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Pregnancy Outcome in Covid-19 Positive Patients in Rural Medical College. A Prospective Observational Study.

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Abstract:
Background: *There are many unknowns for pregnant women during the coronavirus disease 2019 (COVID-19) pandemic. Even though enormous studies on effect of COVID-19 infection on pregnant women, newborns but there is no data about the covid-19 pregnancy outcomes in rural and tribal areas, so we are collected data related to pregnancy outcomes in covid-19 patients in tertiary care hospital which is surrounded by rural and tribal population.*
Materials and Methods*: A prospective observational study conducted over a period of 1 year from 1/6/2020 to 31/5/2021. All pregnant women with covid-19 infection presented to OPD or in patient department of OBGY in our institute are included in this study, pregnant women who are not infected with covid-19 were exclude. Details about the pregnancy, covid-19 infection severity, maternal and neonatal complications and outcomes were collected and analysed.*
Results: *78 women were included in study among them most of women were asymptomatic having mild covid-19 infection. Majority of our study group are between 20-30 years age(71%) and 90.9% are belongs to Socioeconomic status IV&V. 10.2% were below 28weeks of pregnancy and 89.8% were between 28 to 40 weeks of pregnancy at the time of diagnosis of covid-19 infection. In our study 56(71.7%) had vaginal delivery and 17(21.7%) had cesarean section. We had one case of maternal death. Out of 68 live new borns7 newborns required NICU admission, we had no neonatal deaths.*
Conclusion*: Covid-19 infected pregnant patients can be managed effectively without a significant increasing in complications if proper personal protective measures and guidelines issued were followed at every centre even it is rural area.*
Key words: Covid-19 infection, pregnancy outcomes, rural and tribal area.

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I. Introduction

Infection by new corona virus which is known as SARS-COV-2 leading to corona virus disease (COVID-19) has become global pandemic.[1]The fate of COVID-19 is highly variable depending on host immune response and comorbid-illnesses. There are many unknowns for pregnant women during the coronavirus disease 2019 (COVID-19) pandemic. The impact of SARS-CoV-2 in pregnancy remains to be determined, and a concerted, global effort is required to determine the effects on implantation, fetal growth and development, labour, and neonatal health. Asymptomatic infection presents a further challenge regarding service provision, prevention, and management. A pregnant woman with coronavirus disease 2019 is at the greatest risk when she is in labour, especially if she is acutely ill. A 2020 systematic review suggested that people who are pregnant did not have an increased risk of SARS-CoV-2 infection or symptomatic COVID19, but they were at risk of severe COVID-19 compared with those who were not pregnant.[2,3]Although some recent observational studies have suggested that people with confirmed asymptomatic and symptomatic COVID-19 as well as mild and severe infections may be at risk of adverse pregnancy outcomes.[4,5] Even though enormous studies on effect of COVID-19 infection on pregnant women, newborns but there is no data about the covid-19 pregnancy outcomes in rural and tribal areas, so we are collected data related to pregnancy outcomes in covid-19 patients in tertiary care hospital which is related to rural and tribal population.

II. Materials and Methods

This is a prospective observational study of pregnancy outcomes in covid-19 positive patients in a tertiary care centre which is related to rural and tribal population. The study was approved by the institutional ethical committee Rajiv Gandhi Institute of Medical Sciences, Adilabad. We collected data from 1/6/ 2020 to 31/5/2021. Pregnant women who attended out-patient department or in patient in the department of obstetrics and gynaecology in RIMS, Adilabad with covid-19 symptoms, history of contact or suspicious of infection or pregnant women who planned for delivery were screened for Covid-19 infection with nasopharyngeal swab RT-PCR. An attempt made to include all pregnant women who were Covid-19 positive during study period after taking an informed consent. Total 78 pregnant women were screened positive were included in the study. Pregnant women who are not infected with covid-19 were excluded from study. Data about demographic details of woman, Present and past Obstetric history, COVID-19 symptoms, Laboratory investigations which can help to assess the severity of covid-19 infection, details about the mode of delivery, treatment received, about requirement of respiratory support, complication developed maternal morbidity and mortality were collected and analysed. The details about the Neonates like NICU admission, LBW, RDS, sepsis, congenital anomalies, neonatal deaths were also analysed. All mothers and neonates were followed up till 6 weeks post delivery.

