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Case Report

Maternal and fetal outcomes of the pregnant woman with COVID-19: The first case report in Taiwan

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ABSTRACT

Objective: A real-Taiwan experience to deal with near-term pregnant woman infected by severe acute respiratory syndrome coronavirus 2, SARS-CoV-2 (coronavirus disease 2019, COVID-19) is extremely limited. We described the first case in Taiwan.
Case report: A 30-year-old woman, primigravida had a laboratory-confirmed COVID-19 infection at 36 gestational weeks (GW). She was asymptomatic. Ten days later, she was hospitalized and receive a selective cesarean section with a term baby weighted 3142 gm (Apgar score 8 and 9 at 1st and 5th minute, respectively) at 38 GW. No evidence of in utero and direct transmission was found and newborn was free of COVID-19.
Conclusion: It is still uncertain whether timing or mode of delivery is appropriate in SARS-CoV-2 infected pregnant woman in near term, but we suggested that a selective delivery time at 38 GW or later, regardless of which mode of delivery is finally decided, can be considered.

Introduction

Severe acute respiratory syndrome coronavirus 2, SARS-CoV-2 (coronavirus disease 2019, COVID-19) is a pandemic disease with a rapid and wide dissemination to the world [1–3]. According to the Centers for Disease Control and Prevention (CDC), there are 99,535 pregnant women with COVID-19, contributing to a total of 17,040 hospitalized cases and 109 deaths in these pregnant women with COVID-19 in the USA to date [4]. As a new infection, evidence-based knowledge about pregnant women with COVID-19 is limited [5]. However, pregnant women with COVID-19 are more like to develop severe illnesses, compared to both non-pregnant women and pregnant women without COVID-19 [5–9]. All hint that an urgent need of national or international recommendations and guidelines for the prevention and management of COVID-19 in pregnancy [10–12]. However, it is still uncertain what is the better management for pregnant women infected by COVID-19, resulting in a biggest challenge for both physicians and pregnant women. A report from Taiwan published in the November issue of the *Taiwanese Journal of Obstetrics and Gynecology* directly pointed at this dilemma [13]. Therefore, we would like to share the first case of a pregnant woman with laboratory-confirmed COVID-19 infection in one tertiary hospital in Northern Taiwan on May 11, 2021 and discus the impact of COVID-19 on pregnant women in the third trimester.

Case report

A 30-year-old pregnant woman was uneventful without any remarkable medical or surgical history during the routine prenatal examination. She was gravida 1, para 0 (G1P0) and the last prenatal examination was performed at 36 gestational weeks (GW) on 8 May, 2021. She visited to our hospital due to laboratory-confirmed diagnosis of COVID-19 of her mother, who lived together with her

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on 11 May, 2021. She was immediately informed and underwent a COVID-19 examination. The results confirmed that she was infected by COVID-19. Based on absence of any symptom, she stayed in the "single" and "isolated" room outside the hospital.

On 19 May, 2021, she visited to Emergency Room (ER) with complains of abdominal pain and decreased fetal movement. She was admitted to a single isolation room in ER. After evaluation, neither urgent need of induction nor indication for cesarean section should be performed for this pregnant woman. However, due to personal consideration and her spouse's request, the decision of cesarean section was made. Then, she was transported to the isolation surgery room. Epidural anesthesia was performed. The cesarean section went smoothly and the healthy newborn weighted 3142 gm with the Apgar score 8 and 9 at 1st and 5th minute, respectively was separated immediately from the infected mother. The newborn was absent of COVID-19 infection. Postoperative specimens, including amniotic fluid and placenta were all negative for COVID-19.

During the hospitalization, the patient was still absent of symptoms or signs. The second and third COVID-19 examinations were still strong positive reactions with cycle threshold (Ct) levels 24 on the 7th day postoperatively with similar to the initial examination on 11 May, 2021 (Ct 24.4). The patient was discharged uneventfully at 14 days postoperatively and was sent to isolate at epidemic-prevention hotel. The newborn was discharged 4 days later, who is still free of infection to now (reported date on 11 July, 2021).

Discussion

Although so far, more than 100 thousands pregnant women with diagnosed COVID-19 have been reported worldwide [3,4,6,7,9,14], little is known about the impact of pregnancy on COVID-19 and vice versa. In Taiwan, national or international recommendations and guidelines for the prevention and management of COVID-19 infection in pregnancy are available by various scientific organizations or hospitals and are constantly updated to correspond to the latest scientific data [4,15–20], but a real-Taiwan experience in the management of pregnant women with COVID-19 infection is still scarce. This case may be the first pregnant woman who was infected with COVID-19 in the third trimester reported in Taiwan, although she was totally free of symptom. Based on the current case, the management of pregnant women infected with COVID-19 either with or without symptoms or sings in the third trimester is worthy of discussion. We hope our experience can provide a better care for those pregnant women infected by COVID-19 in the third trimester.

