

Outcome of Fetus and Mother in Covid-19 Positive Pregnancies: A Retrospective Study

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ABSTRACT

Aim: To assess the Feto-Maternal Outcome in Covid-19 Positive Pregnancies

Study design: A retrospective study

Place and duration: This study was conducted at Sheikh Khalifa bin Zayed hospital Quetta, Pakistan from February 2020 to February 2021

Methodology: After ethical committee approval for the study, all medical records were evaluated for symptomatic and asymptomatic COVID-19 positive pregnant females. After admission to the hospital, an experienced healthcare worker validated the SARS-CoV-2 status of all afflicted women by taking nasopharyngeal swabs for real-time RT-PCR following WHO criteria. Both fetal and maternal outcomes were observed, including psychological stress, fever, cough, sore throat, dyspnea, ICU hospitalizations, pneumonia, maternal transfer of COVID to newborn. SPSS version 22 was used to analyze the data.

Results: The present study investigated 72 COVID-19 positive pregnant women. The mean age of females was 28 ± 5.6 years, and the mean gestational age was 37 weeks. The common symptoms were anxiety (18.1%), runny nose with fever (12.5%), cough and fever (9.7%), and sore throat (8.3), whereas 48.6% of cases were asymptomatic. Co-Morbidities include Hypertension (19.7%), Anemia (8.3%), Diabetes Mellitus (5.6%), and Hypothyroidism (2.8%).

Conclusion: The clinical course of COVID-19 infection in pregnant women appears similar to that of non-pregnant women. There was no vertical transmission of COVID-19, nor was there any neonatal mortality.

Keywords: COVID-19, feto-maternal transmission, pandemic, pregnancy outcome

INTRODUCTION

Respiratory infections are very common among pregnant women. Pregnancy causes immune changes that can make them more susceptible to infections. (1) Diaphragm elevation, increased demand of oxygen, and respiratory tract edema are all important cardiopulmonary adaptations of pregnancy, making pregnant females more susceptible to hypoxia. (2) Mortality and morbidity related to pregnant women are high among developing nations. As a result, obstetricians still have a big challenge in mother and fetal health. (3) Identification and treatment of respiratory infection may reduce the burden of fetus and mother mortality. (4)

Many difficulties have arisen since the first instances of COVID-19 infections were identified. The coronavirus disease 2019 (COVID-19) outbreak was first detected in Wuhan, China, in December 2019. (5) It quickly became a pandemic and spread around the world. Coronavirus is a positive-stranded ribonucleic acid (RNA) enveloped virus that causes respiratory illnesses ranging from mild, moderate infections to more severe situations such as viral pneumonia with general consequences. (6) Moreover, studies have also reported about the mental, psychological, cardiac, and endocrinological issues due to COVID-19. (7-9) At the end of 2019, it was observed that COVID-19 causes severe respiratory infection characterized by dyspnea and fever. (10) COVID-19 infection began as a pandemic in China and swiftly spread to many nations, increasing cases on a daily basis. (11) Physiologic changes during pregnancy make women more susceptible to severe course of pneumonia, resulting in increased maternal and fetal morbidity and death. (12) The effects of COVID-19 on the health of pregnant women and fetal development are currently unclear. COVID-19 has been found to be less harmful to pregnant women than SARS-CoV or MERS-CoV, with a reduced death rate. (13) However, there is a scarcity of information on the effects of COVID-19 infections during pregnancy in the literature, limiting both counseling and care for these individuals. (5) Several items on this list have yet to be thoroughly researched. They include the pathogenic effects on body systems, prevention, and several diagnostic and treatment alternatives. However, it is now well known that this viral infection can impact other bodily systems while mostly affecting the respiratory tract. They include the eyes,

