

COVID-19 as a Possible Cause of Unexplained Maternal Polyhydramnios: A Case Report

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Received on: 12 September 2022; Accepted on: 15 September 2022; Published on: 22 October 2022

ABSTRACT

Background: Pregnant women are uniquely susceptible to severe illnesses with a viral infection, possibly due to the shift from cellular to humoral immunity during pregnancy and puerperium. The relationship between clinically evident polyhydramnios in coronavirus disease 2019 (COVID-19) infection and poor perinatal outcome has not been evaluated.

Case description: We describe as case of 28-year-old pregnant female with mild systemic disease (ASA-II) having COVID-19 with moderate polyhydramnios underwent an emergency cesarean section under spinal anesthesia due to fetal distress. She had class II obesity, cough, and fever with moderate COVID-19.

Conclusion: Since COVID-19 is a viral infection, it may have caused placental insult due to cytokine storm during the pregnancy and resulted in polyhydramnios.

Keywords: COVID-2019, Parturient, Polyhydramnios.

Journal of Research and Innovation in Anesthesia (2022): 10.5005/jp-journals-10049-2018

INTRODUCTION

Still, very little is known about COVID-19 and polyhydramnios. Pregnant women are uniquely susceptible to severe viral infection illnesses, possibly due to the shift from cellular to humoral immunity during pregnancy and puerperium.¹ The relationship between clinically evident polyhydramnios and poor perinatal outcome has not been described, especially during the COVID-19 pandemic. Polyhydramnios is an excess accumulation of amniotic fluid, and it happens when the equilibrium between swallowing function and urination is disturbed.² This clinical condition is associated with a high risk of poor pregnancy outcomes.³ Based on the amniotic fluid index (AFI) values obtained during prenatal screening, polyhydramnios is being categorized into three groups according to severity: mild polyhydramnios (AFI of 25–30 cm), moderate polyhydramnios (30.1–35 cm), and severe polyhydramnios (≥ 35.1 cm).⁴ We are presenting a case of a 28-year-old female who tested COVID-19 positive with moderate polyhydramnios and was posted for emergency lower segment cesarean section (LSCS).

CASE DESCRIPTION

A 28-year-old ASA-II pregnant female tested COVID-19 positive with moderate polyhydramnios and was posted for emergency cesarean section due to fetal distress. She was G3-P2-L2 at 37 weeks of gestation with a previous history of two LSCS. At the time of admission, she had class II obesity with a body mass index of 39.3 kg/m² (bodyweight 92 kg and height 153 cm) with moderate COVID-19 symptoms of cough and fever. The

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How to cite this article: Kumar N, Arun SK, Kumar A, et al. COVID-19 as a Possible Cause of Unexplained Maternal Polyhydramnios: A Case Report. *J Res and Innov Anesth* 2022;7(2):62–64.

Source of support: Nil

Conflict of interest: None

patient was hemodynamically stable, with a respiratory rate of 32 breaths/min, and oxygen saturation of 92%. Supplementation of oxygen with the nasal cannula at a flow of 3 L/min improved her oxygen saturation to 98%. As per Ministry of Health and Family Welfare guidelines, Government of India,⁵ as she was categorized as a moderate COVID-19 case, so oxygen therapy, injection of enoxaparin (0.5 mg/kg) 40 mg subcutaneous once daily as low molecular weight heparin, and injection dexamethasone 6 mg once daily for 5 days as anti-inflammatory therapy were advised. She did not have medical or surgical comorbidities. She was evaluated for the cause of polyhydramnios: an oral glucose tolerance test with 75 gm glucose was done, fasting blood sugar was 6.6 mmol/L (118 mg/dL) and 2 hours after glucose 7.7 mmol/L (138 mg/dL); all viral markers were negative;

detailed abdominal ultrasonographic scan showed moderate polyhydramnios with AFI 30.8 cm and an anatomical scan showed no significant fetal anomalies. All investigations were within normal limits. Informed written consent was taken to perform the LSCS under spinal anesthesia with level III personal protective equipment protection. Standard monitors were attached, and all baseline parameters were recorded. Left lateral tilt was maintained, and she was preloaded with crystalloids at 15 mL/kg. With strict aseptic precautions, a low-dose subarachnoid block was performed in the left lateral position at L3-L4 space. The adequacy of the block was confirmed with modified Bromage scaling. After achieving a sensory block of T6 level and grade IV modified Bromage score, a Pfannenstiel-Kerr incision was given, and the baby was immediately delivered. The baby's birth weight was 2.8 kg, and the 1-minute appearance, pulse, grimace, activity, and respiration (APGAR) score was 7 which improved to 9 by 5 minutes. At birth, no gross anomalies or birth defects were present. During the intraoperative period, we were able to maintain all hemodynamic parameters. On the opening of the amniotic sac at around 2200 mL, amniotic fluid was slowly drained, and no maternal hypotension was noted as we maintained mean arterial pressure >75 mm Hg using crystalloids and phenylephrine infusion at 50 µg/min. The total duration of the surgery lasted 60 minutes, and it was uneventful.

