Emergency Cesarean Section at 38 Weeks of Gestation with COVID-19 Pneumonia: A Case Report

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Conflict of interest: None declared

Patient: Female, 30-year-old
Final Diagnosis: COVID-19
Symptoms: Chills • cough • diarrhea • fatigue • fever • headache • myalgia • nausea • rhinorrea • shortness of breath • vomiting
Medication: —
Clinical Procedure: Cesarean section
Specialty: Critical Care Medicine • Obstetrics and Gynecology • Surgery

Objective: Rare disease
Background: Up to 47% of pregnant women with COVID-19 have preterm deliveries. A severe, symptomatic COVID-19 infection in close-to-term pregnancies can have a poor prognosis. Early identification of COVID-19 in pregnant women can prevent the progression of the disease. Currently, there is very little guidance on treating pregnant close-to-term women with COVID-19; this case report suggests changes to current management to maximize positive maternal and fetal outcomes.

Case Report: A pregnant woman (37 weeks of gestation) presented to the Emergency Department with a chief complaint of fever with an associated cough for 2 days. She was diagnosed with COVID-19 in the Emergency Department, and discharged in a stable condition. She returned 5 days later in preterm labor with severe respiratory distress. After an emergency cesarean section, she remained intubated in the Surgical Intensive Care Unit; she was persistently hypotensive and hypoxic despite maximal ventilator and medical treatment. She died after a cardiac arrest and unsuccessful resuscitation, 15 days after the delivery. We discuss the possible benefit of a planned C-section for close-to-term pregnancies prior to the onset of COVID-19 symptoms. The patient’s next of kin gave informed consent for this case report. Approval from the Institutional Review Board or Ethics Review Board was not required as this is a case report.

Conclusions: Currently, asymptomatic pregnant women are not tested for COVID-19 infection until hospitalization for delivery. It could be beneficial to have a protocol in place to screen asymptomatic pregnant women so they can be identified early and monitored, as COVID-19 symptoms can escalate quickly.

MeSH Keywords: Cesarean Section • COVID-19 • Pregnancy Complications, Infectious • Pregnancy, High-Risk

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/926591
Background

The symptoms of the coronavirus disease 2019 (COVID-19) infection can range from mild symptoms including fever, cough, sore throat, myalgia, and malaise to severe illness requiring immediate advanced critical-care support, including pneumonia with or without acute respiratory distress syndrome, renal failure, and multiorgan dysfunction. In pregnant women, the clinical presentations can be atypical with normal body temperatures and normal white blood cell counts [1]. A positive COVID-19 result does not assure maternal or fetal compromise, or an indication for expedited birth. Despite the fact that COVID-19 is less lethal than SARS and MERS, the COVID-19 infection can result in severe symptoms in pregnant women. Therefore, they should be identified early and efforts should be made to prevent the progression of the disease, especially since women with severe COVID-19 infection at the time of giving birth have required ventilation and extracorporeal membrane oxygenation (ECMO). Currently, there is very little guidance on the management of close-to-term pregnant women with COVID-19, to maximize positive maternal and fetal outcomes. In the light of previous cases of preterm labor induced by COVID-19, it is unclear whether scheduling a cesarean section prior to the onset of COVID-19 symptoms can decrease maternal and fetal mortality.

Case Report

A 30-year-old woman, who was gravida 4, para 2 (1 term birth, 1 premature birth, 1 abortion) with an intrauterine pregnancy of 37 weeks and 5 days presented to the Emergency Department with a chief complaint of fever and an associated cough for 2 days. Her medical history was a previous cesarean section with a COVID-19 infection, an obstetrician-gynecologist (OB/GYN) assessed her and determined that the patient and pregnancy were undetermined significance. She denied smoking, alcohol use, and recreational drug use. She reported decreased fetal movements to follow-up with her primary-care physician and OB/GYN. She was then started on azithromycin (Zithromax, Pfizer, New York, USA) [8]. She was discharged with instructions to follow-up with her primary-care physician and OB/GYN.

She returned 5 days later in preterm labor and respiratory distress. Her X-ray on admission showed bilateral infiltrates (Figure 1). Initially, she had an oxygen saturation of 75% on room air; however, her oxygen saturation further deteriorated to 60% on room air. A nonrebreather mask was used while she was rushed to the operating room for an emergency C-section. Despite the fact that COVID-19 is less lethal than SARS and MERS, the COVID-19 infection can result in severe symptoms in pregnant women. Therefore, they should be identified early and efforts should be made to prevent the progression of the disease, especially since women with severe COVID-19 infection at the time of giving birth have required ventilation and extracorporeal membrane oxygenation (ECMO). Currently, there is very little guidance on the management of close-to-term pregnant women with COVID-19, to maximize positive maternal and fetal outcomes. In the light of previous cases of preterm labor induced by COVID-19, it is unclear whether scheduling a cesarean section prior to the onset of COVID-19 symptoms can decrease maternal and fetal mortality.
Postoperatively, she remained intubated and was transferred to the Surgical Intensive Care Unit (SICU). On postoperative day 2, she developed a fever from an unknown source. She was not febrile when she presented to the hospital in preterm labor or on postoperative day 1. Blood and sputum cultures were drawn and she was started on intravenous (IV) piperacillin-tazobactam (Zosyn, Pfizer, New York City, USA) 3.387 mg/8 h and vancomycin 500 mg IV/6 h. The bedside cardiac and inferior vena cava (IVC) ultrasound showed good contractility, a normal appearance of the right atrium and ventricle, and a dilated, non-collapsing IVC, indicating an euvolemic state. Throughout the course of her SICU stay, she displayed no significant neurologic improvement and developed worsening tachycardia, hypertension, and ventilator dysynchrony. She required maximum ventilatory support with 100% fractional inspiration of oxygen (FiO2) and a positive end-expiratory pressure (PEEP) of 20 cmH2O to maintain hemoglobin-oxygen saturations above 90%. A chest tube was placed on the right side due to barotrauma as she required a high PEEP to maintain oxygenation. Her D-dimer levels rose to 9.56 mcg/ml fibrinogen equivalent units; therefore, a heparin drip was added for therapeutic anticoagulation. She was registered for a Mayo Clinic convalescent plasma trial and received 1 dose of 200 ml convalescent plasma. The repeated intervals of pronation initially improved her respiratory status; however, her condition worsened on day 15 after intubation, with the chest X-ray showing worsening confluent opacities (Figure 2). She desaturated to 80% to 86% during a pronation attempt. In addition, she was persistently hypotensive and hypoxic without improvement, despite maximal ventilation and medical treatment. A cardiac arrest ensued 15 days after the delivery and admission to the SICU, and resuscitation was unsuccessful.

