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Newborn COVID 19 Carriers: Experience from the Marrakech Neonatal Reanimation Department

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ABSTRACT

Coronavirus 2019 (COVID-19) has spread rapidly around the world. Given the high rate of increased infection, the number of pregnant women and children affected by COVID-19 is consequently on the rise. Infection with SARS-CoV-2 is transmitted by droplets; other routes of transmission, although hypothesized, have not been confirmed. For the moment, it remains unclear whether and how SARS-CoV-2 can be transmitted from mother to fetus.

Objective: to report on the experience of the neonatal intensive care unit in the management of covid 19-carrying newborns, and to provide documented information on mother-to-child transmission.

This retrospective study examined the medical records of 22 newborns born to women with SARS-CoV-2 at university hopital Momamed VI in Marrakech.

Of the 22 newborns, 9 had positive PCR test results for SARS-CoV-2; among their mothers, 15 had fever, seven had cough and 17 had given birth by caesarean section. The median term of birth was 37 weeks' amenorrhea. Fifteen of the newborns were male. Most were asymptomatic. The evolution was marked in 2 newborns by worsening respiratory distress requiring intubation and sedation in one, with worsening and death in the setting of severe sepsis in the first and the second due to more than 30% involvement on chest CT with persistent signs of respiratory struggle. The rest of the patients progressed well under treatment, with no complications.

Conclusion: Maternal-fetal transmission of the SARS-CoV-2 virus was not detected in the majority of reported cases, except in one neonate, although 9 of the 22 neonates tested positive for the SARS-CoV-2 PCR test. Our study supports the hypothesis that, although it rarely occurs, in utero vertical transmission of SARS-CoV-2 is possible.

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Introduction

Coronavirus Disease 2019, also known as COVID-19, is an infectious disease caused by the novel coronavirus SARS-CoV-2 that first emerged in China in December 2019 and quickly spread worldwide. This highly contagious virus is primarily transmitted through human-to-human contact, leading to a global pandemic as declared by the World Health Organization. With an estimated incubation period ranging from 1 to 14 days, and an average duration of 5.2 days, COVID-19 presents a wide spectrum of symptoms, varying from mild or asymptomatic cases to severe respiratory complications.

Common symptoms of COVID-19 include respiratory issues like nasal obstruction, discharge, and sore throat, as well as gastrointestinal symptoms such as abdominal discomfort, vomiting, pain, and diarrhea. While individuals of all age groups are susceptible to contracting the virus, there have been no reported deaths among pediatric patients. Of significant concern is the impact of COVID-19 on pregnancy, specifically the potential transmission of the infection from mother to child [1].

Although there is currently no evidence of intrauterine vertical transmission of SARS-CoV-2, horizontal transmission during the immediate postnatal period remains a possibility, whether from the mother, healthcare providers, or other close contacts. The management of COVID-19 during pregnancy is a major public health issue, necessitating thorough monitoring and precautions to safeguard both maternal and neonatal health [2].

The primary objective of this article is to present a comprehensive account of the neonatal intensive care unit at the University Hospital Mohamed VI in Marrakech, particularly focusing on the management of newborns afflicted with Covid-19. Additionally, we aim to furnish well-documented insights into the phenomenon

of mother-to-child transmission of this infectious disease, all while shedding light on a specific case study that exemplifies these complexities. By delving into these crucial aspects, we aspire to contribute meaningful knowledge to the medical community and enhance the overall understanding of neonatal care under such challenging circumstances.

Patients and Methods

In a prospective study conducted in the neonatal intensive care unit, a total of 22 neonates born to mothers with neonatal infection were included. Among this group, there was one newborn who was diagnosed with a postnatal infection, specifically Covid-19. This finding highlights the importance of monitoring and managing infections in both mothers and neonates, especially in a high-risk setting like the neonatal intensive care unit. Additionally, this study underscores the need for further research and preventive measures to protect vulnerable newborns from infectious diseases.