III. Results

Base line characteristics of cases are described in Table 1. Out of 78 pregnant mothers who tested positive for covid-19 infection 91.1% were 20 to 30 years and majority of women belongs to socioeconomic status IV and V that is 90.9 %. Out of 78 women 36(46.1%) were term and 42(53.7%) were below 37 weeks at the time of diagnosis of covid-19 infection. The primi and multigravida were 55.1% and 44.9% respectively

Table 1: Demographic characteristics

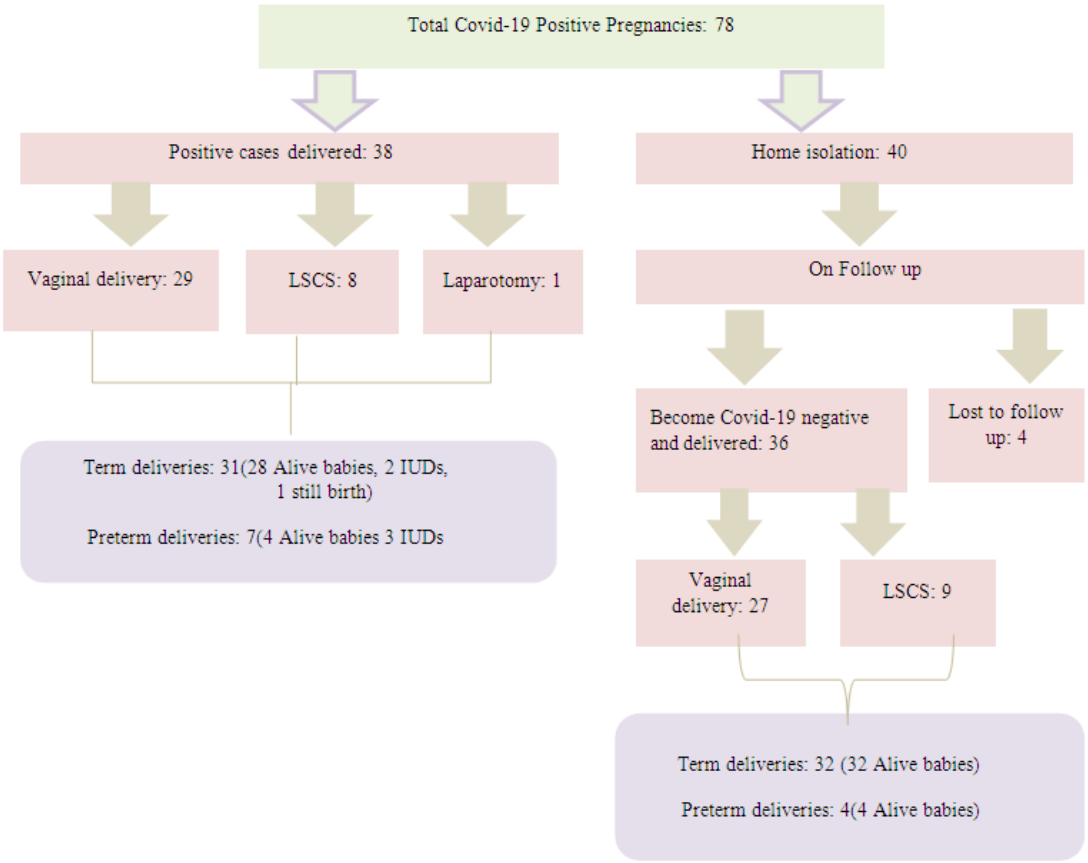
Parameters		Number of cases	Parameters	Number of cases
Age in years	16-20	5(6.4%)	Parity Primi	43(55.1%)
	20-30	71(91.1%)	Multi	35(44.9%)
	30- 40	2(2.5%)		
Socioeconomic status (class)		Number of cases	Gestational age at diagnosis	Number of cases
	I	0	<13 weeks 6 days	3(3.8%)
	II	2(2.5%)	14-27weeks 6days	5(6.4%)
	III	5(6.4%)	28-36weeks 6 days	34(43.5%)
	IV	47(60.2%)	≥37 Weeks	36(46.1%)
	V	24(30.7%)		

