

## COVID-19 during Pregnancy, Complication and Possible Vertical Transmission

Ahlam MohammedS Hakami<sup>1</sup>

1 Lecturer, Department of Obstetrics and Gynecology, Medicine Colege, Jazan University, Saudi Arabia

### Cross ponding author

Ahlam Mohammed S Hakami

Lecturer,

Department of Obstetrics and Gynecology,  
Medicine Colege, Jazan University, Saudi Arabia

e mail:[dr.7ala2012@hotmail.com](mailto:dr.7ala2012@hotmail.com)

mobile: 00966599605127

## Abstract

### Background

The World Health Organization classified the 2019 epidemic of novel coronavirus infection (COVID-19) as a "pandemic." The outbreak is putting unprotected populations all around the world in danger of a health emergency.

A case report with a young woman who was discovered to have COVID-19 and PROM during the third trimester of her pregnancy was presented.

### Case presentation

A woman in her twenties (19) who had been experiencing a minor fever for four days arrived at the clinic. She was bleeding badly from the vagina and her membranes had burst prematurely. COVID-19 was thought to exist.

The PROM assay yielded a positive result. The primary method would be an urgent C-section birth within the next twenty-four hours. Following delivery, the newborn isolation protocol was implemented without any delay in skin-to-skin contact or cord clamping. The neonatal nasopharyngeal swab, which was collected immediately after delivery, contained coronavirus (COVID-19).

### Conclusion

A severe case of neonatal and maternal COVID-19 during the third trimester of pregnancy caused an early membrane rupture that led to vaginal bleeding and an early delivery. A multidisciplinary team's engagement in the treatment of patients with severe COVID-19 throughout pregnancy is very beneficial.

### Introduction

The World Health Organization has classified the COVID-19 epidemic, which is a novel coronavirus disease, as a "pandemic." Through October 16, 2020, the virus would infect over 39 million people worldwide, killing over 1,099,000 of them. (1–5) A worldwide pandemic brought on by coronavirus 19 has put the health of the most vulnerable people in the globe at danger. (1), (2), (6), (7) Depending on their individual immunological statuses and what is known from prior human coronavirus outbreaks, pregnant women and newborns may be at a substantial risk of contracting COVID-19. Only a few case studies on pregnant women with COVID-19 are available, and the results reveal that maternal and neonatal outcomes can vary

greatly. (1), (2), (3), (4), (5), (6), (7) Because of this uncertainty, obstetricians frequently perform caesarean sections, isolate moms, and feed infants formula or expressed milk. (1,10) Clinicians can make better decisions when they take into account elements like the overlap and duplication of research in registries and the degree to which results from different databases differ from one another. (1) Although most COVID-19-infected pregnancies end well, obstetricians still need to understand more about the virus's expression and course during pregnancy. According to a recent systematic research (8), up to 3% of pregnancies were associated with significant maternal morbidity. It has been demonstrated that women who have had children with mothers who have had challenging medical histories are more likely to experience seriously adverse results. According to specialists, the current epidemic emphasizes the need for reporting COVID-19 cases along with their challenging clinical management, and clinical recommendations for managing COVID-19 in pregnancy should be based on this knowledge. (1, 6,7,11)

There aren't many studies that indicate pregnant women who got another virus during their pregnancy gave delivery early because of the mother's poor health and the baby's respiratory problems or death. (1,7,12) Although there is no strong evidence to suggest that hasty induction of labor can reduce the likelihood of a bad result for pregnant women with COVID-19.

A case study of a young pregnant lady who tested positive for COVID-19 and PROM in the third trimester was presented.

### **Case presentation**

A 19-year-old pregnant woman, described as a Gravida 3, Para 2, presented to the emergency room of a general hospital in Germany at 33+1 weeks' gestation with a four-day history of a low-grade fever. She was bleeding badly from the vagina and her membranes had burst prematurely. COVID-19 was thought to exist. Her previous pregnancies and deliveries had all gone off without a hitch.

