

COVID 19 in Neonates: Experience at 2 Tertiary Referral Centers in UAE

Shruthi Bharadwaj^{1*}, Liyakat NA², Sujay NK¹, Abraham D² and Kalyanasundaram S²

¹Department of Neonatology and Paediatrics, Zulekha Hospital, Sharjah, UAE

²Department of Neonatology and Paediatrics, Zulekha Hospital, Dubai, UAE

***Corresponding Author:** Shruthi Bharadwaj, Specialist Neonatologist, Department of Neonatology and Paediatrics, Zulekha Hospital, Sharjah, UAE.

Received: September 01, 2020; **Published:** September 10, 2020

Abstract

There have been reports of the Coronavirus disease 2019 (COVID 19) in the newborn infants, and in this brief report, we summarize our experience based on the combined caseload managed in two sister concern hospitals (in the emirate of Sharjah and Dubai, United Arab Emirates). We had a total of eight neonates born to COVID positive mothers since April 2020 to June 2020, of which three neonates were positive. All of these neonates were asymptomatic except one neonate who had high total count after birth and the other with feed intolerance. One other neonate had symptomatic COVID 19 infection while admitted in the NICU, unrelated to parent infection status. Based on our experience, we concur with most of the recent case series that majority of the babies are asymptomatic. So, the focus should be on supporting the parent's choice in terms of feeding plan, postnatal care with rooming in and close monitoring.

Keywords: Coronavirus Disease; COVID 19; Coronavirus Infection; Neonates; Newborn

Abbreviations

COVID 19: Coronavirus disease 2019; LSCS: lower segment caesarean section; TTN: transient tachypnea of newborn; RDS: respiratory distress syndrome; CPAP: continuous positive airway pressure; PIH: pregnancy induced hypertension; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2

COVID 19 in neonates: Experience at 2 referral centers in UAE

It is just over 6 months since the novel Coronavirus infection started spreading all around the world, and it is nearly 4 months since the World Health Organization declared the infection a pandemic on 11th March 2020 [1]. There have been reports of COVID 19 in the newborn infants, and in this brief report, we summarize our experience based on the combined caseload managed in two sister concern hospitals (in the emirate of Sharjah and Dubai, United Arab Emirates). Both hospitals serve around 2000 deliveries per year each, and have level 3 NICU facilities, serving as regional referral units.

Description of cases and clinical management: We had a total of eight neonates (Case 1 - 8) born to COVID positive mothers since April 2020 to June 2020 in our hospitals of which three neonates were positive. One other neonate (case 9) had symptomatic COVID 19 infection while admitted in the NICU.

Five women were COVID 19 positive at the time of delivery (Case 1 - 5) and three were positive in the immediate postnatal period (Case 6 - 8). Three women were symptomatic of which one mother needed ICU admission for severe pneumonia. All the mothers delivered in the 3rd trimester by LSCS except one mother who delivered vaginally. Out of 8 COVID 19 positive mothers, 4 had gestational diabetes and one had hypothyroidism. All the 8 mothers had a history of COVID 19 exposure.

Of the 8 neonates born to COVID 19 positive mothers in the perinatal period, three were born preterm (31, 33 and 36 weeks gestation). Two babies received skin to skin care after birth, 4 were on exclusive breast milk feeding (direct breast feeding/expressed milk), 2 each on mixed and formula feeding. All the neonates born to suspected or proven COVID 19 positive mothers received early bath within the first 24 hours. One neonate had TTN and two preterm neonates had RDS due to prematurity treated with CPAP. Most of the neonates were asymptomatic except one neonate (Case 6) who had high total count after birth and the other with feed intolerance likely due to infection (Case 9).

Out of five neonates (Cases 1 - 5) born to mothers who were COVID 19 positive at/before delivery, two neonates (Case 1, 2) were COVID positive at 24 hours age (RT PCR nasopharyngeal swab). This may suggest a probable vertical transmission in these neonates. We did not pursue other tests to confirm vertical transmission, as such cases had already been reported elsewhere. In case 1, the baby did not receive skin to skin care as the mother was sick with pneumonia needing ICU admission and was on formula milk suggesting the strong possibility of vertical transmission. However, case 2 received skin to skin care as well the baby was on combined breast milk and formula milk. However, both the neonates were asymptomatic.

