Baseline Characteristics of Covid-19 Infected Spontaneous Abortion Cases

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Abstract

Background: The COVID-19 pandemic has raised concerns about the potential impact of SARS-CoV-2 infection on pregnancy outcomes. However, there is limited evidence regarding the association between COVID-19 and spontaneous abortion cases, particularly in Bangladesh.

Methods: This retrospective observational study investigated the baseline characteristics of 48 cases of spontaneous abortion in pregnant women with laboratory-confirmed COVID-19 infection at Enam Medical College Hospital, Savar, Dhaka, Bangladesh between March and July 2020. Participants were included if they experienced fetal demise at 11 or more weeks of gestation, and potential confounding factors, such as fetal malformations or other obstetric disorders, were excluded. Data on demographic characteristics, gestational age, parity, gravidity, and COVID-19 severity were collected and analyzed.

Results: The age distribution of participants ranged from 18 to 33 years, with 50% in the 26-30 year age group. A majority (58.33%) were obese, and 83.33% exhibited mild COVID-19 symptoms, while 16.67% were asymptomatic. Regarding gestational age at the time of spontaneous abortion, 50% were between 11-15 weeks, 41.67% were between 16-20 weeks, and 8.33% were between 21-25 weeks. All participants had at least one previous pregnancy, with 33.33% experiencing their second pregnancy, 41.67% their second pregnancy with a previous live birth, and 25% their third pregnancy with at least one previous live birth.

Conclusions: This study provides insights into the baseline characteristics and maternal outcomes of COVID-19 infected spontaneous abortion cases in Bangladesh. The findings suggest that severe COVID-19 illness may not be a prerequisite for adverse pregnancy outcomes and highlight the need for further investigations into the potential mechanisms of intrauterine SARS-CoV-2 transmission and the role of placental factors. Larger-scale studies are warranted to better understand the impact of COVID-19 on pregnancy outcomes and develop appropriate management strategies.

Introduction

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, has emerged as a global public health crisis. Declared a pandemic by the World Health Organization in March 2020, this novel coronavirus strain was first identified in Wuhan, China, in 2019. While the primary mode of transmission is through respiratory droplets, the possibility of perinatal transmission remains uncertain. Though previous studies have suggested that pregnant women typically experience mild COVID-19 symptoms, some cases of acute maternal morbidity and mortality have been reported. Pregnancy is a unique physiological state characterized by a delicate balance of immune tolerance towards the fetus's paternal antigens. This altered immune response can heighten susceptibility to infections, particularly respiratory illnesses like pneumonia. Immunologists continue to explore the intricate factors contributing to maternal immune tolerance, as
changes in the immune system can render pregnant women vulnerable to various ailments. Physiological and mechanical modifications during pregnancy can further amplify infection rates, especially for respiratory tract infections. The early stages of pregnancy are a critical and vulnerable period, where any disturbance can impact embryogenesis and fetal organ development. Maternal ailments during pregnancy have been observed to affect neonates, contributing to neonatal morbidity and mortality. While COVID-19 is an infectious respiratory disease, its potential effects on neonates and child morbidity and mortality are still under investigation. Currently, there are limited guidelines for the critical care management of pregnant patients with COVID-19 infection. Furthermore, the association between COVID-19 and miscarriages or fetal demise is not well-established due to the scarcity of reported cases. Consequently, there is a pressing need for evidence-based studies to elucidate the interrelationship between COVID-19 infection during pregnancy and the risk of miscarriages and fetal deaths, thereby informing suitable interventions. The present study focuses on cases of spontaneous abortion or fetal death in pregnant women infected with COVID-19. To the best of our knowledge, no other studies have been conducted on this subject in Bangladesh.