Majority 47.4% were having anemia as comorbid condition. Most of the women 75.6% were asymptomatic or having mild covid-19 infection. 14(17.9%) had moderate and 5(6.4%) had severe covid-19 infection in our study. Out of 78 women tested positive 38(48.7%) required admission at the time of diagnosis the reasons were near to EDD, in labour, moderate to severe covid-19 infection or associated comorbidities. Other 40(51.2%) cases went on home isolation as they were asymptomatic or having mild infection and for from EDD. 38 cases were delivered during active covid-19 infection and in 40 cases who went on home isolation on follow up 36 cases become covid-19 negative and delivered and 4 cases had lost to follow up. Among 78 cases 56(71.1%) Women had vaginal delivery, 17(21.7%) women had LSCS for various indications and one women required laparotomy rent repair who presented at term with previous cesarean section in labour with IUD ruptured uterus. 63(80.7%) and 11(14.1%) had term and preterm deliveries respectively. Pregnancy outcomes and various obstetric complication of our study women were depicted in flow chart (1) & table(2).

Table 2: Obstetric complications of Study population

Parameters		Number of cases	Parameters	Number of cases
1)	Abortions	Nil	7) Transvers lie	1(1.2%)
2)	IUGR	8(10.2%)	8) Previous 1 LSCS	10(12.8%)
3)	Abruption	1(1.2%)	9) Previous 2 LSCS	3(3.8%)
4)	Preterm delivery	13(16.6%)	10) Intrauterine deaths	
5)	Multi-fetal Pregnancy	1(1.2%)	Preterm IUD	3(3.8%)
6)	Breech presentation	3(3.8%)	Term IUD	2(2.5%)

Flow chart: 1Depicting the inflow of participants in to the study



Two cases had PPH(2.5%), three cases required mechanical ventilation(3.8%) and five developed pneumonia(6.4%). We had one maternal death she was Primi gravid with 7 months pregnant presented with SOB, fever. Chest X ray with shield showed B/L pneumonia severe disease all inflammatory markers were elevated. She received steroids, LMWH, IV antibiotics. Considering the benefits over risk after taking consent from patient and relatives we started on injection Remdesivir but her condition deteriorated and died on 7 days of hospital stay due to respiratory failure.

Intrauterine death of fetus noted in 5 cases among them 3 were preterm and 2 were term . Among these 5 cases one case was primi 30 week with SPE presented with IUGR and oligohydromnios, one more case was G3L2 37 weeks presented with ruptured uterus IUD abruption , in other 3 cases cause of IUD was not known. We had 68 live neonates and one still birth cause of which was unknown. 16 neonates had LBW, 4 Babies had low Apgar score<7 at the time of delivery. Seven neonates required NICU admission due to various causes like respiratory distress, LBW, meconium aspiration. No neonatal deaths were reported in our study. Maternal and fetal outcomes of study group depicted in Table (3). Four mothers were lost to follow up , one mother had death so we followed 73 mothers 6 weeks post delivery all were healthy except mild weakness as a complaint. On 6 weeks follow up of 68 neonates all were healthy and asymptomatic.

