

STUDY OF COVID19 OBSTETRIC CASES ADMITTED IN MATERNAL INTENSIVE CARE UNIT AND FETOMATERNAL OUTCOME

***Prof.Dr.Sangeeta Shah, Dr.Kora Sravanthi¹, Dr.Mrinalini Mitra²,
Dr.G.Sai Maheswari³**

*Professor & HOD, Department of Obstetrics and Gynaecology, Gandhi
Medical College, Secunderabad, Telangana.

1. Post Graduate, Department of Obstetrics and Gynaecology, Gandhi
Medical College, Secunderabad, Telangana.
2. Assistant Professor Department of Obstetrics and Gynaecology, Gandhi
Medical College, Secunderabad, Telangana.
3. Post Graduate, Department of Obstetrics and Gynaecology, Gandhi
Medical College, Secunderabad, Telangana.

*Corresponding Author:- Dr.Sangeeta Shah, Professor & HOD of Obstetrics &
Gynaecology, Gandhi Medical College/Hospital, Secunderabad, Telangana
State

ABSTRACT

OBJECTIVES

- Study of covid 19 obstetric cases admitted in maternal intensive care unit.
- To study the fetomaternal outcome of covid 19 pregnant women

METHODS

- This was an observational study carried out in the department of Obstetrics and Gynecology at Gandhi hospital, a tertiary care centre in Telangana. 100 women were taken into the study based on COVID19 test status.

RESULTS

Among 100 covid patients who were admitted into maternal intensive care unit, were in the range of 17 to 35years. Most (64%) of the patients were primigravida and majority (64%) of them were admitted in third trimester. 36 patients were without any co-morbidity, 38 patients belong to hypertensive disorders, 12 patients had anemia. High sugars and heart disease complicating pregnancy cases were also admitted. Inflammatory markers were raised in covid patients. All the patients had elevated CRP. Serum ferritin was raised in 53patients, LDH was raised in 46patients and 24patients were having raised D-Dimer. 70% patients were managed with NIV. 38% patient's babies were admitted into NICU due to respiratory distress, low birth weight and seizures. Among 100 patients, 62% patients were discharged with good outcome and 38% patients were died.

CONCLUSION

Covid 19 during pregnancy may happen without identifiable risk factors. Although the risk of poor maternal and perinatal outcome increases when intensive care unit admission is required, adequate respiratory support adapted to the clinical status and interdisciplinary

management of critical cases may not only lead to maternal recovery, but also an improvement in neonatal outcomes.

KEY WORDS

Corona virus, co morbidity, intensive care unit, inflammatory markers, non invasive ventilation.

1.INTRODUCTION

Covid 19 disease caused by a novel virus named corona also called severe acute respiratory disease-corona virus 2 [SARS-COV-2] is the hottest topic in the healthcare system. With over a million individuals infected, the global pandemic is going at an accelerating state. We must prioritize women to ensure that, they are shielded from the worst of the pandemic. Pregnant women, in particular, are potentially vulnerable to COVID19, due to changes in their immune system which can put them at risk of severe disease.

Depending on the various health conditions of mother, intensive care and management gets individualised. So it is imperative for the obstetric team to get abreast of development in the field and do justice to the young women admitted in intensive care unit. Even though pregnant women are young, immune compromised state of pregnancy places them in high risk group. Pregnancy does not increase the risk of covid19 infection but many evidences indicate pregnant women are at higher risk when compared to non pregnant women.

. The rationale of this study is to summarize the cause of admission, intervention required for the obstetric cases that are admitted into maternal intensive care unit and the fetomaternal outcome.

2.METHODOLOGY

This was an observational study carried out in the department of Obstetrics and Gynecology at Gandhi hospital, a tertiary care centre in Telangana. 100 women were taken into the study based on COVID19 test status.

SOURCE OF DATA- Gandhi hospital

SAMPLE SIZE- 100

STUDY DESIGN- Prospective observational study

100 patients who are tested positive for covid19 reverse transcriptase polymerase chain reaction test were taken in to the study and observed.

INCLUSION CRITERIA-

All covid 19 obstetric cases admitted in maternal intensive care unit in Gandhi hospital.

EXCLUSION CRITERIA-

Patients who are tested negative for covid19 RTPCR

Asymptomatic covid19 pregnant women

Home isolated covid19 pregnant women

Non MICU covid19 pregnant women.

Eligibility criteria included laboratory confirmed covid19 infection using quantitative real time polymerase chain reaction or dual fluorescence polymerase chain reaction. Records of covid 19 patients who were admitted into maternal intensive care unit are studied and analyzed the various causes of admission into intensive care unit and treatment modalities of the covid 19 pregnant patients.

3. OBSERVATIONS AND RESULTS

3.1. DEMOGRAPHICAL PROFILE

The age range of 100 covid pregnant women who were admitted in maternal ICU was 17-35years.

