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Original Research Paper

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A STUDY ON IMPACT OF MATERNAL AND FETAL OUTCOME IN COVID 19 PREGNANT WOMEN

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ABSTRACT

BACKGROUND: The novel corona virus disease is the most challenging health crisis that we are facing today. Against the backdrop of this pandemic it becomes imperative to study the effects of this infection on pregnancy and its outcome.Hence the present study was undertaken to evaluate the effects of COVID-19 infection on the maternal morbidity, mortality, the mode of delivery as well as the neonatal outcome.

MATERIALS AND METHODS: A prospective observational study is conducted in all pregnant women attending the Department of Obstetrics and Gynecology at GGH Kurnool which has been converted as state COVID 19 hospital in Andhra Pradesh during COVID 19 pandemic period. A total of 5970 pregnant women are included in the study who are admitted in AN ward & Labor ward from 1st May to October 31st 2020.

RESULTS: Out of 5970 pregnant women,847 are tested as COVID positive and the incidence is 14.18%. Out of them, only 15 are symptomatic and are treated medically as per the physician's advice based on their severity,487 are delivered,of which 207 are vaginal deliveries and 280 are LSCS. Majority of newborns are having good APGAR at 1 min & 5 min,every newborn is subjected for COVID testing, of which only 1 tested positive on day one of life and again tested negative on day 5.

CONCLUSION: There is no significant effect of COVID 19 itself on maternal and fetal outcome in pregnancy except when it is associated with other co-morbidities like preeclampsia with HELLP, GDM, DIC etc,resulting in increased morbidity and mortality to the pregnant women. As of now there is no significant evidence of vertical transmission of COVID 19 infection but the long term follow up of these babies is recommended.

KEYWORDS : COVID 19 positive, Mode of delivery, Management, Maternal and fetal outcome.

INTRODUCTION:

The novel corona virus infection is a global public health emergency. The first case of corona virus infection was identified in Wuhan, Hubei province of china and was notified to the WHO on 31stDecember 2019. By 30th of January, the corona virus disease was declared as a public health emergency of international concern (PHEIC)[1]. It did not take long for the COVID – 19 to establish its roots in India as the first case was confirmed on 30th January at Thrissur, Kerala2. As of 24th September total no of cases in India was 5,751,510 with 91,362 deaths . More than 180 countries reported laboratory confirmed cases of COVID19.

Corona virus is a single stranded RNA virus with a diameter of 80 -120 nm. There are four types – alpha, beta , delta and gamma corona virus. Prior to SARS-COV2(Severe Acute Respiratory Syndrome Coronavirus), six corona viruses were known to cause diseases in humans, including SARS-COV and MERS-COV. SARS-COV2 like SARS-COV and MERS-COV (Middle East Respiratory Syndrome Coronavirus) is a beta corona virus[3]. Corona viruses causes illness ranging in severity from the common cold to the severe respiratory illness and death. Mode of infection is through respiratory droplets when an infected person coughs or sneezes ,by direct contact with infected persons, or by contact with contaminated objects or surfaces. The incubation period varies from 2 days to 2 weeks following exposure to virus[4].An analysis of 181 confirmed cases outside Wuhan, China, found the mean incubation period to be 5.1 days and that 97.5% 0f the individuals who developed symptoms did so within 11.5 days of infection[5].The period from the onset of COVID 19 symptoms to death ranged from 6 – 41 days with a median of 14 days with a case fatality rate of 2.3% [6,7].

Frequent manifestations include fever, cough, myalgia, headache, sore throat and diarrhea. Abnormal testing includes abnormalities on chest radiographic imaging, lymphopenia, leucopenia and thrombocytopenia[8].The diagnosis of current infection relies on tests to detect the presence of virus in various body fluids. The standard test being done presently is detection of viral RNA by RT-PCR [reverse transcriptase polymerase chain reaction] from the nasopharyngeal mucosa as recommended by ICMR [Indian Council of Medical Research].Antibody tests on blood are used to confirm post infection and presumed immunity to repeat infection, although effectiveness of such tests is not yet known[9].Interim COVID-19 guidelines for the effective counselling and education of pregnant women are currently available from the Center for Disease Control and Prevention [CDC] and the World Health Organization [WHO][10,11].

COVID-19 is a rapidly evolving situation and there is limited data reporting its impact on pregnant women. Based on the available data, various clinical guidelines for management have been formulated. This article intends to compile and summarize maternal and fetal outcome in COVID-19 affected Pregnant women.

AIMS AND OBJECTIVES:

To assess the maternal and fetal outcome in COVID 19 affected pregnant women.

