Pregnancy and COVID-19: Cesarean Delivery on ECMO

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Background

COVID-19 in pregnant females is associated with preterm birth, preeclampsia, need for Cesarean delivery, and perinatal death, along with higher rates of ICU admission, mechanical ventilation, and extracorporeal membrane oxygenation (ECMO) when compared to nonpregnant females with COVID-19. We present a case of severe COVID-19 during second trimester pregnancy which led to an emergency Cesarean delivery while being on ECMO.

Case

38-year-old G2P1 female with past medical history significant for polycystic kidney, liver disease, and renal transplant, was admitted with COVID-19 pneumonia at 25 weeks gestation. The patient was unvaccinated, declined the use of remdesivir and convalescent plasma. Obstetric history was significant for invitro fertilization pregnancy, placenta previa, pre-eclampsia and fibroids. Due to worsening of respiratory status, patient required mechanical ventilation and ECMO.

At 28 weeks gestation, patient developed hemorrhagic shock. CT imaging demonstrated a large hepatic cyst with active hemorrhage and hemoperitoneum. Patient required Cesarean delivery, abdominal exploration, resection of hepatic cyst and hemorrhage control. Total blood loss was 2 L for which patient received 6 units of pRBCs, 2 units of platelets and 2 units of FFP.

Postoperative course was complicated by an additional 13 open abdominal surgeries, embolization of uterine artery due to the bleeding from hysterotomy site, acute kidney injury and numerous infections. Patient was in the ICU for 7 weeks, on ECMO for 4 weeks, but was eventually transferred in stable condition to the medical floor.

Vaccination Rates

- According to data from Morbidity and Mortality CDC 03/2022 vaccination rates were 65% for the General Population and 31% for the Pregnant Population

Effects of COVID-19 Vaccination

- CDC Vaccine Safety Datalink assessed 40,000 pregnancies as of 2021 and the COVID-19 vaccination was not associated with increased risk for preterm birth, or gestation age for newborns
- COVID-19 vaccination has not been shown to affect fertility
- Breastfeeding has been shown to be safe after vaccination

Effects of COVID-19

- Preterm and cesarean delivery birth rates have been increased in some studies but not all and are more likely to be associated with severe or critical disease. As of Aug 2021, Preterm birth rates were 11.6% compared to 10.1% in the general population and cesarean delivery rates were 33.1% compared to 31.8% in the general population
- As of Sept 2021, stillbirth rates were 1.26% compared to 0.64% in general population

COVID-19 and Pregnancy

- From a report for CDC, pregnant women had a higher risk of ICU admission (ARR 3), invasive ventilation (ARR 2.9), ECMO (ARR 2.4) and death (ARR 1.7)
- Pregnant women with comorbidities and older pregnant patients were at an elevated risk for adverse outcomes

ECMO and Pregnancy

- ECMO in peripartum women has been reported to have maternal and fetal survival rates of 75% and 64%, respectively
- ECMO in peripartum women is associated with bleeding at 31% and neurologic changes at 5%

Conclusion

- Severe COVID increases risk of mortality and morbidity in pregnant patients
- ECMO increases the risk for bleeding but has good survival rates
- COVID-19 vaccination is safe in pregnancy

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