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CC-BY Probable horizontal transmission of
SARS-CoV-2 in an asymptomatic
neonate: A case report



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Abstract: Horizontal transmission of SARS-CoV-2 is the more likely mode of transmission in this neonate rather than vertical transmission.

Neonates are more likely to be asymptomatic carriers of SARS-CoV-2 therefore health care workers should observe strict infection control practices, like hand hygiene and use of PPE (including face shield) during all clinical encounters.

Parents may not provide a history suggestive of COVID-19 clinical

symptoms in the family members, unless specifically asked for.

We report a case of SARS-CoV-2 in an asymptomatic neonate who presented to the outpatient clinic of a private multispecialty hospital for routine follow up. The hospital caters for approximately 5000 deliveries per year with pediatric inpatient and outpatient facilities, neonatal intensive care unit with facilities for advanced respiratory support, therapeutic cooling, with supporting radiology and full laboratory services.

Case Report

A female baby was born at 39 weeks of gestation by normal vaginal delivery to a 24-year-old gravida three, para one mother, following an uneventful pregnancy. Amniotic fluid was meconium stained but baby did not require any resuscitation, Apgar score was 9 at one and five minutes respectively. Birth weight was 2.93 Kg (25th centile) and head circumference was 31.5cm (2nd centile). There was no significant maternal history except for hypertension. The baby had routine care in the newborn nursery with normal newborn early warning system score (NEWS) and observations. She was discharged home on day two. Screening for critical congenital heart disease and hearing by brain stem evoked auditory response was normal. Initial and discharge newborn examinations were normal except for mild jaundice, with follow up arranged. Mother's blood group was O positive; baby's blood group was A positive and Direct Coomb's test was negative.

Baby was reviewed on day 16 for routine follow up. Baby was breast fed and gaining weight satisfactorily. Temperature was 36.8^oC and weight was 3.195Kg, midway between 9th and 25th centile and head circumference was 34 cm, midway between 25th and 50th centile. Stools were normal. Clinical examination was unremarkable.

At the end of consultation, the baby's mother asked if the baby's chest was clear as she felt some phlegm in her own throat. Further questioning revealed that all the family members (father: aches, muscle pain and fever, baby's 18-month-old male sibling: fever and cough, maternal aunt: fever, cough, pharyngitis, grandmother: fever, cough, pharyngitis) were ill with features of upper

and lower respiratory tract infection. Four days later after the outpatient visit, with the baby now aged 20 days the nasopharyngeal swab result taken from all family members were reported as positive for COVID-19 by PCR. All family members except the Neonate were by now fully symptomatic for COVID-19. The maternal grandmother and aunt who are ill, are being cared for at an institutional quarantine facility, while the baby and other family members are in home isolation.

Discussion

This case report highlights several important clinical issues:

Likely mode of transmission: This mother was asymptomatic during pregnancy and delivery, until a feeling of phlegm few days before clinic visit after her sister developed symptoms. It is therefore unlikely to be vertical transmission. Baby was tested on day 16 of life as other family members had developed symptoms. From the available literature, vertical transmission of infection has not been reported^{1,2,3,4}. Also, so far, there are no concrete reports to support SARS-Cov-2 transmission via breast milk⁵. Should transmission via breast milk become established, the advantages of breast milk and importance of bonding, would lead to supporting continued breast feeding.

Although the incubation period of COVID-19 can be up to 14 days, it is most probable that this baby had horizontal transmission from family members, who live together in a shared flat, with social distancing being im-

practical.

The best advice would be to minimize exposure with masks, and hand hygiene.

Parents may not offer information of a viral URTI/LRTI illness of family members for various reasons: They may not be aware of the significance if the baby is asymptomatic, unless specifically asked. It would be helpful to routinely ask for specific COVID-19 symptoms of all the parents and carers attending the clinic/ hospital. Accurate information may still not be forthcoming in view of the stigma and the fear of quarantine associated with COVID-19 infection.

Neonates may be asymptomatic: There are case reports of young infants presenting with severe illness with multi-organ dysfunction⁶ however, our index case was asymptomatic when all other family members were ill with symptoms. This supports the current evidence that neonates are more likely to be asymptomatic or develop mild to moderate symptoms¹.