The mean age distribution was 25.75(4.31) years

Majority (40%) of the patients were seen in the age group of 21 to 25years.

(TABLE-1)

Majority (64%) of covid pregnant patients admitted into MICU were in 3rd trimester followed by postpartum patients (16%).

8% of patients belongs to first trimester,12% patients belongs to 2nd trimester. (TABLE-2)

64% patients who were admitted into MICU belong to primigravida.(TABLE-3)

3.2. COMORBIDITIES

The patients admitted into ICU were categorized according to co morbidities.

Among 100 patients, 36 patients were without any co morbidities.

Majority (40%) of COVID patients admitted into ICU had hypertension complicating pregnancy which includes abruption, gestational hypertension, chronic hypertension, severe preeclampsia and eclampsia, remains the main co morbidity associated with covid patients admitted into ICU.

Pre-existing anemia, diabetes complicating pregnancy, heart disease and asthma were other co morbidities associated with severe covid infection. (TABLE-4)

3.3. CLINICAL FEATURES

Most of the patients admitted with shortness of breath (96%). Other symptoms like cough, fever are present along with SOB. (TABLE-5)

3.4. INFLAMMATORY MARKERS

All patients admitted in to MICU had elevated CRP, 53 patients had elevated serum ferritin, 46 patients had elevated LDH, and 24 patients had elevated d-dimer. (TABLE-6)

3.5. MANAGEMENT

As shortness of breath is the main symptom and many patients presented with low saturations, oxygen support is the mainstay of treatment. Majority patients needed non invasive ventilation. The person who needed mechanical ventilator landed up with bad prognosis. (TABLE-7)

3.6. MATERNAL OUTCOME

Among 100 patients, 62 patients discharged healthy and 38 patients died.(TABLE-8)

3.7. PERINATAL OUTCOME

Neonatal outcome in covid 19 patients, 19 patients had good neonatal outcome. Total 38 babies admitted in NICU and the major (30%) cause is respiratory distress mainly due to hypoxia in mother.(TABLE-9)

4.DISCUSSION

The present study which included 100 covid pregnant women, who were admitted into maternal intensive care unit, was conducted at obstetrics and gynecology department in GANDHI HOSPITAL, a tertiary care centre in Telangana. The patients were studied based on demographical characteristics, clinical features, and association with co morbidities, inflammatory markers, management, maternal and perinatal outcome

The observations of the study were as follows,

- Out of 100 patients studied, the mean age of presentation was 25.75(4.31) years. The age range observed was between 17 to 35years. Majority (40%) of them being in the age group of 21 to 35years. 64% patients belong to 3rd trimester and majority of them were primigravida.
- Similarly in a study conducted by Brinda priyadharshini et al,¹ published in clinical epidemiology and global health, majority of the covid pregnant patients were in the age group of 21 to 25years., 83% were admitted in 3rd trimester and half of the patients are primigravida.
- In a study conducted by josevillar et al², the mean age distribution of covid patients was 30.2years
- In present study, of all patients, 36% patients do not have any associated co morbidity. 40% were in the group of hypertensive disorders including abruption, gestational hypertension, preeclampsia, eclampsia and chronic hypertension.
- Similarly, according to study of josevillar et al,² majority of the patients were at higher risk of preeclampsia/eclampsia (relative risk-1.76, 95% Confidence interval 1.27-2.43).
- In a study conducted by john Allotey et al³, pre-existing maternal co morbidities including hypertension, GDM and obesity were associated with more complications.
- In present study, majority (96%) of the patients admitted into ICU were presented with shortness of breath. Cough (35%) and fever (31%) were also the major symptoms.
- Similarly, According to john Allotey et al,³ shortness of breath was the leading symptom (52%) followed by fever and cough (36%).
- In study conducted by Melanie Nana et al,⁴ shortness of breath and fever for any duration was associated with increased risk of severe maternal complications (RR-2.56, 95%CI 1.92-3.40)
- The present study showed elevated inflammatory markers in decreasing order CRP (100%), S.FERRITIN (53%), LDH (46%) and D-DIMER(24%). Elevated inflammatory markers associated with proportional increase in the maternal mortality.
- According to study of Andrea Lombardi et al,⁵ CRP was the inflammatory biomarker which varied more significantly during the course of covid 19 obstetric patients supporting its employment as a tool to monitor the evolution of the disease. Whereas D-dimer and ferritin were not the reliable predictors of poor outcome.
- In the study conducted by Johana Vasquez-Procopio,⁶ pregnant women in the severe covid 19 group were characterized by increased concentrations of acute phase reactants such as CRP(p<0.0001), D-dimer(0.027)
- According to present study, every patient needed oxygen in the form of mask, non invasive ventilation and mechanical ventilator. 39% patients needed oxygen mask delivery and majority (70%) of the patients was connected with non invasive ventilation and was the good modality of treatment in covid pregnant patients. The patients who were mechanically ventilated (14%) had bad prognosis.

