



OPEN ACCESS

NEONATAL PERINATAL COVID-19



Sajjad ur Rahman✉

Address for correspondence:

Sajjad ur Rahman
Consultant, Neonatal Perinatal Medicine; Director Neonatal Intensive Care Unit & Neonatal Fellowship Program, Maternity and Children's Hospital, Buraydeh Al Qassim-Kingdom of Saudi Arabia

E-mail:

sajjadjan@hotmail.com

The coronavirus disease 2019 pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), also known as Covid-19, has swept across the world like an indiscriminating wildfire. Coronaviruses are positive sense-enveloped, single-stranded RNA viruses. Serotypes from α - and β -coronavirus genera can cause human disease. The novel severe acute respiratory syndrome coronavirus 2 (SARSCoV-2) is a β -coronavirus.

Pregnant women and neonates are particularly vulnerable to SARSCoV-2 infection compared with older children and healthy young adults, with unique challenges in their management. In comparison to SARSCoV-2 positive nonpregnant women, SARSCoV-2 positive pregnant women are significantly more likely to be admitted to an intensive care unit, receive invasive ventilation/extracorporeal membrane oxygenation (ECMO) and have higher risk of death.¹ The transmission of SARSCoV-2 from mother to foetus, during pregnancy or delivery and afterwards during postnatal care of newborn baby, has always been a serious concern for families as well as perinatal practitioners. There were no clear answers due to lack of enough data. Three potential modes of Perinatal transmission of SARSCoV-2 have been proposed; intrauterine transplacental/trans amniotic fluid transmission, intrapartum transmission due to infected secretions/body fluids and immediate postnatal transmission from mother, health care workers and other adults involved in the care of the baby.¹ Immediate postnatal transmission is the most common mode responsible for neonatal SARSCoV-2.

A recent meta-analysis of 31016 SARSCoV-2 positive Pregnant women (from 62 observational studies) has shown that 50% were asymptomatic while 7% required ICU admission and 2% died.² 48.8% delivered by C Section and 49.8% C Sections were due to SARSCoV-2 related reasons. 23.4% babies were born preterm (<37 weeks), 16.6% were low birth weight, 23.7% required NICU admission and 1.6% neonates died. Only 3.5% babies born to Covid-Positive mothers

were Covid-positive. As compared to Covid negative mothers, Covid positive mothers had a higher risk of Preterm (<37 weeks) birth (RR = 4.91; 95% CI = 3.97 to 60.8), much higher risk of very preterm (<32 weeks) birth (RR = 8.47; 95% CI = 4.02 to 17.85) and higher risk of NICU admissions (RR = 2.01; 95% CI = 1.50 to 2.69).²

SARS-CoV-2 is transmitted from person to person by droplet, airborne and contact routes. Hence, like any other situation, face masking, hand washing and physical distancing (≥ 6 ft) remain the main stay of prevention during perinatal period. In addition, the delivery of SARSCoV-2 positive pregnant women requires special arrangements to prevent the spread of infection to other patients, staff and babies. Pregnant women should be given priority for Covid-19 testing. The timing and mode of delivery should follow the standard obstetric protocols. For preterm delivery of Covid positive mothers, the antenatal steroids should be given as a standard. The delivery should be conducted in a negative pressure room if possible. Only essential staff wearing standard PPE (Personal Protective Equipment) should stay inside delivery room. Strict Isolation and infection control protocols (including N-95 masking) should be followed. Mother should wear surgical mask during delivery and afterwards.¹

The newborn resuscitation area should be separated from delivery room by a physical partition. Maternal COVID-19 alone is not a specific indication for attending a delivery by NICU Team. The attending pediatric/neonatal team should strictly follow the standard precautions of donning and doffing, N-95 masks, face shields etc. During neonatal resuscitation, two-person technique should be used during mask/T-piece ventilation. The endotracheal intubation should be carried out under head box or by using video laryngoscopy if available. The baby should be transported to NICU through a predetermined specified pathway. Infant's cot should be six meters away behind a barrier, in case the baby is rooming in with the mother.

