PROM. A higher incidence of LSCS (52%) was seen due to an increased fear of detortation of the maternal condition if trial of labour was given. 9 women required admission to the intensive care unit. 2 COVID positive women with no other obstetric complication or comorbidities had intrauterine death. Only one infant was tested positive for COVID 19. No maternal or neonatal mortality was noted in our study.

CONCLUSION: Pregnancy is an immunocompromised state and pregnant women are more vulnerable to COVID 19 and its complications. Universal screening is required for all pregnant women as most of them are asymptomatic. Vertical transmission has still not been proven.

KEYWORDS

COVID 19, preterm, PROM, RTPCR

INTRODUCTION

The novel Coronavirus also known as SARS COV2, causes a life threatening respiratory disease which has caused a global pandemic.

[1] Sars-cov-2 is an enveloped RNA virus. It affects the hosts respiratory system and acts through angiotensin converting enzyme 2 which is found in type II alveolar cells but is also seen in extra pulmonary sites [2] Pregnant women and neonates represent a vulnerable population. [3] T helper 2 dominance and less T helper 1 activity has been attributed to make pregnant women more susceptible to viral infections [6]. The epidemics caused by sars-cov and middle east respiratory syndrome Coronavirus (MERS-COV) in the last two decades have caused death in 1/3rd of the infected pregnant women [4,5].

Transmission of the virus is seen through droplets and can occur either by direct contact with infected person or indirectly through fomites [8]. Vertical transmission has not yet been confirmed.

AIMS AND OBJECTIVES

This study aims at looking at the ultimate maternal and fetal outcome of pregnant women with COVID 19 in a tertiary care hospital in coastal Karnataka from June 2020 to October 2020. The neonates born to COVID positive mothers were also tested as per neonatal protocol.

MATERIALS AND METHODS

Study Population

This study was an observational descriptive record based study done in Father Muller medical college hospital from June 2020 to October 2020. Universal screening for COVID 19 was done for all pregnant women admitted during this period. Pregnant women tested positive for COVID 19 (using RTPCR test) who were admitted for delivery were included in the study.

The newborns of women with COVID 19 positive status were tested for COVID 19 based on standard hospital neonatal protocol. Neonates were assessed based on birth weight, APGAR and any symptoms suggestive of fever or respiratory distress.

The above information was obtained through medical records of the mother and neonates.

Statistical analysis was done using chi square test and student t test.

RESULTS

A total of 321 antenatal women at term were tested for COVID 19 as per the screening protocol and 36 of these women tested positive for COVID 19.

The incidence of COVID 19 among pregnant women is 112 per 1000 live births.

Demographic data of the study population The average age of the women in our study was 27.46 $\pm$ 4.017 years. The maximum number of patients were between the age group of 26-30 years of age. 60% of the women in our study were multigravidas and 40% were primigravidas. 5 women had pre terms, 7 had late pre-terms (36-37 weeks period of gestation), 22 women delivered at term (38-40 weeks period of gestation) and 2 women delivered between 40-41 weeks period of gestation.

23 COVID positive women belonged to the lower middle socio economic class and 13 women belonged to the upper middle socio economic class. [15]

Gestational age	COVID 19 positive	COVID 19 negative	Total	Chi square	P value
28-32 weeks	5	21	27	19.253	0.0007
34-37 weeks	7	30	37		
37-40 weeks	22	231	253		
40-41 weeks	2	2	4		
	36	285	321		

During this period the incidence of extreme pre term deliveries was (5.5% vs 0.3%), pre term deliveries was (8.3% vs 7%), late pre terms was 19.4% vs 10.5%, term deliveries was 61.1% vs 81.4% and the deliveries between 40-41 weeks was 5.5% vs 0.7% in COVID positive and COVID negative women respectively.

The incidence of pre term deliveries was higher in COVID 19 positive women and this was statistically significant (p value 0.0007)

CLINICAL PRESENTATION ON ADMISSION

CLINICAL PRESENTATION	TOTAL NUMBER OF PATIENTS
Safe confinement	14
Active labour	4
Latent labour	6
Absent fetal movements	2
PROM	9
Oligohydramnios with IUGR	2

Most of the COVID positive patients (14) were admitted for safe confinement. 9 patients came with history of leaking pv (prom), 4 patients came in active labour, 6 in latent labour.

2 women with history of absent fetal movements were found to have intra uterine death.

PRESENCE OF ASSOCIATED COMORBIDITIES

COMORBIDITY	Number (N)
Moderate anaemia	2
Corrected hypothyroidism	4
Gestational diabetes mellitus	4
Hypertensive disorder in pregnancy	5
Coagulopathies	1
No comorbidity	20

Out of the patients with gestational diabetes mellitus (three were on insulin and 1 was on diabetic diet).