Table 3: Maternal and Fetal Outcomes of the Study population

Maternal Parameters	Number of cases	Neonatal Parameters	Number of cases
1. Mode of delivery			
Vaginal	56(71%)	1) Live births	68(87.1%)
LSCS	17(21.7%)	2) Still births	1(1.2%)
Laparotomy	1(1.2%)	3) LBW	16(20.5%)
2. PPH	2(2.5%)	4) Low Apgar Score <7	4(5.1%)
3. Required mechanical ventilation	3(3.8%)	5) NICU admissions	7(8.9%)
4. Puerperal sepsis	5(6.4%)	6) Gross Congenital Anomalies	Nil
5. Maternal deaths	1(1.2%)	7) Neonatal sepsis	1(1.2%)
6. Lost to follow up	4(5.1%)	8) Neonatal deaths	Nil

IV. Discussion

The current study aims to assess the pregnancy outcomes in covid-19 positive patient in tertiary care hospital related to rural and tribal population. This study is among the first studies conducted in such rural and tribal population which is different from preliminary reports and studies in pregnancy outcomes in covid-19 infection which are available till now. The results from this study indicate that the majority of pregnant women with covid-19 infection were young between 20 to 30 years and belongs to low socioeconomic status. Current study indicate that the majority of women were hospitalized due to covid-19 during their 3rd trimester which is consistent with findings of most of overseas studies.[6,7] Majority of our study women had mild covid-19 infection with most of them were asymptomatic which is consistent with the results of a systematic review of sixty studies which showed 43.5%-92%of pregnant women were asymptomatic.[8,9] The most common covid-19 symptom among pregnant women were fever, cough, dyspnea, along with fatigue and myalgia.[10,11] Other less common symptoms were sore throat, malaise, diarrhea and vomiting. Our study women were also had similar symptoms consistent with above studies.

Most of our study women 71.7% were delivered vaginally and 21.7% were delivered by cesarean section which is different from a recent systematic review and meta analysis reports which showed the high prevalence of cesarean section in several studies ranged from 66.7% to 100%.[8-11] One study by khoury R et al made an association between the severity of covid-19infection and mode of delivery with higher rates of cesarean in patients with more severe disease.[12] Systematic review by Di Mascio D et al showed that pregnant patients with greater than 90% hospitalization rates for covid-19 pneumonia showed an increased C-section rate of 91%.[13] It is uncertain whether SARS-CoV-2 is transmitted through breast milk. Current guidance is for mother to continue breast feeding even if they have tested positive during birth or postpartum period they should follow basic hygiene advice, hand washing and should wear a mask while feeding.[14,15,16] Our study women were also continue breast feeding with appropriate preventive measures.

A high rate of preterm birth was reported by many studies although none had a denominator population for comparison and the cause of preterm birth was given all as iatrogenic because of deteriorating maternal condition.[17-19]Whether covid-19 infection is an independent risk factor for preterm birth has not yet been established. We had 14.1% of preterm deliveries in our study. Other fetal complications like fetal growth restriction, fetal distress, still births, respiratory distress, increased NICU admissions were reported by previous studies.[20-24] Our study also had similar complications expect that NICU admissions were not so high in our study and we had no neonatal deaths.

Patients were mostly treated with antibiotics, corticosteroids and symptomatic treatment. Five patients required respiratory support and HDU and ICU admission among them one patient was 28 weeks pregnant developed pneumonia with severe covid-19 infection required antivirals, LMWH and required respiratory support died due to respiratory failure with 7 days of hospital stay other 4were discharged from hospital with 5 to 7 days of stay. Our findings in line with previous studies which provided evidence of low ICU and low maternal mortality rate among pregnant women.[25]

V. Limitations

Most of our patients could not afford extensive investigations and our study could not aid by financial support therefore statistical analysis of laboratory parameters could not carried out. Being tertiary care centre many patients were lost to follow up and long term effects could not be studied. Owing to test supply shortages we could not do testing for neonates, so vertical transmission possibility was not assessed.

VI. Conclusion

Obstetric management of covid-19 positive pregnant women is a critical process which is essential in procuring a good prognosis for mother and neonate. Covid-19 infected pregnant patients can be managed effectively without a significant increasing in complications if proper personal protective measures and guidelines issued were followed at every entre even it is rural area.

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