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Pregnancy Outcomes in COVID Positive Patients

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Abstract---Background and Objective: A new pathogen of high contagious abilities named Corona virus was seen to target pregnant women due to physiologic changes in their immune system, cardiopulmonary and coagulation system leading to poor fetus-maternal outcome. Thus, to determine maternal and fetal outcome in pregnant women affected with COVID-19 and its frequency of vertical transmission is the main objective of the study. Methods: This is a prospective study of 50 pregnant women with RTPCR confirmed COVID-19 infection between 1st March 2021 and 1st August 2021. The foetal and maternal outcome, frequency of vertical transmission,

mode of delivery, presenting symptoms and Level of serum markers such as LDH and CRP were noted. Results: Among 50 patients, 68% delivered through Caesarean section 34% delivered vaginally. The most common presenting symptom was fever in 50% patients. Other symptoms were running nose, headache, myalgia, loss of smell and taste. 68% patients had raised Serum LDH level and 26% patient had raised Serum CRP level. The maternal condition was taken into account based on source of oxygen saturation by monitoring Spo2 level.

Keywords---COVID-19, fetus-maternal outcome, positive patients, pregnancy, vertical transmission.

Introduction

Corona Virus Disease -2019 (COVID-19), first identified in Wuhan china in December 2019 has caused widespread morbidity and mortality across the globe. It caused variety of respiratory tract illness ranging from common cold to pneumonia and death. Fever, headache, myalgia and diarrhea were the usual presentation. Transmission of COVID-19 from person to person is thought similar to as that of influenza and other respiratory infections by direct contact ,indirect contact and droplet. Preterm labour, fetal distress and preterm rupture of membranes were experienced by that patients¹⁻⁵. Even the babies born to such mother had complications of preterm, respiratory distress syndrome and still birth. Maternal respiratory deterioration can lead to changes in fetal heart rate pattern. The decision regarding mode of delivery should be made by an obstetrician in collaboration with neonatologist considering the gestational age of the fetus⁶. Early isolation, aggressive infection control procedures, and testing for co morbidities are general principles regarding management of COVID-19 during pregnancy. For superadded bacterial infection, Oxygen therapy was required, avoidance of fluid overload and prophylactic antibiotic coverage are compulsory⁷. A team based approach with multispecialty consultation was done and thus delivery planning was individualized⁸. Lower segment caesarean section was done in case of fetal distress and non progressive labor. The Neonates that were born had normal APGAR score (7-10) with average birth weight of (2.5-2.9kg). Here we analyze findings of 50 patients that suggest that there were no fetal complications in pregnant women affected by COVID-19 during third trimester.

Maerials and Method

Study design and participants

This was a single centre; retrospective study conducted at Dhiraj hospital Waghodiya , Pipariya designated hospital for COVID-19 , a tertiary health care center in rural area of Vadodara also draining the patients from tribal districts of Chhattaundaipur, Panchmahals and border areas of Madhya Pradesh. We included pregnant women with COVID-19 from inpatient department. Positive RTPCR test was mandatory for assigning the diagnosis of COVID-19 infection in all symptomatic patients. Rapid antigen test for COVID was done in all the patients

attending the labour ward. All the patients in this study had positive rapid antigen test also confirmed by reverse transcription polymerase chain reaction (RT-PCR) test through nasopharyngeal swab samples.

Patient identification and data collection

All patients were admitted to Dhiraj hospital Waghodiya Gujarat with diagnosis of COVID-19. The patients were analyzed according to severity of COVID 19 symptoms, hemodynamic status, laboratory tests, length of hospital stay, oxygen saturation status, outcome of pregnancy and neonatal condition were recorded.

