

CASE REPORT

Early experience on obstetric outcomes of pregnant women who tested positive for COVID-19 in Ethiopia: A case series analysis

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Abstract

Severe acute respiratory syndrome affects all groups of population including pregnant women. Currently, there are limited evidences to show an increased risk of infection or increased mortality among pregnant women than the general population. On the 13th of March 2020, Ethiopian government reported the first case of COVID-19. Since then, until the time of this research compilation, more than 40 pregnant women have been managed at Eka Kotebe General Hospital, which is the first COVID-19 designated center in the country. The aim of this case series is to do an in-depth case review of the first four cases of pregnant women who tested positive for COVID-19. Out of the four cases discussed in this series, there was one maternal death, and three out of the four newborns delivered tested positive for COVID-19. (*Afr J Reprod Health 2022; 26[1]: 115-119*).

Keywords: Obstetric outcomes; COVID-19; case series; Ethiopia

Résumé

Le syndrome respiratoire aigu sévère touche tous les groupes de population, y compris les femmes enceintes. Actuellement, il existe des preuves limitées pour montrer un risque accru d'infection ou une mortalité accrue chez les femmes enceintes par rapport à la population générale. Le 13 mars 2020, le gouvernement éthiopien a signalé le premier cas de COVID-19. Depuis lors, jusqu'au moment de cette compilation de recherche, plus de 40 femmes enceintes ont été prises en charge à l'hôpital général d'Eka Kotebe, qui est le premier centre désigné COVID-19 du pays. Le but de cette série de cas est de faire un examen approfondi des cas des quatre premiers cas de femmes enceintes qui ont été testées positives pour COVID-19. Sur les quatre cas discutés dans cette série, il y a eu un décès maternel et trois des quatre nouveau-nés ont été testés positifs pour COVID-19. (*Afr J Reprod Health 2022; 26[1]: 115-119*).

Mots-clés: Résultats obstétricaux; COVID-19, série de cas; Ethiopie

Introduction

Since the first report of the novel coronavirus by WHO in late December 2019, more than seven million people have been infected with the virus worldwide¹. Being the deadliest viral infection seen in the past 100 years, COVID-19 has taken the lives of more than 600,000 people so far. As of July 20, 2020, more than 13,000 people in Ethiopia are infected with the virus and 209 people have died from the infection. Out of these, one was a postpartum woman who was receiving treatment at the study hospital. Previous experiences from influenza, Ebola, and Lassa fever showed that viruses could be associated with high morbidity and mortality during pregnancy^{2,3}. Despite mounting evidences worldwide, there is no report on the obstetric outcome of pregnant women with

COVID-19 infection in Ethiopia. Furthermore, at the time of this report, no specific guideline is prepared to direct clinical providers on how to care for an exposed newborn following delivery. Here we presented cases of four pregnant women who gave birth while carrying the infection and being followed at one of the COVID-19 designated centers /Eka Kotebe General Hospital (EKGH)/. So, the aim of this case series is to summarize the clinical pictures as well as short-term obstetric outcomes of these four cases.

Case presentation

Case I

A twenty-six-year-old primigravida woman was tested positive for COVID-19 after being screened

with RT-PCR for COVID-19 infection as part of contact tracing. After being tested positive, she was transferred to EKGH for isolation and follow-up. She had no fever, shortness of breath, or cough. Physical examination also revealed clear chest and, no other finding suggestive of COVID-19 infection. After admission to the hospital, she delivered vaginally on the 3rd day at a gestational age of 41⁺² weeks. The outcome was a 3300-gm male alive neonate with an APGAR score of 8 and 9 in the 1st and 5th min respectively. Following delivery, the newborn was allowed to breastfeed for six hours after the woman wore face mask and glove. Six hours later, the newborn was transferred to neonatal intensive care (NICU) for isolation. After 24 hours of delivery, the newborn was screened for COVID-19 and found to be positive. Both the woman and the newborn stayed in the hospital for 23 days until they get two consecutive negative RT-PCR tests.

Case 2

A 40-year-old gravida two Abortion one woman was transferred to EKGH after she tested positive for COVID-19. She was tested as part of contact tracing and was asymptomatic at the time of admission to EKGH. Her blood test and chest x-ray were all normal (see table 1). At the gestational age of 42⁺² weeks, she delivered by Cesarean section for obstetric indication. The outcome was a 3200gm female alive neonate with an APGAR score of 8 and 9 in the 1st and 5th minutes respectively. Immediately following delivery, the newborn was transferred to NICU which was designated for COVID-19 exposed newborns. COVID-19 test was done after 24 hours and turned to be positive. Both the woman and her newborn stayed in the hospital for 19 days and received two negative results. They had a smooth stay in the hospital.

