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CASE REPORT

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COVID-19 infection in an extreme low birthweight, preterm baby: A case report

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Abstract: The COVID-19 pandemic is the largest and most widely spread health emergency globally in recent years and affects all, irrespective of race or sex. This pandemic is caused by severe acute respiratory syndrome - coronavirus- 2 (SARS-CoV-2). Unlike adults, most babies and children who are infected with this virus are asymptomatic. Fever is the most common symptom that has been reported in children who are positive for COVID-19.
Our study reports a case of a preterm, extremely low birth weight baby who was positive for COVID- 19. He had tachypnea, hypoxia and neurological symptoms, which include episodes of high pitched cry and hypertonia. The mother was COVID-19 negative, while over sixty per cent of the staff, including doctors and nurses, were positive when he was on admission. This baby was infected probably by the staffs in the newborn unit. Babies with COVID -19 should not be assumed to have a mild form of the disease but must be admitted at least for observation

Keywords: COVID-19, Neurological symptoms, Preterm baby.

Introduction

The COVID-19 pandemic is the largest and most widely spread health emergency globally in recent years, affecting all, irrespective of race or sex.[1] This infection is caused by severe acute respiratory syndrome- coronavirus- 2 (SARS-CoV-2). The novel disease was first discovered on December 31, 2019, in Wuhan, Hubei, China[-2] The adult population is mostly affected, although cases have been reported in babies and older children. [3] Unlike adults, most babies and children that are infected with this virus are asymptomatic and, if there is any symptom, is usually mild. A common symptom in babies who test positive for COVID-19 is fever, and the outcome is often good.[3,4]

Many babies have been born to mothers with a diagnosis of COVID-19; however, the majority of the babies do not have any respiratory symptoms or positive molecular evidence of COVID-19.[5] It is believed that transmission of SARS-Cov-2 to newborns is mainly through respiratory droplets after birth when these newborns are exposed to mothers or caregivers with SARS-CoV-2 infection.[5] A recent study showed that intrauterine transmission is also possible through an infected mother to her baby.[6]

To the best of our knowledge, no case of extremely low birth weight preterm baby with symptomatic COVID-19 infection has been reported from Nigeria.The objective of this work is to create awareness on severe form including neurological symptoms of COVID-19 in newborn especially in a preterm, extreme low birthweight babies. In this report, we present a preterm low birth weight baby with COVID-19 infection who was symptomatic.

Case Report

We report a BB baby boy, 1st of a set of twins, delivered via spontaneous vaginal delivery at 29-week gestation with a birth weight of 950 grams. The Apgar score was 7 and 8 at 1 and 5 minutes, respectively. Mother is a 30-year-old, unbooked Gravida 3 Para 2 (2alive), who resides in a village which is about a 30-minute drive from our facility. She presented in the hospital on account of labour pain of about 3 hours prior to presentation. There was no history of prolonged rupture of membrane. She was not a known hypertensive or diabetic patient, with no history of fever or respiratory symptoms throughout the pregnancy. The 2nd twin died a few minutes after delivery, while the index baby was admitted from birth. On physical examination, he was active, afebrile, in mild respiratory distress, pink, and not cyanosed. Systemic examination done was essentially normal.

Laboratory investigations were done; Complete blood count, electrolyte, urea and creatinine were essentially normal. Forty-seven hours into admission, the respiratory distress worsened, RR was 65cycles/minute and difficulty with breathing as evident by the intercostal and subcostal recession. On auscultation, the chest was clinically clear, and the oxygen saturation was 87%. Supplemental oxygen commenced, took a sample for

blood culture. After about forty-hours, the patient improved and was wined off oxygen, and the respiratory rate was normal, and the SPO2 was 95%.
Feeding was commenced on the 5th day of life using expressed breast milk via an orogastric tube. He was tolerating feeding and was very calm. He attained his birth weight of 950g on the 16th day of life, and by the 20th day, the weight was 1000gram. The weight gain was consistent at that rate. The weight was 1100g and 1200g on day 26 and 28, respectively. On day 29, he was noticed to be in respiratory distress, RR was 68cpm, and SPO2 was below 90%. Supplemental oxygen was recommenced; the breath sound was vesicular. On the following day, he had several episodes of high pitch cry associated with increase tone on both upper and lower limbs. Respiratory distress did not improve; the SPO2 was ranging between 88 and 90% despite supplemental oxygen. Blood culture done yielded no growth, and the cerebrospinal fluid analysis result done was essentially normal. The baby did not gain weight. The haematocrit was normal

On day 34 blood samples were taken from the patient and the mother for COVID-19 test (as over sixty percent of the managing team, including doctors and nurses, had tested positive to COVID-19 and were in isolation).
On day 37, his result of COVID-19 PCR test was positive while the mother was negative.
The patient was moved to a separate room within the ward. He was given syrup chloroquine, syrup vitamin C 1.25mls, zinc and cefotaxime 100mg/kg/day. On day 39, after 48hours, the high pitch cry had stopped, but an attempt at weaning off supplemental oxygen failed as the patient was still tachypneic (RR, 62cpm), and SPO2 was still below 90%. The next day, day 40, the respiratory rate was normal, and SPO2 was 95%. The patient was weaned off oxygen, and the weight was 1300g.
On day 41, he was weaned out of the incubator at a weight of 1400g. On day 42, he was commenced on a cup and spoon-feeding and, later, direct breastfeeding (DBF). He was discharged home on day 45, with a weight of 1500g, PCV 42%, at an EGA of 36weeks + 5 days.

The patient presented for a follow-up at the out-patient clinic ten days after discharge. The clinical condition was stable, and his weight was 2000g. He was continued on haematinics and also to commence routine immunization. The second visit was six weeks after, and the weight was 3400g.

Discussion

This report presents an extremely low birth weight, a preterm baby with COVID-19, tachypnea, hypoxia, and neurologic symptoms. There may be some other reasons, why a preterm baby will have respiratory symptoms. This baby has been in the ward for over twenty days, and he was stable, tolerating feed, and the weight gain was consistent until an outbreak of COVID- 19 in the ward.
Studies have shown that COVID-19 infections are not common in the neonate. If neonates are infected, the majority of them are either asymptomatic or have mild diseases.[3,4] Many explanations has been alluded to this claim, including immunological and non- immunological factors. Neonates has less vigorous immune response, higher lymphocyte and natural killer cells and also children has more trained immunity after previous infection or vaccine. It is also know that children has healthier respiratory tract than adult.[7] All these reasons contributed to the milder form of COVID-19 diseases in neonates and children.

COVID-19 binds to receptor angiotensin-converting enzyme 2 (ACE2) to enter the cell.[8,9] This receptor is massively express on the nervous system.[10,11] A severe illness involving neurological symptoms is rare in neonates but was reported in this patient. The neurological symptoms occurred probably because ACE 2 is abundantly expressed on the brain. Fever and neurological symptoms were also reported in a 26-day old term neonate by Chacón-Aguilar R e tal, though not in an extremely low birth weight preterm baby.[11] Neurological symptoms have also been reported in many older children with COVID-19.[13]

Studies have shown that most babies got infected with coronavirus by respiratory droplets from their mothers or the caregiver.[8] Even though the mother was negative for SARS-COV- 2, over 60 per cent of the staff caring for these baby in the newborn unit were positive for the virus. Most likely, this baby got infected by the staff in the newborn unit.

Conclusion

COVID-19 infection in any low birth weight baby should not be taken as mild despite reports from many studies. Even if it is for observation, these babies should be admitted so that any severe symptom that appears in the process can be addressed promptly.

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