gastrointestinal tract, heart, and several more physiological systems whose functions are still unknown. (14) Overall, COVID-19 is a mysterious illness with a high morbidity and fatality rate. Vertical transmission may occur from mother to fetus for SARS-CoV-2, resulting in serious infections in fetuses and newborns. (15) According to previous studies, premature labor (39%), abortion (2%), and intrauterine growth restriction (10%) were noted as fetal consequences of COVID-19. (16) Multiple research has been conducted since the outbreak to better understand the pandemic's clinical symptoms and therapy, for general public and for the situations like pregnancy. The present study was designed with the same goal in mind: to add to a worldwide reservoir of obstetric information and care plans for COVID-19-positive pregnant women. The study aimed to evaluate COVID-19 positive pregnant women's clinical presentation, treatment, feto-maternal mortality rate, and neonatal outcomes.

METHODOLOGY

The medical records of all pregnant women were evaluated for symptomatic and asymptomatic COVID-19 cases confirmed via polymerase chain reaction (PCR). Permission was taken from the ethical review committee of the institute. After admission to the hospital, an experienced healthcare worker validated the SARS-CoV-2 status of all afflicted women by taking nasopharyngeal swabs for real-time RT-PCR following WHO criteria. There was a designated labor room, operating theatre, and ward for prenatal and post-natal mothers. Though there was a small barrier to cesarean delivery for COVID-19 positive women in an active phase of labor or multigravida with a strong bishop score were urged to deliver vaginally. Newborns were seen by a doctor and then transported to a neonatal isolation room for additional care after delivery. COVID-19 testing was done after 24 hours, as per the pediatric department's policy. Fever, dyspnea, psychological stress, cough, sore throat, ICU hospitalizations, the requirement for the ventilator, and death were all factors in determining the mother's outcome. The COVID-19 status, the development of pneumonia, and the requirement for ventilators were all used to assess neonatal outcomes. SPSS version 22 was used to enter the data. Categorical variables were expressed as percentages and

numbers, whereas continuous variables were articulated as range and mean.

RESULTS

A total of 72 COVID-19 positive pregnant women were investigated in the study. A total of 54.2% of females were between 26-30 years old, 37.5% of cases were from age 19-25 years, and 8.3% were more than 30 years of age. The mean maternal age observed was 28 ± 5.6 years. A total of 40 women were primigravida and 32 were multipara. The mean gestational age was 37 weeks. As per hospital policy, all patients had to undergo a COVID test before admission. Positive women were separated from other patients and transferred to the specific COVID-19 positive gynecological ward. A total of 35 (48.6%) cases were asymptomatic, whereas anxiety was observed in 13 (18.1%) cases, which could be due to the pandemic situation at that time. Other symptoms such as runny nose with fever 9 (12.5%) cases, cough and fever 7 (9.7%) cases, and sore throat 6 (8.3) were also observed.

In the present study, Hypertension was a more prevalent co-morbidity noted among COVID-19 positive pregnant women. Other co-morbidities were also observed, including Anemia in 6 (8.3%) cases, Hypertension in 14 (19.4%), Diabetes Mellitus in 4 (5.6%) cases, and hypothyroidism in 2 (2.8%). Vaginal delivery was observed in 37 (51.4%) cases, whereas 35 (38.6%) were delivered through cesarean section. The most common cause of cesarean delivery was a previous cesarean section, followed by fetal distress, Diabetes Mellitus, and hypothyroidism. All babies survived, and no mortality was observed in the current study. The majority of newborns ranged between 2.5 to 3.5 kg of birth weight, 6 (8.3%) had lower birth weight than 2.4%, and 3 (4.2%) had a birth weight of > 3.5 kg. COVID-19 test was performed through the nasal swab of all newborns within 24 hours of delivery. No vertical transmission was observed in our study.