Importance during the pandemic of assuming all clinical

Encounters as potential COVID-19 infections: It is not uncommon for a baby to cry lustily or sneeze during assessment, which will generate droplets containing viral particles if present. Though the risk is low compared to the older child due to low tidal volume, babies are likely to cry continuously particularly when hungry, unclothed or in discomfort. Although parents are advised to wear facemask when attending the clinic, this is impractical and dangerous for newborn babies, hence is not recommended. Babies may also require visualization/examination of the ears and oral-nasal cavities there by increasing the risk of aerosolization to physician. This case highlights the importance of wearing appropriate PPE including face shield to reduce the risk of infection/contamination during examination and assessment of babies in the outpatient clinic. This recommendation should also apply to other care givers including the reception staff.

Importance of consistent hospital policies: Our current hospital policy requires parents, visitors and care givers to wear mask and gloves. This message is reinforced by increased visibility of guidelines and posters in many areas of the hospital, including lifts and ward entrances.

Alcohol hand gel is available throughout the hospital including at the entrance to lifts. All the visitors, patients

and relatives are screened for COVID -19 symptoms and their temperature measured. Anyone with family history/ symptoms of COVID-19 is referred to designated health care facilities. Clinical handovers are performed with social distancing. This case report demonstrates that despite these measures, healthcare practitioners may still encounter asymptomatic parents and newborns in the clinic.

Implications for families: With large families living together, sharing the same house/ flat, it is very difficult to maintain social distancing. With neonates being asymptomatic, it would make sense to advice parents to minimize the contact of the neonate/infant to older family members.

Recommendations

From the experience of this asymptomatic SARS-CoV-2 positive neonate, during this pandemic we recommend that the measures to screen the visitors and staff should be followed strictly to reduce the risk of COVID-19. In order to minimize the risk of exposure/ infection all staff should observe strict hand hygiene, social distancing, wear PPE when dealing with patients and visitors. Clinical staff attending to the newborn should in addition wear face shield as a part of PPE during examination and assessment. All the visitors must wear the mask and follow strict hygiene.

The asymptomatic Neonate could be a reservoir of SARS-CoV-2, therefore parents should review close contact to older family members.

Clinical staff should remain vigilant and exercise a high index of suspicion, during the next Respiratory Syncytial Virus (RSV) and Influenza infection season when the features of RSV and other respiratory viral infections are indistinguishable and could co-exist with SARS-CoV-2.

Author's Contribution

SE Ibhanebhor initiated the case report and both authors wrote and reviewed the manuscript and the literature search.

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References

1. Lingkong Zeng, MD Shiwen Xia, MD et al. Neonatal Early-Onset Infection With SARS-CoV-2 in 33 Neonates Born to Mothers With COVID-19 in Wuhan, China. *JAMA Pediatrics*. Published online March 26, 2020. doi:10.1001/jamapediatrics.2020.0878
2. Juan GuoMS et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*. Volume 395, Issue 10226, 7–13 Mar 2020, Pages 809-815
3. Cuifang Fan, Di Lei, Cong Fang e tal. Perinatal Transmission of COVID-19 Associated SARS-CoV-2: Should We Worry? *Clinical Infectious Diseases*, ciaa226, https://doi.org/10.1093/cid/ciaa226

4. David A. Schwartz (2020) An Analysis of 38 Pregnant Women with COVID-19, Their Newborn Infants, and Maternal-Fetal Transmission of SARS-CoV-2: Maternal Coronavirus Infections and Pregnancy Outcomes. *Archives of Pathology & Laboratory Medicine* In-Press.
5. Chen H, Guo J, Wang C, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet* 2020; 395: 809–15
6. James Cook, Katharine Harman, Bogdana Zoica, Anita Verma, Pam D'Silva, Atul Gupta. Horizontal transmission of severe acute respiratory syndrome coronavirus 2 to a premature infant: multiple organ injury and association with markers of inflammation. *Lancet Child Adolesc Health* 2020 Published Online May 19, 2020 <https://doi.org/10.1016/S2352-4642>