Her heart rate was 122/57 mmHg and her temperature was 37.5%. The blood type A+ was verified. The T.U.S. revealed the following: the placenta's position in reference to the uterine wall. The typical fetal posture is called cephalic presentation. Amniotic fluid; AFI 8,5 cm. Results from the Doppler are typical. The speculum, on the other hand, showed clots and dark blood.

The PROM assay yielded a positive result. An urgent c-section birth would be the main procedure during the next 24 hours. The treatment program also includes the following medicines: Rift Valley Fever Preventive Measures (Celestan). Nifedipine is used in tocolysis. 2 grams of ampicillin and 1.5 grams of azithromycin intravenously combined

Successful delivery of a female neonate weighing 1825 g and measuring 42 cm in length. Following delivery, the newborn isolation protocol was implemented without any delay in skin-to-skin contact or cord clamping. At 1, 5, and 10 minutes, the Apgar-Scores were 7, 10, and correspondingly. The neonatal nasopharyngeal swab, which was collected immediately after delivery, contained coronavirus (COVID-19).

### **Effect of COVID-19 on Pregnancy**

- The hazards to mothers seem to rise with other coronavirus infections, especially during the third trimester of pregnancy (SARS, MERS). There have been reports of preterm births in COVID-19-infected women, however it is unclear if all of these births were caused by medical induction or whether any of the pregnancies were unplanned (32).
- Pregnant women do not appear to be more at risk of contracting the virus than anyone else. The immune system and the body's response to viral infections, including COVID-19, are both altered by pregnancy.
- Anxiety, despair, and marital violence during pregnancy are all on the rise thanks to the coronavirus pandemic. Increasing the availability of resources for women and their families is crucial; in particular, it is essential that women be questioned about their emotional well-being at every point of contact.
- Pregnant women who have COVID-19 pneumonia tend to have less severe symptoms (33).
- Women with heart disease who are pregnant are at the greatest risk (congenital or acquired).

### Discussion and conclusions

Despite the fact that there has been a lot of research on CT, clinical symptoms, and therapeutic monitoring of patients with COVID-19 pneumonia, not many studies have specifically focused on pregnant women who have the infection. (14) On March 11, 2020, the World Health Organization formally declared the COVID-19 sickness a global pandemic. Thorough study must be done on the clinical characteristics and consequences of pregnant women with COVID-19 (15), (a) in order to offer effective guidelines for the three basic measures of prevention, (b) in order to treat and manage the disease effectively, and (c) to avoid further transmission (16).

A severe case of COVID-19 was reported during the third trimester of pregnancy, necessitating an emergency Caesarean section and resulting in an early delivery at 33 weeks and one day of gestation. The rising body of evidence that implies a COVID-19 infection during pregnancy may have negative effects on the mother is strengthened by this example. While the majority of women who contract COVID-19 have moderate symptoms that go away on their own without treatment (8, 17–20), reports of women who needed intensive care admission and, in one case, invasive breathing with extracorporeal membrane oxygenation have also surfaced. It has been suggested that immunological reactions and circulatory alterations brought on by pregnancy could exacerbate COVID-19 infection. (8) Mothers who already experience health problems may find the situation to be more hopeless. Evidence suggested that COVID-19 could be transmitted vertically from mother to newborn. Even while no such evidence has been found in the vast majority of cases, there have been reports of COVID-19 being found in infants. (21) (22,23) Even though only a handful of cases have been documented, the possibility of vertical transmission cannot be dismissed until more extensive research has been done.