Case 3

A 30-year-old para two woman delivered at a general hospital in Addis Ababa by cesarean section for obstetric indication. With evidence of contact history, COVID test was done. The result arrived as positive on the third post-operative day. She was then transferred to EKGH for isolation and further management. Otherwise, she was asymptomatic during her stay in both hospitals and her

investigations were all in the normal range (see Table 1). COVID-19 testing was done for the newborn on the first postpartum day and it was negative. Repeat test was done on the third day while the newborn was in the NICU on isolation, and it was found to be positive. Between these two test results, the newborn has no contact with his mother. But there was one other newborn with confirmed positive case in the NICU.

Both the neonate and the mother stayed for 19 days and discharged after receiving two consecutive negative test results.

Case 4

A 35-year-old gravida three para two woman tested positive for COVID-19 at a gestational age of 37⁺² weeks after she presented with cough, shortness of breath, and difficulty of breathing for three days. Upon examination, she was tachypneic with a respiratory rate of 32 breaths per minute and oxygen saturation of 82% with atmospheric oxygen. Her chest had a decreased air entry and crepitation on the right lung field. Chest X-ray showed consolidation on the right side (see table 1). Otherwise, her blood test was normal with a white cell count of 9,250. She was admitted and put on intranasal oxygen with two liters of oxygen. At the gestational age of 37⁺⁵ weeks, she developed respiratory distress with impending respiratory failure. For this reason, an emergency cesarean section was performed under general anesthesia. The outcome was a 3100gm male alive neonate with APGAR score of 8 and 9 at 1st and 5th minutes respectively. Immediately following delivery, the patient was on close monitoring with intranasal oxygen of 3-5 liters. On the 3rd post-operative day, the respiratory condition worsened and gradually she went into respiratory failure. For this, she was intubated, transferred to adult intensive care unit (ICU) and broad-spectrum antibiotic (vancomycin 1gm iv BID and cefepime 1gm IV BID) was initiated. For two weeks in the ICU, she was receiving supportive care including maintenance fluid, anti-ulcer medications and thromboprophylaxis with Low molecular weight heparin (LMWH). On her 16th postpartum day, after 2 weeks stay in the ICU, the patient died with the stated cause of death being respiratory failure. COVID-19 test for the newborn was performed on

Table 1: Characteristics and short-term outcomes of pregnant women who tested positive for COVID-19 at Eka Kotebe General Hospital

Case	Case 1	Case 2	Case 3	Case 4
Age	26	40	30	35
Parity (P), Abortion (A)	P I	P II A I	P II	P III
Symptoms	No	No	No	Shortness of breath, cough, dyspnea
Source of infection	Contact with COVID-19 confirmed case	Contact with COVID-19 confirmed case	Contact COVID-19 confirmed case	Unknown contact history
Maternal comorbid conditions	No	No	No	No
Maternal outcome	Improved	Improved	Improved	Died
Neonatal outcome	Term, Live birth	Term, Live birth	Term, Live birth	Term, Live birth
Length of days before the first negative result	12 days	11 days	14 days	Died on 16 th days of admission
Duration of stay in the isolation center	23 days	19 days	19 days	16 days
Neonatal RT-PCR result on initial testing	positive	positive	negative	Positive
Need for mechanical ventilator	No	No	No	Yes
Mode of delivery	Vaginal delivery	Cesarean section	Cesarean section	Cesarean section
White blood cell (cells per 10 ⁶ /L)	13.6 x 10 ³	11.23 x 10 ³	13.6 x 10 ³	10.95 x 10 ³
Neutrophil (%)	71.9	86.3	81.4	79.1
Lymphocyte (%)	10.2	9.1	10.2	1.23
Platelet (cells per 10 ⁶ /L)	406,000	180,000	406,000	306,000
Renal function test	Cr = 0.12 BUN = 11	-	Cr = 0.88 BUN = 14	Cr = 0.66 BUN = 7
CXR	normal	Normal	Normal	More than 50% consolidation on the right side
If died, the immediate cause of death	N/A	N/A	N/A	Respiratory failure

P, parity; A, abortion; N/A, not applicable; Cr, creatinine; BUN, blood urea nitrogen; CXR, chest x-ray

the third day and was positive. The newborn was isolated in the ICU for 12 more days and discharged after two negative test results.

Discussion

Previous studies on the impact of viral infection on pregnancy have shown an increased morbidity and mortality in these populations than in the general population⁴. The experience from influenza epidemic of 1918, the Asian flu epidemic of 1957, and SARS showed that pregnant women have poor prognosis than the general population^{5,6}. In our series of four pregnant women who were tested positive for COVID-19, one woman died from a complication related to the virus.

Three of the four cases were asymptomatic upon diagnosis, through the course of their hospital stay up to the time of discharge, which is similar to findings in other countries^{7,8}. All of the cases were at the age of 40 and below with no comorbidity.

Among the exposed newborns, three tested positive for COVID-19 infection. Interestingly, one of the newborns who initially tested negative, turn out to be positive upon a repeat test after being transferred to the NICU.