DISCUSSION

Physiologic, metabolic, and vascular changes in normal and high-risk pregnancies may increase the risk of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection and modify/exacerbate the clinical presentation of COVID-19. The incidence of polyhydramnios is 0.2–1.6%.⁶ The clinical diagnosis of polyhydramnios is mainly confirmed by ultrasonographic assessment. It was reported that apart from maternal and fetal causes, some viruses, parvovirus B19, rubella, and cytomegalovirus, are also known to cause polyhydramnios.⁷ But, polyhydramnios due to COVID-19 has not been reported yet. Viral infection during pregnancy causes the release of cytokines and causes oxidative stress and disrupts placental functions, and causes polyhydramnios.⁸ Since COVID-19 is a viral infection, it may have caused placental insult due to cytokine storm during the pregnancy and resulted in polyhydramnios. The majority of the pregnant mothers got infected with COVID-19 in their second and third trimesters,⁹ which is comparable to our case also. We have ruled out all other possible causes of polyhydramnios and assumed that SARS-CoV-2 viremia might have led to moderate polyhydramnios (may have been related to an increase in amniotic fluid volume). The possibility of vertical transmission of SARS-CoV-2 from the infected mother to fetus or neonate has been a point of recent debate, with previous systematic reviews and a limited number of studies concluding no evidence of vertical transmission.¹⁰ We had performed SARS-CoV-2 reverse transcription-polymerase chain reaction (RT-PCR) testing on the baby within 48 hours of delivery, and it was tested negative. This mother suffered

from respiratory complications due to COVID-19, which was aggravated by moderate polyhydramnios. Morbid obesity possesses additional challenges in clinical management. A closed-loop communication in a COVID-19 positive parturient and anticipating potential obstetric emergencies, and predicting the need for airway instrumentation is always crucial. In our case, if regional anesthesia failed, the entire scenario could have been changed as general anesthesia always possesses additional risks. Common complications associated with polyhydramnios are umbilical cord prolapse, fetal malpresentation, fetal distress, or postpartum hemorrhage. Subclinical glucose tolerance may contribute to both polyhydramnios and macrosomia. So, it is always reasonable to repeat the diabetes screen when polyhydramnios is evident on sonographic assessment and must estimate fetal weight before the anticipated delivery. The findings of Phelan et al.¹¹ described that if AFI is >25, these patients have higher reported incidences of fetal malformation, non-reactivity, macrosomia, and adverse perinatal outcome than with normal gestations. Moreover, placental pathological morphological changes like increased intervillous, subchorionic fibrin, or extensive fetal thrombotic vasculopathy can be caused by hypoxia during coronavirus infection, resulting in intrauterine growth restriction, meconium-stained amniotic fluid, or fetal distress.¹² In our case, polyhydramnios may have been caused by COVID-19 infection during pregnancy due to placental insult and oxidative stress. Even though delivery was uneventful during a pandemic, we must be prepared to deal with complications. As the mother was having moderate polyhydramnios, mild-moderate symptoms of COVID-19 with a history of previous two cesarean sections, she had a high chance of postpartum hemorrhage. Polyhydramnios may aggravate the hypotension caused by a neuraxial blockade. In our case, polyhydramnios with COVID-19 have many challenges in view of maternal respiratory compromise, hypotension, and fetal distress; however, the entire perioperative period was uneventful.

CONCLUSION

In summary, we report the successful management of a moderate polyhydramnios pregnant patient during the third trimester with COVID-19 who underwent an emergency cesarean section. Managing a patient with polyhydramnios is always challenging. In the middle of a COVID-19 pandemic, the polyhydramnios could be related to COVID-19 infection.

CREdIT Author Statement

- Kumar N: Conceptualization, Writing – Original draft preparation, Writing – Reviewing and Editing.
- SK Arun: Data curation, Writing – Original draft preparation.
- Kumar A: Writing – Reviewing and Editing.
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- Informed written consent was obtained from the parents for publishing the photos and clinical details.

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