First, our present case is totally free of symptoms or signs. In fact, the similar clinical findings are common. According to the USA CDC's report, based on evaluation of 23,434 pregnant women with confirmed COVID-19 infection, only 44.4% (n = 10,404) of pregnant women have various kinds of signs and symptoms [8]. The most common symptoms or signs of pregnant women with COVID-19 are presented in order, as 50.3% with cough, 42.7% with headache, 36.7% with muscle aches, and 32% with fever [8]. Compared to 45.1% (174,198/386,028) of non-pregnant women who have various kinds of symptoms or signs, the pregnant women who got COVID-19 had a tendency to present less frequency of symptoms or sings [8]. Moreover, the pregnant women with COVID-19 have symptoms or signs with a trend to much milder than non-pregnant women with COVID-19 do. The less frequency of symptoms or signs in pregnant women with COVID-19 based on USA CDD data was further supported by another meta-analysis [9]. Compared with non-pregnant women of reproductive age, pregnant and recently pregnant women with COVID-19 were less likely to have symptoms (odds ratio [OR] 0.28, 95% confidence interval [CI] 0.13–0.62, I2 = 42.9%) or report symptoms of fever (OR 0.49, 95% CI 0.38–0.63; I2 = 40.8%), dyspnea (OR 0.76, 95% CI 0.67–0.85; I2 = 4.4%) and myalgia (OR 0.53, 95% CI 0.36–0.78; I2 = 59.4%) [9]. However, these mild or few symptoms or signs presented in pregnant women with COVID-19 increase the risks of underestimated severity of diseases. By contrast, the pregnant women with COVID-19 are stated on higher risk for the development of the more severe and critical disease courses, compared to those pregnant women without COVID-19 or non-pregnant women with COVID-19. Furthermore, the pregnant women were in a high tendency to exacerbate their COVID-19 related diseases [8,9]. The disease courses are vulnerable to downhill in pregnant women [8,9]. After adjusting for possible confounding factors, such as age, race/ethnicity, or underlying medical illnesses, pregnant women were significantly more likely than were nonpregnant women to be admitted to an intensive care unit (ICU) (10.5 versus 3.9 per 1000 cases, risk ratio [RR] 3.0, 95% CI 2.6–3.4), receive invasive ventilation (2.9 versus 1.1 per 1000 cases, RR 2.9, 95% CI 2.2–3.8), and receive extracorporeal membrane oxygenation (ECMO) (0.7 versus 0.3 per 1000 cases, RR 2.4, 95% CI 1.5–4.0) [8]. Of most importance, pregnant women with COVID-19 have a significantly increased mortality rate up to 70% (1.5 versus 1.2 per 1000 cases, RR 1.7; 95% CI 1.2–2.4) [8]. The USA CDC further indicated although the absolute risks for severe outcomes for women were low, pregnant women were at increased risk for severe COVID-19-associated illness, contributing to the recommendation that pregnant women should be counseled about the importance of seeking prompt medical care to reduce the risk for severe illness and death from COVID-19 [8]. That is why we should manage this pregnant woman with COVID-19 intensively and actively, even though she was totally free of any symptoms or signs.

Second, in pregnant women with COVID-19, some specific or non-specific medical conditions, such as increased maternal age, high body mass index, non-white ethnicity, any pre-existing maternal comorbidity (chronic hypertension and diabetes and pre-eclampsia as examples), which are often accompanied with pregnant women were associated with more serious complications such as admission to an ICU (OR 18.6, 95% CI 7.5–45.8), invasive ventilation and maternal death (OR 2.9, 95% CI 1.1–7.5), compared to pregnant women without COVID-19 [9].

Third, pregnant women with COVID-19 not only have the aforementioned worse outcome of themselves, but also result in poor reproductive outcome. The spontaneous preterm birth rate among pregnant women with COVID-19 was 6%, which was 3-fold higher than that of pregnant women without COVID-19 [9]. Neonates born to women with COVID-19 were 3 times as likely to be admitted to the neonatal ICU [9]. All contribute to increased perinatal morbidity and/or mortality rates significantly. It is fortunate that in the current case report, pregnant woman got COVID-19 at near term and was total absence of symptoms or signs; therefore, neonatal outcome was good.

Fourth, literature review showed that COVID-19 is a commonly reported indication for cesarean section, despite management guidelines urging against this [14,19]. In a real word, rate of cesarean section was dramatically high and around 75% [14]. Our current case report is performed by cesarean section, as predicted, based on concerns about vertical transmission. However, a recent review found all amniotic fluid and tissue samples (placenta) tested negative for COVID-19 in those neonates with COVID-19 infection [14]. Given the lack of definitive evidence for increased risk of vertical transmission with a vaginal delivery in pregnant women with COVID-19, especially similar to our case, who had an asymptomatic disease, COVID-19 status alone may not be a contraindication to vaginal delivery. However, sometimes, the choice of vaginal delivery is hard to convince the pregnant women and health care works. In concerns of health care worker safety, and

maternal mental wellbeing and expectations for her pregnancy and childbirth experience, maintaining an evidence-based approach is critical when making decisions on timing and mode of delivery in pregnant women infected by COVID-19 in the third trimester to minimize adverse outcome.

Finally, the management of pregnant women infected by COVID-19 in any trimesters is challenged. For asymptomatic pregnant women with COVID-19 in the third trimester, it is still controversial. Therefore, much understanding of disease course may further adapt the better timing and mode of delivery for these pregnant with COVID-19. We are looking forward to seeing more discussions for this topic.

Declaration of competing interest

The authors declare that they have no conflicts of interest related to the subject matter or materials discussed in this article.

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