Currently, there are limited evidences to support perinatal transmission of COVID-19 infection and only few reports showed infection in newborns tested in the first days of life⁹⁻¹¹. The relatively high number of COVID-19 infections among the newborns in this case series needs further investigations to identify any gap or amendable factor during peripartum period that could have contributed to neonatal infection.

Among other factors, the lack of standard procedural guidelines to care for pregnant women and exposed newborns contributes to the high rate of positive COVID-19 cases among newborns of positive COVID-19 pregnant women. Health system readiness to manage COVID-19 cases has a positive impact on both maternal and neonatal

outcomes. It is advised to rapidly respond to the escalating pandemic by developing a resilient health system that can prevent both maternal and neonatal mortality as well as transmission.

Ethical clearance

Ethical approval was obtained from Eka Kotebe General Hospital, Addis Ababa, Ethiopia, with the reference number ER/150/5/45. The permission to collect data was obtained from the department of obstetrics and gynecology at Eka General Hospital. The patients' identification was kept confidential and anonymous.

Conclusion

Though uncommon, COVID-19 infection during pregnancy can be associated with severe maternal complications with subsequent maternal death. Suboptimal system preparedness may contribute to high rate of infection in newborns. There is an urgent need to identify and revise any management gaps that have contributed for the disproportionately high rate of newborn COVID-19 infection in this setup. Our finding also alarms the need for a well-designed longitudinal study to identify amendable causes of neonatal infection during the early postpartum period.

Conflict of interest

All authors declare that they have no competing interest.

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Consent

All three patients consented for publication of their information. The family of the fourth patient also gave consent.

Author's contribution

TT: Conceived and conducted the study, did literature search

NM: Participated in the surgery, did literature search, critically revised the manuscript

FA: Critical revision of the manuscript and literature search

MF: Critical revision of the manuscript and literature search

All authors mentioned in the article approved the manuscript

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References

1. WHO Coronavirus Disease (COVID-19) Dashboard <https://covid19.who.int> (accessed August 3, 2020).
2. Price ME, Fisher-Hoch SP, Craven RB and McCormick JB. A prospective study of maternal and fetal outcome in acute Lassa fever infection during pregnancy. *BMJ* 1988;297:584–7. <https://doi.org/10.1136/bmj.297.6648.584>.
3. Jamieson DJ, Uyeki TM, Callaghan WM, Meaney-Delman D and Rasmussen SA. What obstetrician-gynecologists should know about Ebola: a perspective from the Centers for Disease Control and Prevention. *Obstet Gynecol* 2014;124:1005–10. <https://doi.org/10.1097/AOG.0000000000000533>.
4. Peiris JS, Lai ST, Poon LL, Guan Y, Yam LY, Lim W, Nicholls J, Yee WK, Yan WW, Cheung MT, Cheng VC, Chan KH, Tsang DN, Yung RW, Ng TK and Yuen KY. Coronavirus as a possible cause of severe acute respiratory syndrome. *Lancet Lond Engl* 2003;361:1319–25. [https://doi.org/10.1016/s0140-6736\(03\)13077-2](https://doi.org/10.1016/s0140-6736(03)13077-2).
5. Harris JW. Influenza occurring in pregnant women: a statistical study of thirteen hundred and fifty cases. *J Am Med Assoc* 1919;72:978–980.
6. Greenberg M, Jacobziner H, Pakter J and Weisl BA. Maternal mortality in the epidemic of Asian influenza, New York City, 1957. *Am J Obstet Gynecol* 1958;76:897–902.
7. Alfaraj SH, Al-Tawfiq JA and Memish ZA. Middle East Respiratory Syndrome Coronavirus (MERS-CoV) infection during pregnancy: Report of two cases & review of the literature 2019.
8. Breslin N, Baptiste C, Miller R, Fuchs K, Goffman D, Gyamfi-Bannerman C and D'Alton M. COVID-19 in pregnancy: early lessons. *Am J Obstet Gynecol* 2020;100111.
9. Murphy S. Newborn baby tests positive for coronavirus in London. *The Guardian* 2020;14.
10. Alfaraj H, al-Tawfiq JA and Memish ZA, "Middle East Respiratory Syndrome Coronavirus (MERS-CoV) infection during pregnancy: report of two cases & review of the literature," *Journal of Microbiology, Immunology, and Infection*, vol. 52, no. 3, pp. 501–503, 2019. View at: Publisher Site | Google Scholar

11. Akbarian-Rad Z, Mojaveri MH, Bouzari Z, Sadeghi F, Yahyapour Y, Rad MN, Alizadeh S, Ebrahimpour S, Sepidarkish M and Javanian M. Neonatal Outcomes in Pregnant Women Infected with

COVID19 in Babol, North of Iran: A Retrospective Study with ShortTerm Follow-Up. *Infectious Diseases in Obstetrics and Gynecology* Vol. 2021, 9952701, <https://doi.org/10.1155/2021/9952701>.