Of the three mothers (Case 6 - 8) who were COVID19 positive in the immediate postnatal period, one neonate (Case 6) was positive on day 14. This mother tested positive on day 4 post-delivery. Although neonate was initially negative on day 10, subsequent test on day 14 was positive for RT PCR. The neonate had initial TTN needing high flow nasal cannula, high total count of 46500/mm³ and a negative blood culture. It is possible that the mother was in the incubation period at delivery, and it is difficult to be clear if the virus contributed in any way to the symptoms, as baby was positive only on day 14.

Case 9 was a preterm neonate born at 32 weeks by LSCS for PIH with birth weight of 1.44 kg. Mother didn't have any infection concerns prior to or at delivery. Neonate was treated with CPAP for RDS and managed conservatively for feed intolerance. On day 17 of life, baby developed fever, abdominal distension, feed intolerance and diarrhea. COVID 19 RT PCR Nasopharyngeal swab was positive at this point (test was sent as baby had fever and the current unit guidelines recommends this in view of risk of community transmission). Parents were tested but were negative. Baby was isolated and managed conservatively covering for sepsis with piperacillin-tazobactam and amikacin for a week. Second swab was negative, and baby improved with 7 days of antibiotics. The source of infection in this case is unclear, though the clinical features were likely due to the infection. Baby was subsequently stable and discharged home on full feeds.

Characteristics	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9
Gestation in weeks	36	40	37	39	38	37	33	31	32
Birth weight (g)	2890	3220	3220	2860	3200	3760	2215	1600	1440
Delivery	LSCS	Vaginal	LSCS	LSCS	LSCS	LSCS	LSCS	LSCS	LSCS
Isolation	NICU - NPR	No	No	No	No	NICU - NPR	NICU -NPR	NICU	NICU
Maternal COVID test	Positive 3 days before delivery and on day 7 post delivery	Positive 3 days prior to delivery and on day of delivery	Positive 4 days prior to delivery	Positive 14 days prior to delivery	Positive until 6 days before delivery	Positive on day 4 post delivery	Positive on day 11 post delivery	Positive on day 11 and day 14 post delivery	Negative
Maternal symptoms	Pneumonia	No	No	Fever and cough	Cough	No	No	No	No
Neonatal COVID test	Positive on day 2, 6, 10 and 11	Positive on day 2	Negative on day 2	Negative	Negative	Negative on day 10, Positive on day 14 and 20	Negative on day 14	Negative on day 15	Positive on day 17

Repeat test	Negative on day 17 and 19	Negative on day 6	Negative on day 5	Not done	Not done	Negative on day 21 and day 27	Negative on day 20	Negative on day 16	Negative twice
Mode of transmission	Vertical	Vertical	N/A	N/A	N/A	Horizontal	N/A	N/A	unclear
Type of Feeding	Formula	Breast milk and formula	Breast milk and formula	Breast milk	Breast milk	Formula	Expressed breast milk	Expressed breast milk	Formula
Skin to skin	No	Yes	Yes	No	No	No	No	No	No
Clinical presentation	No	No	No	No	No	TTN, ↑ WBC count	RDS due to prematurity	RDS and feed intolerance due to prematurity	RDS due to prematurity, feed intolerance
Follow up	Healthy	Healthy	Healthy	Healthy	Healthy	Healthy	Healthy	Healthy	Healthy

Table 1: Maternal and Neonatal Characteristics

(LSCS: Lower Segment Caesarean Section; N/A: Not Applicable; CPD: Cephalopelvic Disproportion; NPL: Non-Progression of Labor; PIH: Pregnancy Induced Hypertension; NICU-NPR: Neonatal Intensive Care Unit-Negative Pressure Room; RDS: Respiratory Distress Syndrome; TTN: Transient Tachypnea of Newborn; WBC: White Blood Count; GDM: Gestational Diabetes.