A pregnant woman who was exposed to the COVID-19 virus in her third trimester of pregnancy was reported by the researcher. After much testing, she was identified as a COVID-19. We can only infer that she was infected before giving birth, based on previous research which indicated that antibody levels rose rapidly during the first two weeks (6, 24, 25). Patients with higher immunity have more severe physical effects after initial viral exposure. There is no doubt that innate immune cells play a crucial part in providing an efficient and timely response to diverse infections. According to research, the mother's immune system is geared up and prepared to fight off any invasive diseases (26). While some innate immune responses, such as the strong response of innate immune cells to viral infections, stay mostly unaltered during pregnancy, other adaptive immune responses, such as the number of T and B cells, decrease. (27) Under normal circumstances, the IgG antibodies in the mother's blood can breach the placental barrier and provide passive immunity to the developing fetus. Therefore, maternal vertical transmission may account for the positive fetal IgG result (28). Researchers discovered that the presence of SARS-CoV-1 antibodies in the cord blood and breast milk of some pregnant women was connected to a lack of vertical transmission in a second study on infants born to mothers who had SARS. (29) Recommendations for early delivery should be based on obstetric symptoms rather than the presence of COVID-19 infection, according to evidence-based care practices and new studies on COVID-19 infection during pregnancy. (30,31)

### **General Guidelines for Obstetric Health Care Providers**

- Medical professionals, including gynecologists, should get in touch with their state and/or municipal health departments for advice on how to conduct diagnostic testing on patients under investigation, in accordance with the national protocol.

- All pregnant women who are diagnosed with COVID-19 should be recorded in a registry. It is important to keep thorough records of pregnancy, delivery, and the baby's outcome (34).
- In light of a potential decrease in the size of the health care workforce, a likely dearth of personal protective equipment, and a shortage of isolation rooms, prenatal care providers should maximize the use of telehealth in as many aspects of prenatal care as possible.
- Women who are expecting should be encouraged to keep their distance from others and to wash their hands frequently.
- Safe intrapartum care should be provided with attention to details like meeting staffing minimums and being prepared to handle obstetric, anesthetic, and neonatal emergencies.
- It is important to allow a single, symptom-free birth partner to remain with the pregnant woman during the entire process. The appropriate personal protective equipment (PPE) for visitors to wear includes a gown, gloves, a face mask, and goggles (35).
- At the entry to the maternity ward, women should be greeted by staff members who are themselves protected by PPE and given a surgical face mask. The woman should remain isolated in a safe room until the mask is removed.
- According to government regulations, caregivers must use PPE when handling patients (36).

### Conclusion

In the third trimester, the author presented a severe instance of maternal and neonatal COVID-19 that caused premature membrane rupture, vaginal hemorrhage, and preterm delivery. It was not possible to exclude out an atypical manifestation of HELLP, highlighting the need for a multidisciplinary team in the care of severe

COVID-19 in pregnancy. Exposure to COVID-19 was thought to be particularly dangerous for pregnant women and newborn babies.



## References

1. Young EM, Green O, Stewart J, King Y, O'Donoghue K, Kate F Walker KF, Thornton JG. COVID-19 and pregnancy: A comparison of case reports, case series and registry studies. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 268 (2022) 135–142
2. Peng J, Li R, Yin H, Tang F, Xie H, Li M, Zhao Y. A case report of a pregnant woman infected with coronavirus disease 2019 pneumonia. *Medicine* 2020;99:30(e21335).
3. Nissen T, Wynn R. The clinical case report: a review of its merits and limitations. *BMC Res Notes* 2014;7:264.
4. National Health Commission of People's Republic of China. An Update of Novel Coronavirus Pneumonia Outbreak as of 24:00 on 11 April, 2020. Available at: <http://www.nhc.gov.cn/xcs/yqtb/202004/9631d3d14b514055ac74b9b4d1367904.shtml>.
5. National Health Commission of the People's Republic of China. New Coronavirus Pneumonia Diagnosis and Treatment Program (Trial Version 7) [EB/OL]. Available at: <http://www.nhc.gov.cn/yzygj/s7653p/202003/46c9294a7dfe4cef80dc7f5912eb1989/files/ce3e6945832a438eaae415350a8ce964>.
6. Long R, Wu D, Lin X, Lv D, Wang R, Jin L, Liao S, Liu W, and Deng D. COVID-19 and Pregnancy: A Case Study. *Global Challenges* 2021, 5, 2000074
7. Ronnje L, Länsberg JK, Vikhareva O, Hansson SR, Andreas Herbst<sup>3</sup> and Zaigham M. Complicated COVID-19 in pregnancy: a case report with severe liver and coagulation dysfunction promptly improved by delivery. *BMC*

