Original Research Article

FREQUENCY AND OUTCOME IN PREGNANT WOMEN WITH COVID-19 INFECTION

PREVIEW

ABSTRACT:

OBJECTIVE: To determine the frequency and outcome in pregnant women with covid-19 infection.

STUDY DESIGN: This is a observational cohort study.

SETTING: Study carried out at Department of Obstetrics & Gynecology, Civil Hospital, Dow University of health sciences Karachi, from July 2020 to November 2021.

MATERIAL & METHOD: The study was conducted in a tertiary care hospital in Karachi and was approved by the ethical board of institution. Women having COVID-19 positive status during any stage of their pregnancy having antenatal visits in our hospital were included in our study. Maternal demographics, race, maternal outcome, and neonatal complications were noted on a self-made Performa. Statistical analysis was done by SPSS version 21 and descriptive statistics with frequencies were mainly calculated.

RESULTS: During the defined time of 14 months, we had 143 women visiting antenatal outpatient department and were tested positive for COVID-19. Majority of the women were tested for COVID-19 due to symptoms like fever, flu, cough and diarrhea. The mean age of women in our study was found to be 30 ± 6.7 years. The most frequent maternal outcome with SARSCOV-2 was preterm delivery. Out of 143, 27 cases had emergency lower segment C-section.PCR testing of neonates was carried out and 8.39% (n=12) neonates tested positive for SARSCOV-2.

CONCLUSION: Maternal COVID-19 infection can affect pregnancy in ways, most of the associations mentioned above are to be studied on large scale to improve maternal and neonatal outcomes. Symptoms of COVID-19 should taken into account seriously and PCR performed immediately. Obstetricians must ensure delivery of neonate with availability of ICU and expertise to deal with complications.

KEY WORDS: Pregnant women, Covid-19 infection, Maternal outcome

INTRODUCTION:

The global pandemic of 2019 Sars Cov-2 was first reported in the city of Wuhan, China with approximately 4 million cases registered leading to 300,000 deaths. Till date a lot of data has been found on the genetic and clinical aspect of this virus but much less is known about its effect on pregnant women and their outcome (1). Studies on respiratory infections before the covid outbreak has shown adverse effects in pregnant women and neonatal outcome. The maternal immune system is compromised during pregnancy to aid fetal development and avoid rejection of fetus from maternal antigens (2). Viral diseases in pregnancy are found to have prolong course in pregnant women than usual bacterial infections (3). Women having influenza infection during pregnancy had higher risk of mortality in contrast to women not getting infected (4). COVID-19 during pregnancy has resulted in greater risks for miscarriage, maternal or fetal death and preterm labor especially (5). The most common symptom of COVID-19 in these women is fever, but many also experience cough, shortness of breath, and diarrhea. Some pregnant women get severely ill with COVID-19 and require mechanical ventilation increasing mortality rate (6). As reported most COVID-19 infections in pregnant women are mild, there are case reports about placental abnormality with COVID-19. In electron microscope there are found to be have COVID-19 virions in the placental villi pointing towards the virus for placental abnormality. The most frequently encountered placental abnormality was fetal vascular malperfusion, choriohemangioma, diffuse fibrin villi and multifocal infarctions (7). There are limited studies conducted on placental abnormality with control groups and studies on large scale are needed. Maternal co morbidities like gestational diabetes and preclampisa also affect the outcome with COVID-19. Hence there is dire need of studies conducted to determine risk factors for mortality and morbidity in pregnant

UNDER PEER REVIEW

women with COVID-19 (8). Pregnancies complicated with COVID-19 infection as reported have a mortality rate of 2.3% (9). COVID-19 is also found to cause pre term birth, low birth weight, intrauterine death and maternal death. In some studies it is postulated that COVID-19 can reduce the supply of oxygen to the fetus ultimately resulting in placental insufficiency (10). There is no evidence about vertical transmission of COVID-19 till date. The aim of our study is to assess the maternal and neonatal outcome and complications in pregnant women with COVID-19.