MATERIALS AND METHODS:

A prospective observational study was conducted in the department of Obstetrics and Gynecology at GGH Kurnool which is a State COVID hospital in Andhra Pradesh, All COVID positive women attending AN ward Labor ward and referred from places like Gadwal, Anantapur, Adoni are included. A total of 847 pregnant women are included during our study period. Details about the patient like age, parity, gestational age, address, any co morbid conditions, mode of delivery, baby details, APGAR score and treatment given to the COVID positive women are recorded. Testing of all the pregnant women who come to labor room is done by means of RTPCR,TRUENAT & RAT. Nasopharyngeal swabs are collected after wearing complete PPE and are transferred in a VTM(Viral Transport Media) and sent to the microbiology department for testing.

To reduce risk of transmission we carried out several

measures including creating awareness about hand hygiene and usage of masks, social distancing of about 1 meter among all pregnant women, maintaining distance between beds, strict and correct usage of personal protective equipment among the health care workers. Separate rooms for donning and doffing were assigned in the labor ward complex. Cleaning and disinfection of labor room and OT was done on regular frequent basis.

Symptomatic COVID 19 positive patients are treated with oral or Parenteral antibiotics like Azithromycin, Doxycycline, Vitamins and Mineral supplementation. Severely ill patients required O2 or ventilator support are managed in ICU in consultation with physician and started on Inj.Remdesvir, Inj.Heparin s/c and steroidal injections. Asymptomatic positive patients are transferred to COVID care centers on Day 5 for isolation with multivitamin and mineral supplementation. Neonatal swabs are sent within 24hrs after delivery and rooming in is recommended. Direct breast feeding to the newborn baby is encouraged in our study. Mothers are instructed to wear medical mask when they are near their baby and perform hand hygiene before close contact with the baby.

RESULTS:

A total of 5970 pregnant women are included during our study period of 6 months of which 847 pregnant women are tested COVID positive with an incidence of 14.18 %.Out of 847 pregnant women tested COVID positive, majority are multigravida(525) ,belonging to age group 16-25 years(608) with gestational age of 30-40 weeks.In our study a total of 125 COVID positive pregnant women are having associated co-morbidities of which anaemia(68) and HTN disorders(55) are more commonly associated. Among 15 symptomatic women fever(15),cough and cold(14) and dyspnea(9) are more common. Laboratory findings in these symptomatic women showed elevated CRP,D-DIMER,S. FERRITIN & S. LDH, Only 2 among them showed CT-CORADS changes. Out of 847 women,487 women are delivered, among them 207 are vaginal deliveries and 280 are LSCS and 3 abortions. LSCS done for obstetric indications only like Prior c/s (107), CPD(55), fetal distress(43) and oligohydramnios(41) are common indications. Out of 483 live newborns, Only 1 newborn tested COVID positive, preterm(17),LBW(32),ICU admissions(7) and 2 neonatal deaths are seen. A total of 5 intrauterine deaths are seen during our study period.

Table 1: Age Distribution

S.No	AGE GROUP(YRS)	No of cases	Percentage
1	16-25	608	71.78
2	26-35	239	28.21
	Total	847	100

Table 2: Parity Distribution

S.No	Parity	No of cases	Percentage
1.	Primigravida	322	38.01
2.	Multigravida	525	61.9
	Total	847	100

Table 3: Gestational Age

S.No	Gestational age (weeks)	No of cases	Percentage
1.	<20	9	1.06
2.	20-30	202	23.84
3.	30-40	629	74.26
4.	>40	7	0.82

Table 4: Associated Co-morbidities

S.No	Associated co-morbidities	No of cases	Percenttage
1.	Anaemia	68	54.4
2.	HTN disorders	55	44
3.	Hypothyroidism	2	1.6
4.	DM/GDM	1	0.8
	Total	125	100

Table 5

S.No	COVID 19+VE	No of cases	Percentage
1.	Symtomatic	15	1.77
2.	Asymtomatic	832	98.22
	Total	847	100

Most common symptoms include fever, cough, cold and dyspnea

Table 6: Laboratory Characteristics

CONFIRMED SARS COVID 19 +VE	847
ELEVATED D-DIMER	15
ELEVATED S.FERRITIN	14
ELEVATED CRP	15
ELEVATED S.LDH	14
CT CORADS	02

Table 7: Mode Of Delivery

S.No	Mode of delivery	No of cases	Percentage
1.	Vaginal Delivery	207	42.50
2.	LSCS	280	57.49
	Total	487	100

