Case Report

SAGE Open Medical Case Reports

Repeat cesarean section in a COVID-19 positive mother in the United States

SAGE Open Medical Case Reports
Volume 8: 1–3

DOI: 10.1177/2050313X20945536
journals.sagepub.com/home/sco
SAGE

Krupa Daniel[1], Kiran Goli[2] and Anita Sargent[3]

Abstract

In our report, we present a case of repeat cesarean section in a 29-year-old Ecuadorian mother who contracted COVID-19 and traveled to the United States during her last trimester of pregnancy. We assembled a multidisciplinary team to safely deliver the mother by cesarean section. She received supportive care for her COVID-19 infection. Infection prevention procedures were based on early available data, and the baby was delivered without complications.

Keywords

COVID-19, cesarean section, vertical transmission, infection control

Date received: 13 May 2020; accepted: 1 July 2020

Introduction

The novel coronavirus (2019-nCoV) has become a rapidly disseminating global pathogen. As more people are infected, we encounter perinatal COVID-19 infections.

In a review of the literature we have found evidence that may support the possibility of vertical transmission of COVID-19 infection. In Peru, a 41-year old COVID-19 positive patient in her third trimester of pregnancy required mechanical ventilation prior to her cesarean section (c/s). She delivered a neonate that was immediately separated from the mother, foregoing delayed cord clamping and skin-to-skin contact. Nasopharyngeal swab of the neonate, taken 16 h after delivery was positive for the novel coronavirus (2019-nCoV) by reverse-transcriptase-polymerase-chain-reaction (rRT-PCR).[1] Also, a recent case report from Switzerland describes a second trimester miscarriage in a COVID-19 positive patient. The placental submembrane and cotyledon were found to be positive for severe acute respiratory syndrome coronavirus 2 (SARS-COV-2).[2]

We cannot positively determine if vertical transmission of COVID-19 is possible. Initial data from China suggested low levels of viremia in serum.[3] Case reports of pregnant women diagnosed in the third trimester of pregnancy show negative rRT-PCR testing for 2019-nCoV in the amniotic fluid, cord blood, and neonatal throat swabs.[4,5]

Some case reports published show adverse neonatal outcomes such as fetal distress, pre-mature labor, and abnormal liver function, but again all neonatal testing for COVID-19 remained negative.[4,6] As there is limited data published on COVID-19 in the perinatal period and the majority of this available data does not show evidence of vertical transmission of COVID-19, it was commonly thought to be less likely.[4–6]

As a consequence, optimal measures for early diagnosis, treatment, and preventing transmission in the perinatal period are still being explored. We describe a case of COVID-19 in a pregnant female who underwent c/s without any complications or known procedural transmission of the illness.

Case

A 29-year-old Spanish-speaking female, G2P1 with no significant past medical history, presented to our hospital at 35 weeks plus 5 days gestation inquiring about prenatal care. She had arrived at JFK airport in New York on 3 March 2020, from Ecuador, where she was receiving medical care for her pregnancy. Her initial evaluation revealed normal non-stress test and laboratory findings (Table 1).

[1]Department of Infectious Disease, Lehigh Valley Hospital - Pocono, East Stroudsburg, Pennsylvania, USA
[2]Department of Medicine/division of Nephrology, Kidney Care Specialists, Allentown, Pennsylvania, USA
[3]Department of Obstetrics and Gynecology, Lehigh Valley Hospital - Pocono, East Stroudsburg, Pennsylvania, USA

Corresponding Author:
Krupa Daniel, Department of Infectious Disease, Lehigh Valley Hospital–Pocono, Lehigh Valley Health Network, 175 East Brown St., Suite 201A, East Stroudsburg, PA 18301, USA.
Email: krupa.daniel@lvhn.org

Table 1. Test results during the course of treatment through c/s delivery.