Patient concerns

We report a study of clinically and laboratory confirmed 50 COVID-19 positive pregnant patients. Patients were tested positive for COVID-19 on admission before delivery but then turned negative few days post delivery. Out of 50 patients 34 patients were delivered by LSCS and 16 patients were delivered vaginally at Dhiraj hospital. In order to reduce chances of vertical maternal-fetal vertical transmission planned caesarean delivery was expedited after improving fetal lung maturity with betamethasone at 34 weeks of gestation. Higher recovery rate was noted in mother after delivery of the baby. Two patients succumbed to death as they were admitted in critical condition in ICU and on admission and were put on ventilator because of low oxygen saturation.

Outcome

Pregnant ladies admitted to Dhiraj hospital gave birth to healthy babies. The neonates were subjected to screening for corona virus infection. Out of 51 babies (one twin pregnancy), 3 babies were dead in utero. Out of 48 live babies, 46 babies were tested negative for RTPCR, 2 babies were tested positive for RTPCR but were asymptomatic and turned negative after 15 days. 2 pregnant patients who presented in critical condition in late stage with extensive pulmonary involvement succumbed to death in spite of all measures to revive them. Out of these two, one patient delivered still birth and another antenatal patient with twin pregnancy succumbed to death before delivery. Average duration of hospital stay after normal delivery was 2 days and after LSCS it was 3 days. Recovery was faster and better in patients presenting in early stage of disease with mild to moderate symptoms. Chances of vertical transmission from mother to son cannot be neglected.

Vertical transmission of COVID-19

The possibility of vertical transmission was suspected in two cases, where the neonate had an increased IgM level, which indicated involvement of innate immunity of neonate. Two neonates born to COVID-19 infected mothers were tested positive for SARS-CoV-2. Rapid detection, isolation; testing and preventive measures formed the mainstay of management of the pregnant patients coming to the hospital. Appropriate measures were taken for preventing cross infection to the baby. Utmost care was exercised to prevent the contact of neonate with

infectious vaginal secretions during delivery. Thus, baby should be isolated from mother to avoid contact transmission who has confirmed COVID-19.

Results

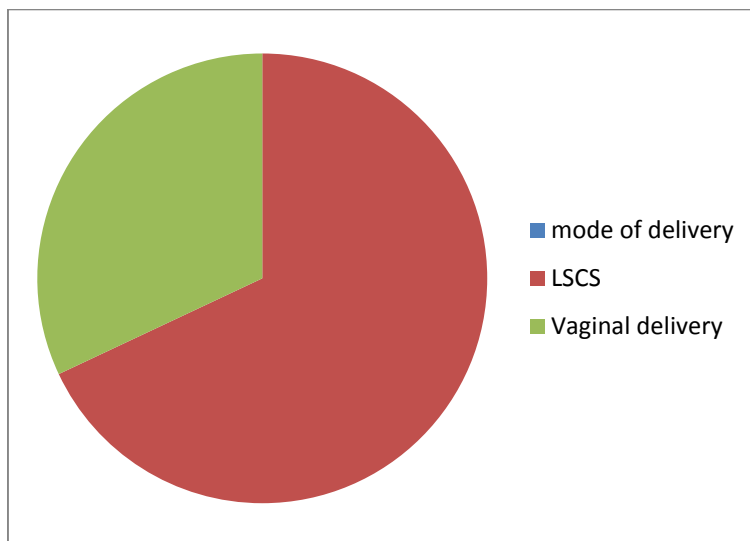


Figure 1. Mode of delivery

Amongst all 50 COVID positive pregnant patients, it was found that mode of delivery was caesarean section in 68% patients and 32% patients delivered vaginally (Figure 1).