Table 8: Indications For Lscs

S.No	Indications for LSCS	No of cases	Percentage
1.	Prior c/s	107	38.21
2.	CPD	55	19.64
3.	Fetal distress	43	15.35
4.	Oligohydramnios	41	14.64
5.	PROM	14	5
6.	Breech	04	1.42
7.	Failed progression	03	1.07
8.	Placenta previa	03	1.07
9.	Imminent eclampsia	02	0.71
10.	Twins	01	0.35
11.	Others	07	2.5
12.	Total	280	100

Table 9: Neonatal Outcome

S.No	Neonatal outcome	No of cases	Percentage
1.	No of newborns tested +ve	01	0.20
2.	No of Preterm	17	3.48
3.	No of LBW	32	6.55
4.	No of NICU admissions	23	4.71
5.	No of IUD	05	1.02
6.	APGAR at 5 min <7	21	4.30
7.	APGAR at 5min >7	467	95.69
8.	No of neonatal deaths	02	0.40

Table 10: Maternal Outcome (complications)

S.No	Maternal outcome	No of cases	Percentage
1.	Abortions	03	27.27
2.	APH and PPH	03	27.27
3.	Maternal ICU admissions	03	27.27
4.	Maternal deaths	02	18.18
	Total	11	100

DISCUSSION:

COVID 19 is a global public health emergency and could cause devastating health issues during pregnancy,as pregnant women have a high propensity to acquire this infection due to their altered physiological and immunological function.Many studies have focused on infectious patients from general ;however of COVID-19 related pregnancy outcomes are scarce.

The present study involved a total of 5970 pregnant women among them 847 are tested COVID positive with an incidence of 14.18%. Majority of them being Multigravida, belonging to age group 16-25 years with a gestational age of 30-40 wks in concordance with other studies like Nayak et al study[12].

In our study most of the COVID 19 pregnant women are asymptomatic ,Only 15 are symptomatic having symptoms like fever,cough ,cold and dyspnoea.These symptomatic patients showed laboratory findings of elevated CRP, elevated D –DIMER, elevated serum Ferritin, elevated serum LDH. G. A. Ryan et al study showed lymphocyte to leucocyte ratio changes[13],In our study no such changes are seen.Among the symptomatic who are severely ill are found to have associated co-morbidities like severe preeclampsia leading to deranged coagulation status contributing to maternal morbidity and mortality.These severely ill patients required ICU admissions and treated them with oxygen supplementation,Inj Remdesvir,Inj Heparin,Steroids and higher antibiotics as per the physician's advice.

Among 847 COVID 19 affected pregnant women,487 are delivered,Of which 207 are vaginal deliveries,280 are LSCS and 3 abortions, showing more LSCS rate compared to vaginal deliveries. LSCS is done for obstetric indications like Prior c/s,CPD,Fetal distress,Oligohydramnios etc and not just because of the COVID 19 infection.

Regarding neonatal outcome, majority of the neonates are born with an APGAR >7 at 5 min(467).Out of 488 newborns only 1 tested positive for COVID 19,17 are preterm,32 are LBW,23 NICU admissions,5 IUD's and 2 neonatal deaths.NICU admissions are due to Respiratory distress,LBW,Preterm,Birth asphyxia etc,5 IUD's are due to Abruption,Anomalies to the baby,Severe oligohydramnios etc.

In our centre placental histopathology of confirmed COVID 19 women showed evidence of perivillous and intervillous fibrin deposition, perivascular hyalinization, intervillous hemorrhage, chorioangiosis,increased syncytial knots and calcifications which are also seen in normal pregnant women.

Regarding breast feeding, COVID 19 women are educated about hygeine,social distancing,wearing facemask while feeding are explained.According to G. A. Ryan et al study there is no evidence of virus in breast milk secretion till now and the benefits of breast feeding seem to outweigh any potential risks of transmission of virus through breast milk[13].Hence,breast feeding is recommended to all COVID 19 women.

The neonatal mortality is 0.4% (2) because of complications like Preterm,LBW,Birth asphyxia.Out of 2 maternal deaths,1 is being a primigravida with 32 weeks of gestation having ARDS picture with low saturations required ventillatory support is intubated and died within 24 hours after admission, Another pregnant women is a post LSCS with severe preeclampsia associated with HELLP, Pulmonary edema died due to cardio respiratory arrest.

CONCLUSION:

Research on the effects of COVID 19 infection during pregnancy has to be carried out further to study the maternal and neonatal outcome.The results of the present study suggested that there is no effect of COVID 19 infection on maternal and perinatal outcome.The majority of women were discharged without any major complications and there was no evidence of vertical transmission of the COVID 19 infection. However,long term follow up of these babies to see any delayed effects is necessary,As several women are getting infected all over the world, further studies have to be carried out in the coming days about the effect of COVID 19 infection on pregnancy,labor and neonates.

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