- Pregnancy and Childbirth (2020) 20:511 <https://doi.org/10.1186/s12884-020-03172-8>
8. Zaigham M, Andersson O. Maternal and perinatal outcomes with COVID-19: A systematic review of 108 pregnancies [published online ahead of print, 2020 Apr 7]. *Acta Obstet Gynecol Scand.* 2020. <https://doi.org/10.1111/aogs.13867>.
  9. H. Liu, L. L. Wang, S. J. Zhao, J. Kwak-Kim, G. Mor, A. H. Liao, J. *Reprod. Immunol.* 2020, 139, 103122.
  10. Walker KF, O'Donoghue K, Grace N, Dorling J, Comeau JL, Li W, et al. Maternal transmission of SARS-COV-2 to the neonate, and possible routes for such transmission: a systematic review and critical analysis. *BJOG* 2020.
  11. Liang H, Acharya G. Novel corona virus disease (COVID-19) in pregnancy: What clinical recommendations to follow? *Acta Obstet Gynecol Scand.* 2020;99:439–42.
  12. Coronavirus (COVID-19) Infection in Pregnancy. Information for healthcare professionals Version 7: Published Thursday 9 April 2020. Assessed May. 2nd, 2020. Available online: <https://www.rcog.org.uk/globalassets/documents/guidelines/2020-04-09-coronavirus-covid-19-infection-in-pregnancy.pdf>.
  14. Chinese Thoracic Society; Chinese Association of Chest Physicians. Guide for the prevention and treatment of coronavirus disease 2019. *Chin J Tuberc Respir Dis* 2020 Jun 12;43(6):473-489. Chinese. doi: 10.3760/cma.j.cn112147-112147-20200321-00392.
  15. Liu D, Li L, Wu X, et al. Pregnancy and perinatal outcomes of women with coronavirus disease (COVID-19) pneumonia: a preliminary analysis [published correction appears in *AJR Am J Roentgenol.* 2020 Jul;215 (1):262]. *AJR Am J Roentgenol* 2020;215:127–32.

16. Mullins E, Evans D, Viner RM, et al. Coronavirus in pregnancy and delivery: rapid review. *Ultrasound Obstet Gynecol* 2020;55:586–92.
17. Schwartz DA, Graham AL. Potential maternal and infant outcomes from (Wuhan) coronavirus 2019-nCoV infecting pregnant women: lessons from SARS, MERS, and other human coronavirus infections. *Viruses*. 2020;12(02):194.
18. 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. *Lancet*. 2020;395(10226):809–15.
19. Breslin N, Baptiste C, Miller R, et al. COVID-19 in pregnancy: early lessons. *Am J Obstet Gynecol MFM*. 2020;2(2):100111. [Epub ahead of print].
20. Liu Y, Chen H, Tang K, Guo Y. Clinical manifestations and outcome of SARS CoV- 2 infection during pregnancy. *J Infect*. 2020;S0163-4453:30109–2.
21. Zhang ZJ, Yu XJ, Fu T, Liu Y, Jiang Y, Yang BX, Bi Y. Novel Coronavirus Infection in Newborn Babies Under 28 Days in China. *Eur Respir J*. 2020 Apr 8. pii: 2000697.
22. Yang P, Wang X, Liu P, Wei C, He B, Zheng J, Zhao D. Clinical characteristics and risk assessment of newborns born to mothers with COVID-19. *J Clin Virol*. 2020 Apr 10;127:104356.
23. Liu W, Wang J, Li W, Zhou Z, Liu S, Rong Z. Clinical characteristics of 19 neonates born to mothers with COVID-19. *Front Med*. 2020 Apr 13.
24. J. Zhao, Q. Yuan, H. Wang, W. Liu, X. Liao, Y. Su, X. Wang, J. Yuan, T. Li, J. Li, S. Qian, C. Hong, F. Wang, Y. Liu, Z. Wang, Q. He, Z. Li, B. He, T. Zhang, Y. Fu, S. Ge, L. Liu, J. Zhang, N. Xia, Z. Zhang, *Clin. Infect. Dis*. 2020, ciaa344.
25. N. M. A. Okba, M. A. Muller, W. Li, C. Wang, C. H. GeurtsvanKessel, V. M. Corman, M. M. Lamers, R. S. Sikkema, E. de Bruin, F. D. Chandler, Y.