This article may be cited as

Rahman S. Neonatal Perinatal Covid-19. J Postgrad Med Inst. 2021; 35(2): 61-2. <https://doi.org/10.54079/jpmi.2021.35.2.2995>

Covid-19 Vaccination is safe and effective during pregnancy and lactation. The risk of transmission of vaccine (i.e., COVID-19 messenger RNA [mRNA]) across placenta is unlikely. On the other hand, maternal Ig G antibodies in response to the vaccine are likely to be transmitted across the placenta. Antibodies to COVID-19 are found in infants born to mothers with COVID-19 and in the breast milk of mothers with COVID-19. Hence, the benefits of Covid vaccination, both for mother and fetus, out weigh any potential risks. The American College of Obstetricians and Gynecologists and American Academy of Pediatrics recommend Covid-19 vaccination as a shared decision between pregnant woman and her obstetrician/pediatrician.

There is no contraindication to breast feeding by a Covid-19 positive mother provided she strictly follows face masking, hand washing and breast washing with soap and water during breast feeding. There is no evidence of Covid-19 transmission through breast milk. Anti-Covid medications and vaccines do not constitute a contraindication to breast feeding. Instead, breast milk is known to provide protective antibodies against SARS-CoV-2. The nutritional, immunologic, and developmental benefits of breastfeeding outweigh the potential transmission risk of viral transmission. In case the mother is unable to directly breast feed, she can use Expressed Breast Milk (EBM) if required.

Management of Perinatal Covid-19 follows the general guidelines issued by regulatory authorities.³ Asymptomatic mothers and babies only need isolation till they become Covid-19 negative. An infected mother who has been afebrile for 24 hours without antipyretics and is improving, is not likely to be contagious 10 days after the onset of symptoms and can safely care for her infant. Therefore, asymptomatic Covid Positive neonates can be discharged with close follow up. Symptomatic mothers and neonates are managed according to the severity of the disease.³ Treatment protocols include non-specific supportive treatment to specific treatment. SARSCoV-2 infection is a biphasic disease. The early phase is due to direct viral infection. The later phase is due to immune mediated response "cytokine storm". In addition, SARSCoV-2 causes widespread microvascular coagulopathy which can lead to multiorgan failure. Hence, early aggressive treatment including ICU admission, management of hypoxia and specific treatment have become the rule. The specific treatment includes antiviral agents (Favipiravir, Remdesivir), Systemic and inhaled corticosteroids, Immunomodulators (Tocilizumab, Baricitinib and IV immunoglobulin) and thromboprophylaxis (Enoxaparin/Heparin). Multisystem Inflammatory Syndrome due to Covid-19 is the most serious and lethal form of disease which in addition to full intensive care and symptomatic treatment, may need use of

Extracorporeal Membrane Oxygenation and hemodialysis. There has been an exponential increase in the knowledge of pathophysiology and management of SARSCoV-2 since the pandemic started in December 2019. With the widespread availability and implementation of Corona Virus vaccine, the severity and number of hospitalizations due to SARSCoV-2 disease are decreasing worldwide.

■ REFERENCES

1. Sankaran D, Nakra N, Cheema R, Blumberg D, Lakshminrusimha S. Perinatal SARS-CoV-2 infection and neonatal COVID-19: A 2021 update. *Neoreviews*. 2021; 22(5): e284-95.
2. Lassi ZS, Ana A, Das JK, Salam RA, Padhani ZA, Irfan O, et al. A systematic review and meta-analysis of data on pregnant women with confirmed COVID-19: Clinical presentation, and pregnancy and perinatal outcomes based on COVID-19 severity. *J Glob Health*. 2021; 11:05018
3. Saudi MoH Protocol for Patients Suspected of/Confirmed with COVID-19 [cited 2021 Aug 8]. Available from: URL: <https://www.moh.gov.sa/Ministry/MediaCenter/Publications/Documents/MOH-therapeutic-protocol-for-COVID-19.pdf>

Conflict of Interest

Author declared no conflict of interest

Grant Support and Financial Disclosure

None