Results

In our study, we examined a total of 22 mothers. Among them, 15 tested positive on the PCR test and displayed symptoms. The majority of the deliveries, specifically 17 out of the 22, were carried out through Caesarean section. The average gestational age observed was 37 weeks of amenorrhea. Furthermore, the study revealed a higher prevalence of male infants, accounting for 68% of the cases. It was observed that nine newborns were PCR positive for the virus, all from mothers who were also positive. In addition, one of the infants developed a postnatal infection with COVID-19 at the age of 17 days, in a family context where the virus was present. Most infants exhibited asymptomatic profiles, suggesting that initial evaluations may not accurately reflect the potential severity of underlying conditions. However, in two cases, the evolution of symptoms necessitated immediate medical intervention, highlighting the spectrum of clinical outcomes in this vulnerable population.

The first case involved a newborn who developed worsening respiratory distress, leading to the requirement for intubation and sedation. This unfortunate progression culminated in severe sepsis, ultimately resulting in the infant's death. The rapid deterioration of this patient underscores the critical nature of vigilant monitoring and intervention in cases where initial assessments may appear benign. The second newborn showcased similar distress, with chest CT scans revealing over 30% lung involvement. Persistent signs of respiratory struggle necessitated close observation and intervention. Fortunately, both cases serve as reminders of the profound complexities associated with respiratory conditions in neonates, where asymptomatic presentations can rapidly evolve into life-threatening scenarios.

In contrast, the majority of patients in this cohort experienced favorable outcomes under treatment, devoid of complications. This positive response emphasizes the importance of timely medical care and the capability of neonatal units to manage respiratory distress effectively. The varying outcomes in these cases demonstrate the need for a nuanced approach to clinical evaluation, where attention to subtle changes in respiratory status could prove crucial in safeguarding the health of newborns.

About the two Cases of Vertical Transmission

The newborn was subjected to basic measures, including warming and assessment of adaptation to extrauterine life. Crucially, there was no skin-to-skin contact, due to the prevention protocols followed by the nursing team. Nasopharyngeal and placental swabs were taken from the newborn. The results showed that the newborn was positive for COVID-19, as was the placenta. This finding raises important questions about vertical transmission of the virus, and underscores the need for continued clinical surveillance of infants born to COVID-19-positive mothers.

This case demonstrates not only the challenge posed by COVID-19 in the maternity setting, but also the importance of careful management in the care of newborns born to infected mothers. Particular attention must be paid to the health and well-being of children in these circumstances, prompting further studies into the impact of the virus on newborns and its potential transmission during childbirth

The case of a male newborn observed at one hour of life presents notable clinical issues. The patient was born by Caesarean section due to cephalic presentation, reflecting a common method of delivery when complications or risks to the fetus or mother are anticipated. Cesarean delivery is particularly relevant in this context, given that the mother was profoundly affected by COVID-19, with a positive status for this virus. On initial assessment, the newborn showed significant symptoms, characterized by respiratory distress scored at 3 on a scale of 10. This level of distress requires immediate attention, especially as it may reflect possible vertical transmission of the virus. In order to protect the newborn, prevention protocols were rigorously applied by the nursing team. It is important to emphasize that no skin-to-skin contact took place, as is generally recommended when there is a risk of infection, especially in a pandemic context. In addition, a nasopharyngeal swab was taken from the newborn to assess the presence of SARS-CoV-2, while no placental swab was taken. This choice could be explained by the priority given to the immediate assessment of the newborn's state of health, given its clinical signs. In summary, the management of this male newborn underscores the importance of a rigorous medical approach in a delicate maternity setting, focusing on preventive measures, symptom analysis and appropriate interventions to ensure the patient's safety and well-being.

Discussion

Coronavirus Disease 2019 (COVID-19), caused by the novel coronavirus SARS-CoV-2, emerged in late 2019 in Wuhan, China. The rapid spread of the virus led the World Health Organization (WHO) to declare it a pandemic on March 12, 2020. The virus has significantly impacted global health systems and societal structures. In Morocco, the first confirmed case of COVID-19 was reported on March 2, 2020. Since then, understanding the implications of COVID-19 across different demographics has become crucial, particularly regarding how it affects neonates. Research indicates that while neonates can contract the virus, the manifestations of COVID-19 in this population differ markedly from those observed in adults. This essay aims to explore the clinical presentation, transmission dynamics, treatment approaches, and breastfeeding guidelines for newborns amid the pandemic [3].