MATERIAL AND METHOD:

This is an observational cohort study focusing on the frequency and maternal and neonatal outcomes in women infected with COVID-19. The study was conducted at Department of Obstetrics & Gynecology, Civil Hospital, Dow University of health sciences Karachi, from July 2020 to November 2021, and was approved by the ethical board of institution. Women having COVID-19 positive status during any stage of their pregnancy having antenatal visits in our hospital were included in our study. Patients having symptoms of COVID-19 infection (fever, cough, anosmia, sore throat, body ache and diarrhea) during the time interval of Feb,2020 till March,2021 while being pregnant were tested by PCR. Women testing positive for COVID-10 were selected for the study and followed up till their delivery.

Management of COVID-19 infection in pregnancy was done by tele medicine virtual follow up with severe cases admitted to the hospital. In majority of the women either the cause of admission was obstetric or COVID-19 related emergency. Women were managed in wards during their delivery time, only severe cases with COVID-19 positive status were managed in isolation units. Only women with severe COVID-19 pneumonia were delivered urgently. Neonatal testing for COVID-19 was also done and neonatal ICU admission if needed. Neonatal outcomes like birth weight, APGAR score and fetal distress was collected in the Performa.

Maternal demographics, race, maternal outcome, and neonatal complications were noted on a self-made Performa. Maternal outcomes were classified into spontaneous delivery, emergency cesarean section and still birth. Premature births were also noted in the collected data. Maternal severity of COVID-19 infection

UNDER PEER REVIEW

was also noted as mild, moderate, or severe. Neonatal complications like breathing difficulties, ICU admissions and placental complications were also considered.

Statistical analysis was done by SPSS version 21 and descriptive statistics with frequencies were mainly calculated.

UNDER PEER REVIEW

RESULTS:

During the defined time of 14 months, we had 143 women visiting antenatal outpatient department and were tested positive for COVID-19. Majority of the women were tested for COVID-19 due to symptoms like fever, flu, cough and diarrhea. The mean age of women in our study was found to be 30 ± 6.7 years. Table-1 shows symptoms of pregnant women with COVID-19. The most common symptoms found were fever and flu .

In our study group women presented with symptoms of COVID-19 in all three trimesters of pregnancy. Majority of the women presented in the third trimester of pregnancy as shown in table 2. Among 47 women COVID-19 was found to be positive in labor rooms and operation theatre. The highest frequency of COVID-19 positive was found in second trimester of pregnancy with 44% being affected followed by 32% women in the third trimester.

The most frequent maternal outcome with SARSCOV-2 was preterm delivery. Out of 143, 27 cases had emergency lower segment C-section. In these cases21 were due to obstetric complications and rest of 6 were due to severe SARSCOV-2 pneumonia. Spontaneous labor occurred in only 13.2% (n=19) pregnancies and mortality ratio was found to be 1.38% (Table No.3). PCR testing of neonates was carried out and 8.39% (n=12) neonates tested positive for SARSCOV-2 and 14.68 (n=21) had respiratory distress which required ICU admission. Other causes of ICU admission include jaundice, fever and increased inflammatory markers (Table No.4).

TABLE-1: SYMPTOMS IN PREGNANT WOMEN WITH COVID-19 INFECTION

SYMPTOMS	FREQUENCY (n)	PERCENTAGE (%)
FEVER	84	58.74%
FLU	48	33.56%
COUGH	39	27.27%
SHORTNESS OF BREATH	16	11.18%
DIARRHEA	8	5.59%
LOSS OF SMELL/TASTE	7	4.89%
MYALGIA	11	7.69%

TABLE-2:
TIME OF DIAGNOSIS OF COVID-19

TRIMESTERS	FREQUENCY (n)	PERCENTAGE (%)
1st trimester	33	23.07%
2nd trimester	63	44.05%
3rd trimester	47	32.86%

UNDER PEER REVIEW

TABLE-3: MATERNAL OUTCOMES INFECTED WITH CONFIRMED SARSCOV-2 WOMEN.

MATERNAL OUTCOME	FREQUENCY (N)	PERCENTAGE (%)
Preterm deliveries	28	19.58%
Spontaneous labour & normal delivery	19	1328%
Elective LSCS	14	9.79%
Emergency LSCS	21	14.68%
LSCS for Covid-19 pneumonia	6	4.19%
Spontaneous first-trimester miscarriages	3	2.09%
Death	2	1.39%

TABLE-4: NEONATAL OUTCOMES.