Methods
The retrospective observational study was conducted on patients attending the Gynecology Emergency and Outpatient Department at Enam Medical College Hospital, Savar, Dhaka, Bangladesh, with hospital records from March 2020 to July 2020. The initial sample size was determined as 150 pregnant women with COVID-19 admitted to BSMMU. From this initial cohort, 48 cases of spontaneous abortion were selected and studied, following specific inclusion and exclusion criteria. The inclusion criteria were: 1) pregnant population, 2) confirmed COVID-19 cases, and 3) fetal demise with a gestational age of ≥11 weeks. The exclusion criteria were: 1) other possible causes of abortion, such as fetal malformations, placental abruption, placenta previa, preeclampsia, diabetes, autoimmune disorders, or maternal trauma, and 2) COVID-19 negative cases. All cases of fetal demise had a gestational age of ≥11 weeks, determined clinically with the help of the earliest ultrasound (US) scan. Abortion was confirmed in the same manner, along with laboratory-confirmed COVID-19 via Real-Time Polymerase Chain Reaction (RT-PCR) assay of maternal nasal swab specimens. This case series aimed to acquire knowledge regarding pregnancy and the novel presentation of COVID-19, with the hope that this study would contribute to the pool of knowledge regarding COVID-19 infection in pregnancy and aid in developing appropriate interventions.

Results

Table 1: Baseline characteristics distribution of the participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>n=48</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Range</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-20</td>
<td>4</td>
<td>8.33</td>
</tr>
<tr>
<td>21-25</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>26-30</td>
<td>24</td>
<td>50</td>
</tr>
<tr>
<td>31-33</td>
<td>8</td>
<td>16.67</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>20</td>
<td>41.67</td>
</tr>
<tr>
<td>Obese</td>
<td>28</td>
<td>58.33</td>
</tr>
</tbody>
</table>

The study involved a total of 48 participants who experienced spontaneous abortion during COVID-19 infection. Regarding the age distribution, half of the participants (50%) were in the 26-30 year age range, followed by 25% in the 21-25 year range, 16.67% in the 31-33 year range, and 8.33% in the 16-20 year range. In terms of body mass index (BMI), a majority of the participants (58.33%) were classified as obese, while 41.67% had a normal BMI.

Table 2: Previous Pregnancy report in parity and gravidity of the participants

<table>
<thead>
<tr>
<th>Parity</th>
<th>n=48</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravida 1 Parity 0</td>
<td>16</td>
<td>33.33</td>
</tr>
<tr>
<td>Gravida 1 Parity 1</td>
<td>20</td>
<td>41.67</td>
</tr>
<tr>
<td>Gravida 2 Parity 1</td>
<td>12</td>
<td>25.00</td>
</tr>
</tbody>
</table>

The data on parity and gravidity revealed that the largest proportion of participants, 41.67%, were gravida 1 with parity 1, indicating they had been pregnant once before and had one previous live birth. Additionally, 33.33% of the participants were gravida 1 with parity 0, meaning it was their first pregnancy. The remaining 25% of participants were gravida 2 with parity 1, indicating they had been pregnant twice before and had one previous live birth.
A study has been conducted through histopathological 24 weeks of 16 16% falling within the 26 3,10  

tions, 58.33% of fetal malformations, placental abruption, placenta previa, preeclampsia, diabetes, autoimmune disorders, or placental barrier damage was not done and we could not conduct fetal autopsy. Here, more studies are needed to confirm the clinical causes of the disease and help to make appropriate management protocols in pregnancy during COVID-19 pandemic.  

**Conflict of interest:** None Declared.
Conclusion
In conclusion, this study provides valuable insights into the baseline characteristics and maternal outcomes of COVID-19 infected spontaneous abortion cases in Bangladesh. The findings reveal that the majority of the participants were in their late twenties, with a significant proportion being obese, a known risk factor for COVID-19 complications. Notably, most participants experienced mild COVID-19 symptoms or were asymptomatic, suggesting that severe illness may not be a prerequisite for adverse pregnancy outcomes. The gestational age at the time of spontaneous abortion varied, with half of the cases occurring between 11-15 weeks, and a smaller proportion occurring later in pregnancy. The study also highlights the need for further investigations into the potential mechanisms of intrauterine SARS-CoV-2 transmission and the role of factors such as placental inflammation and hypoxemia. While the study provides valuable insights, larger-scale studies with more comprehensive data collection are warranted to fully elucidate the impact of COVID-19 on pregnancy outcomes and develop appropriate management strategies. Nonetheless, this research contributes to the growing body of knowledge on the effects of COVID-19 during pregnancy and underscores the importance of multidisciplinary approaches in managing such cases.

References