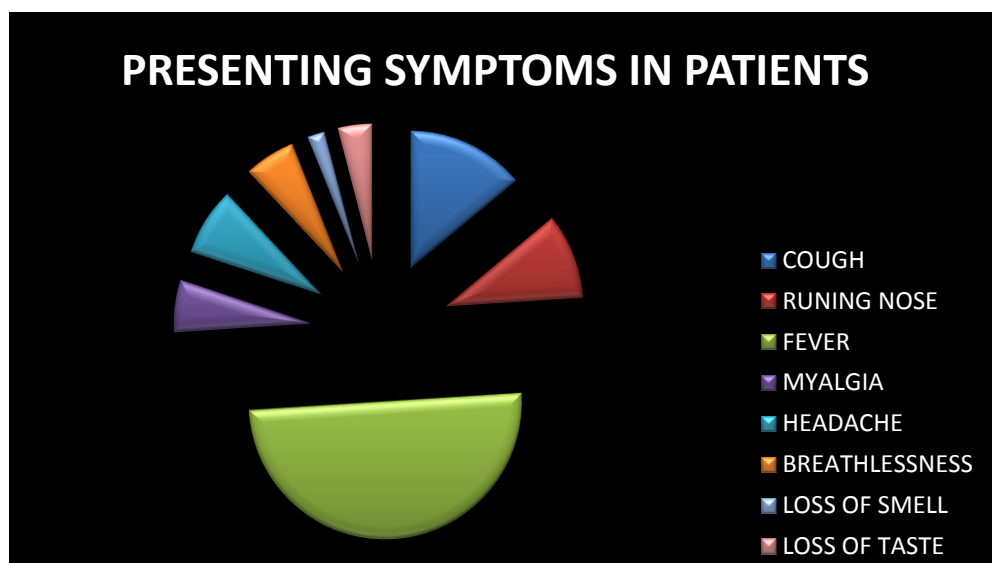


Figure 2. Presenting symptoms

Among 50 COVID positive pregnant patients it was found that 50% patients experienced fever, 14% had cough, 10% had running nose, 8% experienced

headache, 6% had myalgia, 4% developed loss of smell and 2% loss of taste (Figure 2).

Table 1
Test results

TEST FOR COVID POSITIVE STATUS		
	No.	PERCENTAGE
RT-PCR POSITIVE	36	72
RAPID COVID ANTIGEN TEST	14	28
TOTAL	50	100

On testing 72% patients were found to be RT-PCR Positive and 28% were found to be positive by rapid COVID antigen test (Table 1).

Table 2
Post-delivery status

MATERNAL CONDITION		
	NO.	PERCENTAGE
ROOM AIR	37	74
NRBM	1	2
O2 BY MASK	3	6
NASAL PRONGS	7	1.4
VENTILATOR	2	4
TOTAL	50	100

Among these 50 patients, following delivery/LSCS -37 women were kept on Room air, 7 patients on Nasal prongs, 3 patients were given Oxygen via mask, 1 patient was kept on NRBM. Two patients required ventilator support because of low oxygen saturation and later succumbed to Death (Table 2).

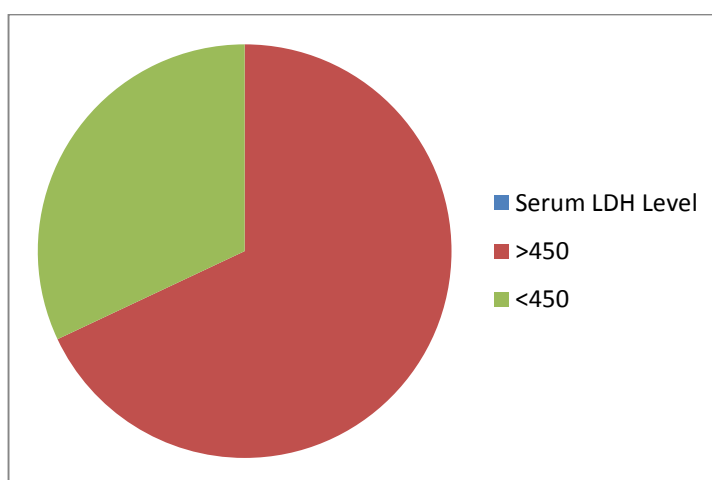


Figure 3. Serum LDH levels

When Serum LDH Levels were tested among these patients it was found that 68% patients had serum LDH Level >450 and 32% patients had serum LDH Level <450 (Figure 3).