Table 1: Description of cases with age at the time of delivery

| Age (years) | Cases | Percentage |
|------------------------------|-------|------------|
| 19-25 | 27 | 37.5 |
| 26-30 | 39 | 54.2 |
| More than 30 | 6 | 8.3 |
| Mean age= 28 ± 5.6 years | | |

Table 2: Description of cases with symptoms at the time of delivery

| COVID Symptoms | Cases | Percentage |
|---------------------|-------|------------|
| Asymptomatic | 35 | 48.6 |
| Fever+ Cough | 7 | 9.7 |
| Fever+ runny nose | 9 | 12.5 |
| Shortness of breath | 2 | 2.8 |
| Sore throat | 6 | 8.3 |
| Anxiety | 13 | 18.1 |

Table 3: Showing other Co-Morbidities in COVID-19 positive pregnant women

| Co-Morbidities | Cases | Percentage |
|-----------------------|-------|------------|
| Hypertension | 14 | 19.4 |
| Anemia | 6 | 8.3 |
| Diabetes Mellitus | 4 | 5.6 |
| Hypothyroid | 2 | 2.8 |
| Hepatitis B, C, E | 0 | 0 |
| No other Co-Morbidity | 46 | 63.9 |

Table 4: Description of delivery mode at the time of birth

| Mode of delivery | Cases | Percentage |
|-------------------|-------|------------|
| Vaginal delivery | 37 | 51.4 |
| Cesarean delivery | 35 | 48.6 |

DISCUSSION

Many restrictions have been imposed on pregnant women and the rest of society to prevent the spreading of COVID-19. (17) During the COVID-19 pandemic, several societies have advocated innovative prenatal care for pregnant women instead of established procedures to avoid infection and transmission of the disease. (18) The lower number of hospital admissions caused

delays in regular prenatal care programs due to the implemented restrictions, changes in health services of the delivery, and the endangerment of pregnant women being infected. According to the studies, there was no substantial difference in the symptoms of COVID-19 between the symptoms of pregnant and non-pregnant women. (19)

Previous research demonstrated that patients' most typical signs of COVID-19 infection were fever, runny nose, cough and shortness of breath. Many of these patients were asymptomatic. (20, 21). Similar results were observed in our study, where 48.6% were asymptomatic, 12.5% had runny nose with fever, 9.7% had cough with fever, and 8.3% had a sore throat. We have also observed anxiety (18.1%) among COVID-19 positive patients. In their present study, Zhou et al. (2020) showed that pregnant women with COVID-19 were facing anxiety, depression, and insomnia-like symptoms than non-pregnant patients. (22) Lin et al. (2020) observed 13.4% anxiety and 35.4% depression in their study. (23) Many other studies also reported stress, fear, and anxiety due to COVID-19. (24, 25) Some of the causes for the unexpected development of severe anxiety include a new highly infectious disease with insufficient understanding, the pandemic and lockdown situation uncertain situation faced at that time, patients being isolated, and health care workers (wearing PPE) being new. The most common co-morbidity observed in our study was hypertensive disorders (19.4%) following Anemia (8.3%), Diabetes Mellitus (5.6%), and Hypothyroidism (2.8%). Similar observations were also reported in other studies. (26, 27) In the present study, out of 72 cases, 37 (51.4%) were delivered vaginally, and 35 (48.6%) were delivered through cesarean section. In our study, cesarean sections were performed purely for obstetric reasons, not for COVID-19 positive status. A recent study showed that 91.9% had cesarean section due to various reasons, including fetal distress, preeclampsia, abnormal placenta/umbilical cord, persistent fever, etc. (28). There is no evidence reported for COVID-19 vertical transmission from mother to newborn. Vaginal delivery should be promoted in stable patients to avoid unnecessary complications. (29) No fetal-maternal mortality was observed in the present study. All newborns tested for COVID-19 within 24 hours came out negative.

CONCLUSION

Pregnancy is a particularly sensitive state for any infectious illness. The clinical course of COVID-19 infection in pregnant women appears similar to that of non-pregnant women. The clinical symptoms vary among individuals. COVID-19 infection vertical transmission appears to be less common, and this illness should not influence delivery selection. Following a tight procedure during the therapy of a COVID-19 positive woman lowers the risk of neonatal infection.

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