

Neonatal COVID-19: a clinical case report from the Democratic Republic of Congo (DRC)

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Case Report

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Abstract

COVID-19 started as a cluster of pneumonia cases in Wuhan City, the Province of Hubei, China, in December 2019. It spread to many regions of China, outside of China and was declared a pandemic by the World Health Organization (WHO) on March 11th, 2020. Initially Africa had no case and now the continent is reporting an increasing number of confirmed cases in an exponential manner (1,2).

Background

COVID-19 started as a cluster of pneumonia cases in Wuhan City, the Province of Hubei, China, in December 2019. It spread to many regions of China, outside of China and was declared a pandemic by the World Health Organization (WHO) on March 11th, 2020. Initially Africa had no case and now the continent is reporting an increasing number of confirmed cases in an exponential manner (1,2).

As of June 17th, 2020, there were 187625 confirmed cases with 76334 deaths (2.32% case fatality rate [CFR]) reported in the WHO Africa region. South Africa remains the most affected country with 76,334 confirmed cases including 1625 deaths (CFR 2.13%) (3).

DR Congo, in addition to measles, faces two deadly epidemics: on the one hand Ebola Virus Disease (EVD) with an overall CFR of 66% (2251/3444) and 64% (2128/3310) among confirmed cases. On the other hand, COVID-19 disease with 4973 confirmed cases including 111 deaths (CFR 2.23%) (3). Among the most affected provinces, South Kivu comes third with 108 cases confirmed after Kinshasa (4604 cases) and Central Kongo (249 cases) as of June 17th, 2020.

The density of the population, the large internal displacements of the populations, the weakened health system, the weak commitment of political actors, the reluctance of the community, the movements of the populations in the border regions as well as insecurity are all challenges hindering an effective epidemic response.

Pregnant women are a risk group because of the immune adaptations over the entire course of pregnancy (4). In China, a group of pregnant women and their subsequent newborns followed up for SARS-CoV-2 pneumonia presented a number of complications including: fetal distress, premature birth, neonatal distress, thrombocytopenia accompanied by hepatic dysfunction, septicemia as well as neonatal death (5,6).

However, vertical transmission (in utero, in intrapartum or postnatally through breastfeeding) of SARS-CoV-2 is possible but not yet confirmed (7–9).

Here we report the first case of COVID-19 in a newborn in the South Kivu province of DRC.

Case Presentation

Newborn from a 25-year-old mother, gravida 3, para 2 (G3 P2); 34 weeks of gestation with no history of chronic conditions (diabetes, high blood pressure, obesity or asthma). The urogenital infections had not been documented but she had presented fever measured between 39 ° and 40 ° C.

Her husband was listed as a contact with a confirmed case of COVID-19 in the town of Bukavu in South Kivu. The nasopharyngeal swabs for SARS-CoV-2 RT-PCR taken from the mother were confirmed positive by the national laboratory (INRB-Kinshasa).

She was referred by the medical team from the COVID-19 isolation center where she had been staying for 7 days for the management of a threat of premature delivery in a background of coronavirus disease. Treatments received: antibiotic therapy, tocolysis and administration of dexamethasone for pulmonary maturation of the fetus.

The delivery took place by cesarean section in an operating room. There was a barrier between the mother and the medical team; she was wearing a surgical mask and the medical team wore personnel protective equipment (sterile gowns, N95 mask, face shields and sterile gloves). The newborn was female, Apgar score 9 at 1 minute and 10 at 5 minutes; weighing 1760 g, measuring 44 cm in size and 30 cm in cranial perimeter. The mother did not hold the baby of delivery; usual care were performed for the newborn (wipe and drying the skin, stimulation, administration of vitamin K1, eyes and cord care).

Immediately after birth a blood sample was drawn for SARS-CoV-2 serological testing; The IgG and IgM returned negative. The nasopharyngeal swabs for the SARS-CoV-2 RT-PCR was sent to the laboratory of the INRB-Kinshasa. A gastric survey was carried out, the swabs (ear, umbilical cord) as well as blood cultures were taken. The newborn was isolated with her mother in a personal room according to the recommendations for the care of the newborn in the context of an epidemic coronavirus (10–13).

The mother hold the newborn, 48 hours after birth, only for breastfeeding and was wearing a surgical mask. The medical team wore personal protective equipment (disposable gowns, surgical mask, sterile gloves) before entering the room. The newborn had good temperature and blood sugar control. In terms of respiratory functions, the newborn was autonomous.

Probabilistic antibiotic prophylaxis combining Penicillin G to Amikacin was prescribed.

The initial kinetics of CRP (<3 mg / L at H0-H24) with procalcitonin (PCT 0.47 ng / ml); anemia (Hb 9.7 g / dL and HCT 25.8%) with normal platelet count. On the third day of follow-up the newborn developed jaundice (BT 30.29 mg /dl; BD 1.47mg/ dl); severe respiratory distress; axial hypotonia; bloating with abdominal tenderness; gastric residues (> 50%) consisting of undigested milk; thrombocytopenia(112.000/microliter); CRP 26.24 mg /L; Procalcitonin> 100 ng/mL. The diagnoses of neonatal jaundice and ulcerative enterocolitis were retained. Phototherapy was indicated for a period of 72 hours and the newborn was put on oxygen for an oxygen saturation> 92%.

The gastric fluid cultures have isolated *Citrobacter* sp and *Enterobacter Cloacae*. Antibiotic therapy combining Meropenem and Vancomycin was initiated to replace the initially prescribed Penicillin G and

Amikacin as per the antibiogram. The nasopharyngeal swab for SARS-CoV-2 RT-PCR returned positive. The outcome was death after 5 days of follow-up.

Discussion And Conclusions

The conditions for optimal management of prematurity are not met in our environment.

However the complications developed by the newborn cannot be attributed solely to prematurity. Intrauterine contamination is less likely given the negative IgG and IgM for SARS-CoV-2 in the newborn immediately after birth; this may have taken place in the perinatal period. The early onset of sepsis, the medical complications and the outcome may have been favored by the SARS-CoV-2 disease background.

COVID-19 perinatal infection can lead to harmful complications in the newborn.

Vertical transmission from mother to fetus is possible but not yet confirmed, however preventive measures must be scrupulously observed in order to limit transmission during the perinatal period. Pediatricians must be associated with the reception and follow-up of newborn babies of mothers infected with COVID-19 to prevent complications in the neonatal period linked to coronavirus disease.

Declarations

Ethics approval and consent to participate

All patients admitted in the "Hôpital Provincial Général de Référence de Bukavu" consent that their clinical and imaging data can be used for publication or education purpose.

All procedures performed were in accordance with the ethical standards of the institutional ethical committee and with the 1964 Helsinki declaration and its later amendments.

All patients admitted consent that their clinical and imaging data can be used for publication or education purpose.

Consent for publication

Written informed consent for publication of the clinical details and/or laboratory results was obtained from the patients or the parents (for the newborn).

Availability of data and materials

All data generated or analysed during this study are included in this manuscript

Competing interests

The authors declare that they have no competing interests

Funding

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Authors' contributions

All authors contributed to the study conception and design. All authors contributed to the literature search. The first draft of the manuscript was written by SZ and all authors contributed to subsequent versions of the manuscript. All authors read and approved the final manuscript.

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