Informed consent was obtained from her next of kin. As this is a case report, approval from the Institutional Review Board or Ethics Review Board was not necessary.

Discussion

Current data suggest that pregnant women are no more likely to contract COVID-19 than the general population. While pregnant women are not necessarily more susceptible to a viral illness, pregnancy can result in immune system changes resulting in an increased severity of the symptoms. Since COVID-19 infection can result in severe symptoms in pregnant women, they should be identified early and all efforts should be made to prevent the progression of the disease, especially since there have been case reports similar to the present case, where the women with severe COVID-19 infection at the time of giving birth have required ventilation and ECMO [6].

A recent study of pregnant women affected by COVID-19 to date suggests that women who gave birth did so within 13 days of the onset of the illness [3]. Thirteen pregnant women aged between 22 years and 36 years were diagnosed with COVID-19 and admitted to the hospital. Eleven women were in their 3rd trimester with no underlying medical conditions. Ten out of 13 patients (77%) presented with fever, and 3/13 (23%) patients complained of dyspnea. Only 3/13 patients (23%) improved after hospitalization and were discharged with an uncomplicated ongoing pregnancy. Ten women (77%) underwent C-sections; 5/10 (50%) delivered emergently because of pregnancy complications, including fetal distress and premature rupture of the
membranes. One patient had a stillbirth. Six patients (46%) had preterm labor between 32 weeks and 36 weeks of gestation [9]. Two patients were admitted to the Intensive Care Unit (ICU), 1 developed multiorgan dysfunction and had to be placed on the ECMO [9]. The woman in the present study (38 weeks of gestation) presented with dyspnea and required intubation and an emergent C-section. She did not have any significant comorbidities. Recent evidence suggests that while the current COVID-19 virus is less lethal than the SARS or MERS virus, 47% of women affected by COVID-19 delivered preterm. This is significantly greater than the reported 4/16 (25%) pregnant women with SARS who had preterm deliveries, and the 3/11 (27%) pregnant women with MERS who delivered preterm by C-section [3].

Pregnant women affected by SARS and MERS had a higher case-fatality rate compared to non-pregnant women. The case-fatality rate was 15% for all reported pregnancy cases of SARS, with an ICU admission rate of 60%. In pregnant women affected by MERS, the case-fatality rate was 27% while the ICU admission rate was 64% [3]. The case-fatality rate and ICU admission rate of pregnant women affected by COVID-19 is yet to be determined.

The risk to pregnant women with coronavirus infections (SARS, MERS) appears to increase particularly during the last trimester of pregnancy. Pregnancy is known to be a hypercoagulable state. Emerging evidence suggests that patients hospitalized with COVID-19 are also hypercoagulable, suggesting that a COVID-19 infection during pregnancy can result in an increased risk of maternal venous thromboembolism [7]. In addition, although viral infections during pregnancy can be asymptomatic, approximately half of all preterm deliveries are associated with histologic evidence of chorioamnionitis, which could be due to a viral infection [10].

Studies comparing the frequency of adverse maternal outcomes between preterm emergency cesarean deliveries and term emergency cesarean deliveries in patients unaffected by COVID-19 show that the preterm cesarean deliveries have significantly higher rates of abnormal bleeding, which can require transfusion, and the use of antibiotics, compared to term cesarean deliveries. In addition, a classic abdominal incision for C-sections was related to an increased rate of blood transfusion and the need for antibiotic treatment [11]. Elective C-section prior to the progression of normal labor has risks, including infection, thromboembolism, postpartum hemorrhage, surgical injury to the mother or neonate, and neonatal transient tachypnea.

Conclusions

Currently, we do not test asymptomatic pregnant women (for isolation purposes) for COVID-19 until they are admitted to the hospital in labor. It would be beneficial to have a protocol in place to screen asymptomatic pregnant women so they can be identified early and monitored, as COVID-19 symptoms can escalate quickly. It could be beneficial to induce labor or perform a C-section early if pregnancies are close to term (at the discretion of the OB/GYN and the patient) to prevent the onset of severe symptoms and labor simultaneously, as this can affect maternal and fetal outcomes.

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Department and Institution where work was done

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Conflicts of interest

None.

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