Variable	Reference range	6 March 2020 (first clinic visit)	18 March 2020 (first ED visit)	23 March 2020	25 March 2020	3 April 2020 (day of C-section)
Hemoglobin (g/dL)	11.5–14.5 g/dL	13	12.9	13.4		14
Hematocrit (%)	35.0%–43.0%	37.5	37.8	39.9		40.5
WBC (thou/cmm)	4.0–10.0 thou/cmm	8.8	7.9	5.6		6.6
Platelet count (thou/cmm)	140–350 thou/cmm	227	184	165		305
Absolute neutrophil count (thou/cmm)	1.6–7.0 thou/cmm	6.3		3.8		
Absolute lymphocyte count (thou/cmm)	0.6–4.4 thou/cmm	1.7		1.4		
Sodium (mmol/L)	136–145 mmol/L		136	136		137
Potassium (mmol/L)	3.5–5.1 mmol/L		3.3	3.8		3.3
Chloride (mmol/L)	100–108 mmol/L		106	105		106
Carbon dioxide (mmol/L)	21–31 mmol/L		20	21		20
Glucose (mg/dL)	70–100 mg/dL		81	125		80
Calcium (mg/dL)	8.6–10.2 mg/dL		8.4	8.6		8.5
Total protein (g/dL)	6.4–8.9 g/dL		5.9	6.4		6.2
AST (U/L)	13–39 U/L		42	25		19
ALT (U/L)	7–52 U/L		27	28		15
Total bilirubin (mg/dL)	0.2–1.1 mg/dL		0.3	0.4		0.6
Uric acid (mg/dL)	2.8–9.1 mg/dL		3.6			
Urine protein/creatinine ratio	<0.15		0.31	0.28		
SARS coronavirus 2 PCR			Detected		Detected	Not tested

ED: emergency department; WBC: white blood cell; AST: aspartate aminotransferase; ALT: alanine aminotransferase; PCR: polymerase chain reaction; SARS: severe acute respiratory syndrome.

She returned to the prenatal clinic on 18 March and complained of severe headache, nasal congestion, swollen legs, and epigastric pain. She denied shortness of breath, cough, chest pain, or fever. She was referred to the emergency department (ED) where she was placed on enhanced droplet precautions. Her temperature was 98.5 degrees Fahrenheit, blood pressure (BP) was 100/60 mmHg, heart rate (HR) was 110 beats/min, and oxygen saturation was 89%–91% on room air. She was ill-appearing with facial flushing and cyanotic lips. Episodes of fetal tachycardia were noted.

Her white blood cell (WBC) was normal. Her aspartate aminotransferase (AST) was 42 U/L, and her urine protein to creatinine ratio was 0.31. A nasopharyngeal nucleic acid amplification test (NAAT) for common viral respiratory pathogens including Influenza A/B and respiratory syncytial virus (RSV) was negative. rRT-PCR for novel coronavirus (2019-nCoV) was sent to the lab.

She received 1 L of lactated ringers, with improvement of maternal and fetal tachycardia. Her oxygen saturation also improved to 96%. She was discharged and went home to quarantine for 14 days. Her rRT-PCR for 2019-nCoV returned positive on 20 March. She reported persistent nasal congestion at the time, and she denied any fever, cough, or shortness of breath. Repeat COVID-19 testing 1 week later remained positive.

The patient remained clinically stable having received no treatment for COVID-19. On 3 April, she underwent a repeat low transverse c/s at 39 weeks plus 5 days due to her prior history of c/s. She underwent spinal anesthesia without difficulty. The main operating room (OR) was fitted with a high efficiency particulate air (HEPA) scrubber to create a makeshift negative airflow room. OR staff wore N-95 masks underneath their surgical masks. The patient delivered a vigorous male infant, weighing 6 lbs and 2 oz, with an Apgar score of 9, and 9 at 1 and 10 min. No perinatal testing for COVID-19 was performed on the baby as he was asymptomatic and we had limited access to COVID-19 testing supplies at the time.