5 women had hypertensive disorder in pregnancy (3 were not on treatment and one woman had chronic hypertension and one had pre eclampsia) One woman had protein C and S deficiency.

SYMPTOMS OF COVID

	Number (N)
Asymptomatic	31
Symptomatic	5

SYMPTOMATOLOGY

	Number (N)
Fever, myalgia, headache	4
Acute onset of breathlessness	1

31 women tested positive were asymptomatic. These women however gave a history of fever, cough and myalgia in the weeks preceding, but were found to be asymptomatic on admission.

5 women were symptomatic, four had low grade fever, headache and myalgia and one had acute onset breathlessness with a saturation of 90% at room air.

LABORATORY INVESTIGATIONS AND RADIOGRAPHIC CHANGES

	Number (n)
Elevated CRP	18
Elevated Ferritin	5
Elevated D DIMER	36
Elevated LDH	24
Radiographic changes	
Present	19
Absent	17

5 women had elevated ferritin level (between 170-366), 18 had elevated CRP (6.7-187.3ng/L), 24 had elevated LDH (253-268IU/L) and all had elevated D dimer levels (256-1108ng/dl).

All COVID positive women were subject to chest radiography post-delivery. 19 women were found to have changes which included haziness of the lung fields that was concomitant with that of COVID 19. 17 women were found to have normal chest radiographs.

LABOUR AND MODE OF DELIVERY

MODE OF DELIVERY	COVID POSITIVE	COVID NEGATIVE
LSCS	19	82
Elective	3	44
Emergency	16	38
Operative vaginal delivery	10	32
Vaginal delivery	9	171

52% of the women underwent LSCS, 27% had operative vaginal delivery (in view of poor maternal bear down and fear of deterioration of the patient) and 25% had normal vaginal delivery.

Out of the 19 women who underwent LSCS, three had elective LSCS and 16 had emergency LSCS.

INDICATIONS OF EMERGENCY LSCS

INDICATION	Number (N)
Malpresentation	3
Previous LSCS in labour	3
Prolonged PROM	3
Anhydramnios	1
Failed induction	1
Abruption	1

Cephalopelvic disproportion	1
Pathological CTG	3

Among the 285 women tested negative for COVID 19 who delivered during this period, 171 had vaginal delivery (60%) and 82 women had LSCS (28%) and 32 had vacuum assisted vaginal delivery (11%).

There was a higher incidence of LSCS among the COVID 19 positive women due to an underlying fear of adverse maternal and fetal outcome due to prolonged trial of labour was given.

NEONATAL OUTCOME

	Number (N)
INTRAUTERINE DEATHS	2
IUGR	2
PREMATURITY	12
APGAR SCORE (1 minute)	
0-3	0
4-6	2
7-10	32
APGAR SCORE (5 minute)	
0-3	0
4-6	0
7-10	34
NICU ADMISSION	
Respiratory distress	4
Hyperbilirubinemia	8
Suspected sepsis(due to prolonged PROM)	2
COVID STATUS OF THE BABY	
COVID positive	1
COVID negative	33

Two babies born to COVID positive mothers had fetal growth restriction. These women were also found to have oligohydramnios on USG. They were however not found to have any medical or obstetric complications or comorbidities.

Twelve babies born to covid positive mothers were born before 37 weeks period of gestation. These women had all come in labour.

A total of 5 intrauterine deaths during this period. 2 COVID 19 positive mothers had intra uterine deaths. These two women had no associated comorbidities. They however gave a preceding history of fever and decreased fetal movements. 3 COVID negative women had intrauterine deaths. One woman had abruptio placenta and two had overt diabetes mellitus with gestational hypertension. There was no significant difference between the incidence of intra uterine deaths among the COVID positive and negative women.

32 babies born to COVID positive mothers had an average one minute APGAR between 7-10 which was reassuring. 2 babies had a one minute APGAR score of 6 at one minute.

Neonates of COVID positive mothers were tested for COVID 19 using RT PCR as per hospital protocol, using nasopharyngeal and oropharyngeal swabs on post-natal day 1.

97% of them were negative and 2.7% were found to be positive.

39% of the babies born to COVID positive mothers required an NICU stay of 4+/- 9 days and 61% of the babies did not require NICU admissions. 4 babies were admitted in view of immediate respiratory distress which was transient, 8 in view of hyperbilirubinemia, requiring phototherapy and 2 in view of suspected sepsis due to premature rupture of membranes. There was no neonatal mortality noted in our study.

All the babies were discharged after an average hospital stay of 7+/-5 days along with their mothers.