- Yazdanpanah, Q. Le Hingrat, D. Descamps, N. Houhou-Fidouh, C. Reusken, B. J. Bosch, C. Drosten, M. P. G. Koopmans, B. L. Haagmans, *Emerging Infect. Dis.* 2020, 26.
26. Zhang Z, Li X, Zhang W, et al. Clinical Features and Treatment of 2019-nCoV Pneumonia Patients in Wuhan: report of a couple cases [published online ahead of print, Feb 7]. *Viol Sin* 2020;1–7. doi:10.1007/s12250-020-00203-8.
27. Aghaeepour N, Ganio EA, Mcilwain D, et al. An immune clock of human pregnancy. *Sci Immunol* 2017;2:eaan2946.
28. Junghans RP. Finally! The Brambell receptor (FcRB). Mediator of transmission of immunity and protection from catabolism for IgG [published correction appears in *Immunol Res* 1997;16(2):215]. *Immunol Res* 1997;16:29–57.
29. Shek CC, Ng PC, Fung GP, et al. Infants born to mothers with severe acute respiratory syndrome. *Pediatrics* 2003;112:e254.
30. Dave A, Joshi P, Jaiswal S, et al. Successful outcome of severe COVID-19 in pregnancy: individualised approach. *BMJ Case Rep* 2022;15:e246648. doi:10.1136/bcr-2021-246648
31. López M, Gonce A, Meler E, et al. Coronavirus disease 2019 in pregnancy: a clinical management protocol and considerations for practice. *Fetal Diagn Ther* 2020;47:519–28.
32. Castro P, Matos AP, Werner H, Lopes FP, Tonni G, Araujo Júnior E. Covid-19 and pregnancy: an overview. *Revista brasileira de ginecologia e obstetrícia.* 2020 Aug 26;42:420-6.
33. Venkatrao, B. A., & Manoliivna, S. V. (2022, July). COVID 19 DURING PREGNANCY. In *The 4 th International scientific and practical conference—Modern research in world sciencell*(July 10-12, 2022) SPC—Sci-conf. com. uall, Lviv, Ukraine. 2022. 1161 p. (p. 81).
34. Bharti Maheshwari D, Prabhakar M, Mittal S, Goel A. A study on mode of delivery among COVID 19 pregnant women. *Mortality.*;2:4.
35. Wastnedge EA, Reynolds RM, Van Boeckel SR, Stock SJ, Denison FC, Maybin JA, Critchley HO. Pregnancy and COVID-19. *Physiological reviews.* 2021 Jan 1;101(1):303-18.

- 36.D'Souza R, Ashraf R, Rowe H, Zipursky J, Clarfield L, Maxwell C, Arzola C, Lapinsky S, Paquette K, Murthy S, Cheng MP. Pregnancy and COVID-19: pharmacologic considerations. Ultrasound in Obstetrics & Gynecology. 2021 Feb;57(2):195-203.