Discussion

To our knowledge, this is the first reported case of a c/s delivery with maternal COVID-19 infection in the United States. A normal vaginal delivery was recently reported by Iqbal et al.[7] The mother in our case recovered clinically without receiving any antiviral medication. Chest X-ray and computerized tomography (CT) scan of the chest were not performed, even though radiation exposure for imaging below 610 mGy is not associated with any teratogenic effects. A CT scan is associated with a fetal radiation dose of 0.01–0.66 mGy of radiation.[8]

An important aspect of her care was distinguishing COVID-19 infection from HELLP syndrome and pre-eclampsia, which can present with abdominal pain, elevation of liver enzymes, proteinuria, and fetal distress. The patient's only respiratory complaint was nasal congestion; she had no cough or fever. But noting her hypoxia and travel history, we had a high index of suspicion for COVID-19. Therefore, we initiated appropriate isolation and testing strategies, and formed a multidisciplinary team comprising obstetrics, anesthesia, and infectious disease to devise effective infection control measures perioperatively.

Throughout the perinatal course, the mother had a normal WBC count. Mild leukocytosis is usually seen in the second trimester of pregnancy.[9] Her differential showed a normal lymphocyte count and percentage. Previously documented hematologic abnormalities during COVID-19 infection include lymphopenia and neutrophilia.[10] It is unclear if her WBC parameters were normal variants or a reflection of the multiple complex factors affecting her hematopoiesis. The patient and delivered baby had a favorable outcome, as do most mothers and neonates with COVID-19 infection, as noted in available literature.[11,12]

Conclusion

In the present COVID-19 pandemic situation, it is vital to assess patients in all medical settings for the possibility of COVID-19 infection. Current guidance on infection control methods in the operative and perinatal setting are not based on high quality data. More studies are needed to better understand transmission risks and appropriate measures for transmission prevention in the perinatal and perioperative setting.

Acknowledgements

Debra Goldberg MA assisted with editing and formatting this article.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

This case study is exempt from Lehigh Valley Health Network Internal Review Board review.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Informed consent

Dr Sargent obtained verbal and written consent from the patient over the telephone and via email using a Spanish translator.

ORCID iD

Krupa Daniel https://orcid.org/0000-0001-7168-7362

References

1. Alzamora M, Paredes T, Caceres D, et al. Severe COVID-19 during pregnancy and possible vertical transmission. *Am J Perinatol* 2020; 37(8): 861–865.
2. Baud D, Greub G, Favre G, et al. Second-trimester miscarriage in a pregnant woman with SARS-CoV-2 infection. *J Am Med Assoc* 2020; 323: 2198–2200.
3. Wang W, Xu Y, Gao R, et al. Detection of SARS-CoV-2 in different types of clinical specimens. *J Am Med Assoc* 2020; 323: 1843–1844.
4. Chen H, Guo J, Wang C, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *The Lancet* 2020; 395(10226): 809–815.
5. Wang X, Zhou Z, Zhang J, et al. A case of 2019 novel coronavirus in a pregnant woman with preterm delivery. *Clin Infect Dis*. Epub ahead of print 28 February 2020. DOI: 10.1093/cid/ciaa200.
6. Zhu H, Wang L, Fang C, et al. Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. *Transl Pediatr* 2020; 9(1): 51–60.
7. Iqbal SN, Overcash R, Mokhtari N, et al. An uncomplicated delivery in a patient with Covid-19 in the United States. *N Engl J Med* 2020; 382: e34.
8. Chen D, Yang H, Cao Y, et al. Expert consensus for managing pregnant women and neonates born to mothers with suspected or confirmed novel coronavirus (COVID-19) infection. *Int J Gynaecol Obstet* 2020; 149(2): 130–136.
9. Molberg P, Johnson C and Brown TS. Leukocytosis in labor: what are its implications. *Fam Pract Res J* 1994; 14(3): 229–236.
10. Wang D, Hu B, Hu C, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus–infected pneumonia in Wuhan, China. *J Am Med Assoc* 2020; 323: 1061–1069.
11. Mullins E, Evans D, Viner RM, et al. Coronavirus in pregnancy and delivery: rapid review. *Ultrasound Obstet Gynecol* 2020; 55(5): 586–592.
12. Breslin N, Baptiste C, Gyamfi-Bannerman C, et al. Coronavirus disease 2019 among asymptomatic and symptomatic pregnant women: two weeks of confirmed presentations to an affiliated pair of New York City hospitals. *Am J Obstet Gynecol MFM* 2020; 2: 100118.