POST NATAL COURSE OF COVID POSITIVE WOMEN

	Number (n)
Need for supplemental oxygen	2
ICU and post-operative ward admission	9
Breathlessness	1
Anaemia	8
Average days of hospital admission	7 +/-10 days

Condition On Discharge

	Number (n)
Asymptomatic	34
Fever and tachypnoea	2
Need for anticoagulants	1

9 women required an average stay of 2+/-5 days in the ICU.

Two women had decreased oxygen saturation and needed supplemental oxygen.

Four had post-partum haemorrhage and developed severe anaemia requiring blood transfusion.

None of the women required invasive mechanical ventilation.

All women with COVID 19 were given Hydroxychloroquine, Azithromycin, multivitamins and vitamin C as part of the protocol during that period. One woman was given Ivermectin in addition to the above treatment.

The average hospital stay was noted to be 7+/-10 days. At discharge, 34 women were asymptomatic and were discharged with stable vitals. Two women, discharged against medical advice had fever and tachypnoea on discharge.

Two COVID positive women were put on anticoagulant therapy on discharge. One of the had protein C and S deficiency and the other due to elevated D dimer levels.

One patient continued treatment post-delivery in a government hospital. She was a known case of diabetes mellitus and chronic kidney disease. She died on post-operative day 14 due to respiratory complications.

DISCUSSION

The novel Coronavirus also known as SARS-CoV-2, has caused a global pandemic.[1]

This virus can be isolated even from asymptomatic individuals, and affected patients continue to shed the virus for 2 weeks even after cessation of symptoms.[1]

In the wake of this global pandemic, several studies have been conducted to see the effects of the virus on pregnant women and their fetuses.

The incidence of COVID 19 among pregnant women in the present study was found to be 112 per 1000 live births. The CDC has reported a total of 27,566 pregnant women tested for positive for COVID 19 with a total of 44 deaths as of October 2020.

WHO has reported that around 80% of infections of COVID 19 in pregnancy are mild or asymptomatic, 15% of them have severe symptoms and require supplemental oxygen and around 5% require critical intervention and mechanical ventilation.[9]

Modi D et al conducted a study in Maharashtra and reported that 88% of the COVID positive pregnant women were asymptomatic and 12% of them were symptomatic.[16]

Our study corroborated the same findings.

The most common presenting among the symptomatic women in this study was fever with headache and myalgia followed by shortness of breath. This was corroborated by studies conducted by Juan et al and Yu et al. although studies conducted by Chen et al found diarrhoea to be an additional presenting symptom.

LSCS (47%) was found to be the most common mode of delivery in our study. In a study conducted by Zaigham M et al 91% of the women were delivered by caesarean section[3] and in a systemic review done by Huntley BJF et al 84.7% of the cases were delivered by LSCS.[13]

A trend of increasing rates of caesarean section was noted in the initial phase of the pandemic due to the fear of deterioration of the maternal condition during labour.

The incidence of pre term deliveries among the COVID positive

patients in this study was 33%. This was corroborated by a systemic review conducted by Huntley BJF et al.[13] however L Zhang et al found no increased incidence in pre term births. [2]

82% of the babies born to COVID positive mothers had normal one and five minute apgar scores. This finding was similar to the study conducted by JUAN et al where all the infants born to COVID positive mothers had an APGAR score between 7 and 10.[10]

It was also noted in this study that only one infant of a covid positive mother was tested positive for the same, thereby not proving a vertical transmission to the newborn. This was corroborated by Juan et al.[11] However Huntley BJF et al.[13] and Zaigham M et al.[3] reported in their systematic reviews that none of the infants born to COVID 19 positive mothers tested positive for the same.

In our study two intra uterine deaths were noted among the 36 COVID positive women. These women had no comorbidities and were asymptomatic on admission. Similar findings were reported by Richtmann R et al [14] and Hantoushzadeh S et al.[15]

There was one woman in the present study who continued care in a government hospital and died on post operative day 14. She was a known case of diabetes mellitus with chronic kidney disease and died due to respiratory complications and sepsis.

CONCLUSION

The incidence of COVID 19 among the pregnant women in our study was 112 per 1000 live births. The present study showed that a majority of women tested positive for COVID 19 were asymptomatic and the most common presenting obstetric complaints in these women was leaking PV. Although there were 2 intrauterine deaths and 2 infants with IUGR noted in our study, covid 19 being an exclusive contributing factor cannot be ruled out.

Higher rates of LSCS was seen earlier in the wake of the pandemic, as there was a greater fear of the deterioration of the patients condition if allowed for a trial of normal labour.

Vertical transmission of COVID 19 could not be proved as only one neonate was tested positive for COVID 19.

This study was conducted over a short period of 5 months and had a small sample size. Studies of longer duration and larger sample size would be required to study the effects of COVID 19 on pregnancy, especially in 1st trimester.

Universal screening of all pregnant women should be a must as most of them are asymptomatic.

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