- Similarly, according to study of Francesco Menzella et al,⁷ non invasive ventilation was successful in 48.1% patients. This study showed NIV can avoid intubation in almost half of the patients.
- In the study conducted by John Allotey et al,³ lecture in epidemiology and women's health majority of patients with severe disease needed ventilation, (invasive ventilation of odds ratio-2.41 and 95% confidence interval 2.13-2.17).
- According to study conducted by Melanie Nana et al,⁴ 5% of hospitalised pregnant women with COVID-19 have required ICU admission and required invasive ventilation.
- According to present study, 62% patients were discharged from the hospital with a good outcome and 38% patients were died. ICU had higher rates of mortality.
- Similarly, in a study of Ali Eman et al,⁸ observed oxygen requirement in all cases(100%), 42% were intubated and mechanically ventilated. All patients that were mechanically ventilated have died. Eight patients have died due to complications of COVID-19 showing an ICU mortality rate of 42.1%.
- In the study of John Allotey,³ 0.2% of pregnant women with confirmed COVID-19 were died who were treated in ICU due to various causes.
- According to Melanie Nana et al,⁴ the overall mortality rate is low (2.2%) in all COVID-19 hospitalized pregnant patients.
- In the present study 38% babies were admitted into NICU in view of respiratory distress (30%) due to prematurity, low birth weight (6%) and seizures (2%). Perinatal mortality in the form of neonatal deaths, stillborn and intrauterine deaths constitutes 16%. 4% of 1st trimester patients were landed with abortion.
- In study conducted by Melanie Nana et al,⁴ symptomatic COVID-19 patients were at increased risk of preterm delivery. In 80% of cases, the preterm births were iatrogenic, undertaken to improve maternal oxygenation.

5. CONCLUSION

The corona virus disease 2019 became a pandemic in a short time and caused serious health issues around the world. Admission into ICU signifies severity of the disease. We as doctors should enable ourselves for prompt and appropriate care for the pregnant women by equipping ourselves with the necessary knowledge and being prepared with the wider multidisciplinary approach

Care for the need of oxygen reserved to the ICU patients mainly who were having raised inflammatory markers

High mortality rate was detected among critically ill pregnant patients in the ICU. Main predictor of mortality was, need of invasive ventilation. Higher rates of NICU admissions were observed with low neonatal mortality.

6. REFERENCES

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7.APPENDIX

**TABLE 1: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE AGE
(N = 100)**

Age (Years)	No.	Percent
16-20	12	12.0
21-25	40	40.0
26-30	28	28.0
31-35	20	20.0
Mean (SD)	25.75 (4.31)	
Range	17-35	

**TABLE 2: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE
TRIMESTER (N=100)**

Trimester	No.	Percent
1 st	8	8.0
2 nd	12	12.0
3 rd	64	64.0
Postpartum	16	16.0

TABLE 3: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE PARITY (N=100)

Parity	No.	Percent
Primi	64	64.0
Multi	36	36.0

TABLE 4: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE CO MORBIDITIES (N=100)

Co morbidities	No.	Percent
Abruption	2	2.0
Anemia(<10g/dl)	12	12.0
Asthma	4	4.0
Chronic Hypertension	4	4.0
GDM	4	4.0
Gestational Hypertension	14	14.0
Overt DM	2	2.0
Heart Disease	2	2.0
Nil	36	36.0
Postpartum Eclampsia	2	2.0
Severe Preeclampsia	18	18.0

TABLE 5: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE COVID SYMPTOMS (N=100)

Covid Symptoms	No.	Percent
Cough	35	35.0
Fever	31	31.0
SOB	96	96.0
Fatigue	10	10.0
Cold	8	8.0

TABLE 6: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE LABORATORY MARKERS (N=100)

	Number	Percentage
Elevated LDH	46	46.0
Elevated CRP	100	100.0
Elevated D-Dimer	24	24.0
Elevated Serum Ferritin	53	53.0

TABLE 7: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE MANAGEMENT (N=100)

Management	No.	Percent
Oxygen Mask	39	39.0
NIV	70	70.0
Mechanical Ventilator	14	14.0

TABLE 8: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE MATERNAL OUTCOME (N=100)

Maternal Outcome	No.	Percent
Died	38	38.0
Discharged	62	62.0

TABLE 9: DISTRIBUTION OF STUDY SUBJECTS ACCORDING TO THE PERINATAL OUTCOME (N=100)

Neonatal Outcome	No.	Percent
Death	6	6.0
Abortion	4	4.0
IUD	6	6.0
Stillborn	4	4.0
LBW	6	6.0
RD	30	30.0
Seizures	2	2.0
Total NICU Admission	38	38.0