NEONATAL	FREQUENCY (n)	PERCENTAGE (%)
Birth weight (kg), mean (SD)	2.5 (± 0.3)	-
Covid-19-positive	12	8.39%
Covid-19-negative	131	91.60%
Intra uterine foetal death	2	1.39%
Fever	7	4.89%

UNDER PEER REVIEW

Jaundice	29	20.27%
Neonatal ICU admission reason		
• Jaundice	24	16.78%
• Respiratory distress	21	14.68%
• Prematurity	4	2.79%
• Elevated inflammatory markers	3	2.09%

UNDER PEER REVIEW

DISCUSSION:

As COVID-19 is a new entity for researchers and doctors, its impact on pregnancy and its outcome is still not completely understood. The clinical presentation and course of disease in pregnant and non-pregnant women is similar as found in retrospective studies. Some studies have reported increased rates of miscarriages with COVID-19 infection but there is limited data about it. In our study we only had only 3 early miscarriages with maternal COVID-19 infection (11). Poor perfusion of the placenta results in intrauterine growth restriction and oligohydramnios. Perfusion abnormalities in pregnant women with COVID-19 is significantly higher leading to increased prevalence of IUGR babies (12). The results of our study suggests that there is less than 2 % chances of neonatal death and there is no reduction in baby's weight due to maternal COVID-19 infection. In women having COVID-19 during their pregnancy, they must be screened for IUGR and placental blood flow by doppler. Before the pandemic the prevalence of IUGR was found to be 4% to 7%, whereas in COVID-19 infected women the ratio was raised to 18.3% (13). The presence of preeclampsia also increases the chances of IUGR from 18.3% to 22.4% in mild to moderate COVID-19 cases (13). However in another metanalysis it has been calculated that the ratio of IUGR is only 2.6% which is significantly lower than reported in other studies. Premature rupture of membranes and fetal growth restriction among pregnant women with

COVID-19 were 8.9% and 1.2%, respectively (14). A study in Italy determined that the maternal and fetal outcomes were not affected by COVID-19 infection but it only had a sample size of 375 Italian pregnant women (15). The highest incidence of PPROM reported in COVID-29 positive mothers is 29.5% in African American population which was previously only 3% (16). In Asian population the prevalence of PPROM was found to be 10.2%. in contrast to this there was 19.5% rate of preterm deliveries in our study population and only 1.39% women died during labor. In a metanalysis other complications like fetal distress (1.1%), placenta previa (0.4%) and gestational diabetes (4.5%) (17). Zhang et al in his study proved that the risk of complications like fetal growth restriction, placental abnormalities, neonatal asphyxia and post partum bleeding were not increased in women with COVID-19 (18). Our study is also limited to a number of patients and this is a single center study, we cannot assume that the results are accurate. These type of studies must be conducted in large populations with different ethnicities to update the findings. Neonatal outcome in pregnant women with COVID-29 was studied in 30 cases, after delivery 40% of neonates were discharged immediately and they had no symptoms of pneumonia. In our study 52 neonates required ICU admission whereas among these 21 neonates had respiratory distress. Whereas other 60% neonates were admitted for quarantine with 5 neonates having confirmed COVID-29 infection on PCR. Out of 18 admitted neonates 40% of babies had some radiological and clinical feature of pneumonia suggesting intra uterine transmission of infection. As shown in our study only 8.3% of the neonates came positive for COVID-19 which is less than reported in this study. (19). The decision of mode of delivery should be solely made on obstetric reasons. Some gynecologists have reported that during the pandemic the threshold for cesarean was lowered to minimize hospital stay, reducing physical exertion of labor and decreasing chances of cross infection. Out of 143 patients, 9.7% women had

UNDER PEER REVIEW

elective cesarean section due to above mentioned reasons. Also, to notice 6 women had to undergo LSCS due to severe COVID-19 pneumonia (20).

CONCLUSION:

Maternal COVID-19 infection can affect pregnancy in ways, most of the associations mentioned above are to be studied on large scale to improve maternal and neonatal outcomes. Symptoms of COVID-19 should taken into account seriously and PCR performed immediately. Obstetricians must ensure delivery of neonate with availability of ICU and expertise to deal with complications.

UNDER PEER REVIEW

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UNDER REVIEW

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