Discussion

The novel coronavirus, named as SARS-CoV-2, belongs to the family of viruses called Beta coronavirus and is a single stranded RNA virus with a helical capsid with radiating spikes [2]. There are a few reports of perinatal spread especially where the mother is symptomatic just prior to delivery as in case 1 and 2. This could be explained by the relatively high viral load in the symptomatic mothers [3,4]. PCR is a highly sensitive test and even vaginal secretions in the baby’s nose can cause positivity. In another series of 7 neonates born by caesarean delivery, 3 newborns showed high IgM levels to COVID 19, suggesting antenatal infection (as IgM does not cross placenta). However, false positive tests cannot be ruled out [5]. Postnatal transmission from parents or care givers who have the infection (or are asymptomatic carriers) is the commonest reason a baby may get infected. The role of breast milk in spreading is also being debated, as there have been reports of breast milk being positive for the virus where the mother was symptomatic around delivery [6]. As per the available literature till date, most of the babies with COVID-19 infections are asymptomatic or mildly symptomatic, though some have presented with respiratory distress, diarrhoea etc [4,7]. There are no reports so far regarding experience with antivirals and use of immunomodulators like hydroxychloroquine in neonates so far. None of our positive neonates needed any treatment for the corona virus.

Based on our experience, we concur with the other recent case series that majority of the babies are asymptomatic. It is interesting that one of our cases presented with fever and diarrhea but responded to supportive treatment (has been well on follow up). So, the focus should be on supporting the parent’s choice in terms of feeding plan, postnatal care with rooming in and close monitoring. There is a higher likelihood of early tests being positive where the mother is symptomatic, as has been reported before, but if mother is able to manage her baby, there is no need to separate mother and baby (unless mother’s condition or family preference dictates otherwise). Breast feeding should be encouraged with appropriate precautions as recommended by WHO and other world bodies [1,8]. It is also very

important for staff to continue with PPE precautions while handling any neonate to minimize risk of spread in either direction, as there is risk of community infection.

Conclusion

COVID 19 infection is a major threat to global health, and evidence is still developing about its impact on pregnancy and neonatal outcomes as we face more cases. In the meantime, it is very important that clinicians stay alert to atypical presentations and test for the virus so that we don't miss these. Although the majority of COVID 19 in neonates is proposed to occur due to postnatal transmission, the possibility of vertical transmission cannot be ruled out. Shared decision making plays an important role in the postnatal management of the neonates born to mothers with suspected/confirmed COVID 19. It is also important to be part of a COVID19 registry for that region so that important information is not missed out.

Declaration of Interest

The authors have indicated they have no potential conflict of interest to disclose.

Funding

The authors received no specific funding for this work.

Bibliography

1. Coronavirus disease (COVID-2019) situation reports (2020).
2. Fehr AR and Perlman S. "Coronaviruses: An overview of their replication and pathogenesis". *Methods in Molecular Biology* 1282 (2015): 1-23.
3. Martínez-Perez O., *et al.* "Association Between Mode of Delivery Among Pregnant Women With COVID-19 and Maternal and Neonatal Outcomes in Spain". *The Journal of the American Medical Association* (2020): e2010125.
4. Zeng L., *et al.* "Neonatal early-onset infection with SARS-CoV-2 in 33 neonates born to mothers with COVID-19 in Wuhan, China". *The Journal of the American Medical Association* 174.7 (2020): 722-725.
5. Zeng H., *et al.* "Antibodies in infants born to mothers with COVID-19 pneumonia". *The Journal of the American Medical Association* 323.18 (2020): 1848-1849.
6. Groß R., *et al.* "Detection of SARS-CoV-2 in human breastmilk". *Lancet* 395.10239 (2020): 1757-1758.
7. Ma X., *et al.* "Neonatal Management During the Coronavirus Disease (COVID-19) Outbreak: The Chinese Experience". *Neoreviews* 21.5 (2020): e293-e297.
8. Narvey M. "Breastfeeding when mothers have suspected or proven COVID-19" (2020).

Volume 9 Issue 10 October 2020

© 2020. All rights reserved by Shruthi Bharadwaj., *et al.*