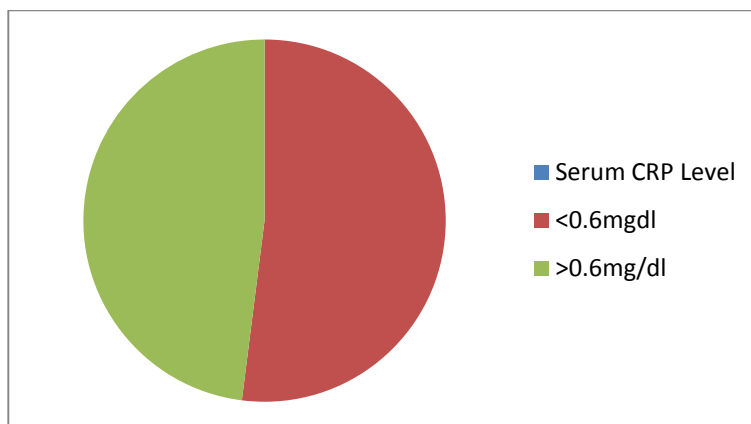


Figure 4. Serum CRP Level

On testing serum CRP Level along 50 patients, 26 patients had raised CRP levels while 24 patients had CRP levels within normal range (Figure 4).

Discussion

SARS CoV-2 pandemic has exposed vulnerable pregnant women population to unprecedented health crisis. In the present study it was found that most common symptoms experienced were fever in 25 patients, 7 had cough, 5 had running nose, 4 experienced headache, 3 had myalgia, 2 experienced loss of smell, 1 had loss of taste and 3 developed breathlessness. These results are similar to a study by Chen et al.⁹ who reported nine women diagnosed with COVID-19 in their third trimester of pregnancy. The common symptom was fever in 7 patients, cough in 4, myalgia in 3, and sore throat and malaise each in 2 patients. Neither of the patients required ventilator support nor any died. Thus the results of our study are in accordance with the study of Chen et al.

With the physiological changes and immune suppression occurring during pregnancy, pregnant women are more susceptible to contract infections and so fetal safety remains a matter of concern. Schwartz conducted a study on 38 women with COVID-19 and their newborns and found that none of the neonates were infected and no maternal deaths were reported¹⁰, whereas we came across 2 maternal deaths and 3 fetal demise in our study. One of the main purposes of this study was to look for possibility of vertical transmission of SARS-CoV-2 infection. Neonatal nasal and pharyngeal swab samples at birth were taken to ascertain the possibility of vertical transmission. This study shows alignment with 2 recent research letters reported on 2 neonates born to women with confirmed COVID-19 who tested for IgG and IgM antibodies despite having a negative nucleic acid result, raising the possibility of vertical transmission, but more confirmatory studies are needed.^{11, 12} In our study 2 neonates out of 50 were found to be sero-positive showing high IgM Levels tested during first 48 hrs of

birth. According to WHO recommendations, mothers with suspected or confirmed COVID-19 should be encouraged to initiate or continue to breast feed. Counseling of mothers should be done about benefits of breastfeeding substantially outweigh potential risks for transmission. 13Whereas in our study we practiced expressed breast milk feeding to the baby as we kept the neonate in NICU under observation for first 48hrs to avoid close contact transmission of the disease from the infected mother.

Conclusion

Thus in our study it was found that Vertical transmission of SARS-CoV-2 can occur from COVID positive mother to baby. Rapid recovery was seen in mother post delivery and isolation of new born from the mother proved helpful in prevention of disease in postnatal period in the baby. The general condition of pregnant women didn't deteriorate much and didn't require oxygen support for longer duration except 2 ANC patients who presented very late with breathlessness. Elevated levels of Serum LDH and Serum CRP were seen in almost half of patients. Fever and cough prevailed as the most common symptoms as reflected by our study.

Acknowledgments

The study was conducted after taking informed and written consent from the patients.

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