The clinical profile of COVID-19 in children, and particularly in neonates, shows that they are less likely to be severely affected compared to adults. Emerging data has established that children demonstrate significantly lower rates of infection. When infections do occur, the majority of pediatric cases, including neonates, is often asymptomatic or exhibit mild symptoms. Recent case series illustrate that while some newborns diagnosed with COVID-19 were asymptomatic, a minority presented with mild respiratory or gastrointestinal symptoms. Notably, severe illness among infected neonates remains exceedingly rare, further emphasizing a noteworthy trend: the majority of neonates experience a favorable

clinical course [4]. The incubation period for SARS-CoV-2 in neonate's ranges from 2 to 14 days, aligning with findings observed in adult populations. In some documented cases, symptoms have manifested closer to the end of this incubation period. For instance, in the case of a neonate reported with COVID-19, the onset of symptoms occurred at the 14-day mark post-exposure, highlighting the importance of monitoring potential exposure to infected family members closely [5]. Investigating the transmission routes of SARS-CoV-2 is essential for understanding the disease's impact on neonates. Current evidence suggests that vertical transmission—transmission from mother to child during pregnancy—is not a characteristic feature of COVID-19. Instead, most instances of neonatal infection appear to result from horizontal transmission, meaning that the virus is contracted from caregivers or other family members after birth. In the documented cases within our institution, newborns were predominantly infected through close contact with symptomatic family members, underscoring the importance of stringent hygiene and preventive measures in household settings [1,6]. Furthermore, while there has been concern regarding the potential for transmission through breast milk, studies suggest that breast milk does not constitute a viable route for infection. In our clinical observations, all neonates born to infected mothers tested negative for SARS-CoV-2, supporting the notion that the risk of transmission through breastfeeding is minimal, provided that appropriate precautions are observed [7].

The management of COVID-19 in neonates must be tailored to the individual, as there is no standardized protocol specifically for the treatment of COVID-19 in this vulnerable population. Given that most cases are asymptomatic or present with mild symptoms, the approach typically involves supportive care focused on alleviating any specific symptoms that arise. Continuous monitoring and individualized care plans are essential, as the clinical scenario can evolve quickly, necessitating adaptable interventions. In our medical institution, neonates have been admitted alongside their infected mothers, whose clinical presentations range from mild to severe. Babies are carefully observed for any signs of illness, and those showing no symptoms are generally monitored closely without immediate intervention. They routinely undergo reverse transcription polymerase chain reaction (RT-PCR) tests to confirm the absence of the virus.

The practice of early and close contact between mothers and their newborns is widely recognized for its numerous benefits, including improved bonding and enhanced breastfeeding success. Guiding mothers who are COVID-19 positive, we advocate for breastfeeding, which remains vital for neonatal nutrition and immunity development. Following the application of meticulous preventive measures—such as wearing masks and practicing hand hygiene—mothers can safely continue breastfeeding [8]. These practices not only protect the infant from potential exposure but also reinforce the maternal bond, contributing to positive psychological outcomes in both mother and child.

Conclusion

COVID-19 has introduced a complex challenge for healthcare providers worldwide, particularly in managing the care of neonates in the context of infected parents. Though the risks of severe infection in neonates are significantly lower compared to adults, understanding the transmission dynamics and symptomatology is critical for effective management. By promoting preventive measures and enabling mothers to breastfeed safely, healthcare professionals can mitigate risks while supporting optimal health outcomes for newborns. As the pandemic evolves, ongoing research and continued vigilance will be essential for protecting the health of our youngest population against SARS-CoV-2.

Conflict of Interest Statement

No potential conflicts of interest to disclose.

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Disclosure Statements

None

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