

Does COVID-19 Transmitted Transplacental?

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Abstract

We presented at 38+ pregnant patient with proven SARS-Cov-2 infection who presented in labor during the pandemic and delivered a baby with positive SARS-CoV-2. To study the risk of transplacental transmission of SARS-Cov-2 infection by obtaining nasal pharyngeal swab of mother and baby and urine & LP culture for baby as well as placental tissue. All specimens were negative except nasopharyngeal sample, so transplacental transmission couldn't be proved.

Keywords: COVID-19, transplacental, Oman

Background

SARS-Cov-2 infection caused the outbreak of COVID-19 all over the world. With first case was reported in Wuhan region in China in December 2019. It's known that it spread through respiratory droplets, but other routes of transmission are controversial, however SARS-Cov-2 has been detected in non-respiratory specimen.¹ It has spread all over the world with the first case was reported in Oman in 24 February.² With total cases reported in Oman by August 2020 reached 84000. By this time, there were about 60 women with COVID-19 positive delivered in Royal hospital with nasopharyngeal swab done at 48 hours of life for the newborns came negative.

Few reports are published worldwide about transplacental transmission of SARS-Cov-2. Here we are presenting a case to study the risk of vertical transmission.

Case Presentation

In August 2020, a 36-year-old gravid 3 para 2 was admitted to royal hospital with draining liquor for > 24 hours at 38+3 weeks of gestation. The patient had a contact with laboratory confirmed case of COVID-19 case but was asymptomatic, she was tested through nasopharyngeal swab which came as positive. Inflammatory markers were done which revealed CRP of 20.8 mg/L with normal WBC count 3.7 mg/dL with neutrophil count 2.3 mg/dL, platelets count was within normal limit 246×10^9 .

Two hours after admission, she delivered vaginally with full precaution, a healthy boy baby with APGAR score of 9/1 and 10/5 minutes. Placenta was sent for histopathology. Baby was isolated from mother with no skin-to-skin contact was done, also he was given formula milk to avoid breastfeeding. At 7 hours of life baby started to have tachypnea with grunting so was admitted to our NICU unit in hospital with full contact and droplet precautions because of mother history. Septic workup was done and antibiotics were started accordingly; gentamicin 4 mg/kg/dose OD & benzyl penicillin 100000 iu/kg/dose TID.

Chest Xray showed increased vascular markings with minimal effusion bilaterally, likely TTN (Figure 1). Labs showed the following: CRP of 61.1 mg/L, WBC 4.1 mg/dL, ANC 2.7 mg/dL & platelet 260.

At 24 hours of life, blood culture reported provisionally with heavy growth of GBS.

LP done revealed clear fluid with no organisms seen, also urine culture was negative.

Same day, baby was more tachypneic required 3 L oxygen through nasal cannula. Nasopharyngeal swab was done at this point as per protocol which was resulted as positive for COVID-19.

Serum of first 24 hours of life was taken to be tested for COVID-19 IgG recipient which resulted as negative with titer of 0.11 and serum at 96 hours of life was negative for COVID-19 IgG recipient with titer of 0.03.

Baby remained asymptomatic through the admission, with no temperature instability, with repeated labs on 72 hours of life showed CRP of 34.1 mg/L and SARS-Cov-2 PCR was negative. Antibiotics were completed for 14 days.

Discussion

We report an asymptomatic patient of COVID-19 presented at labor and delivered a term baby. It was planned to proceed with SVD as there is no evidence that C-section decrease the rate of transmission. As it was shown in a study with 37 c-section compared to 41 vaginal deliveries, it was shown that neonates born by cesarean have increased risk to be deteriorating clinically.³

A classification system has been released in May 2020 for maternal-fetal-neonatal infection. We follow it to categorize our case. The case definition classifies the likelihood of infection. Our case meets classification of probable where it denotes strong evidence of infection but a lack of absolute proof.⁴

Amniotic fluid was not collected prior to rupture of membrane as the patient presented to hospital 24 hours after rupture of membrane so classification of confirmed case as per definition can't be made.

The transplacental transmission was suggested in reports by the detection of IgG & IgM antibodies in neonate postpartum,⁵ but as in our case IgG was negative with decreasing titer from day 1 to day 3 of life. Moreover, IgM levels were not studied in our case and it's known that IgM can't cross placenta so it's presence in fetal serum suggest the hypothesis of transplacental transmission.

As the placenta didn't shows signs intervillous inflammation and was morphologically normal, apart from focally collection of anucleate squamous which has no significance and can be normally found.⁶

It was shown that expression of ACE2 receptor.

By this we can't conclude that the transmission occurred through placenta. As a result, we can't confirm that transplacental transmission is a source of transmission, although

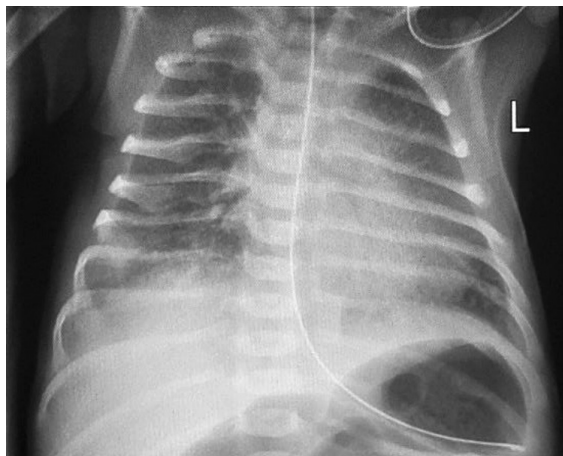


Fig. 1 Chest Xray of baby at Day 1 of life shows picture of TTN.

hypothesis is still applicable with the presence of other papers that have similar outcome that it can be happen if mother was infected in last trimester.

We suggest to examine amniotic fluid before rupture of membrane, along with cord blood and IgG & IgM antibodies in mother and baby in combination with nasopharyngeal aspirate in the first 12 hours of age, for completion diagnosis of transplacental transmission of SARS-Cov-2.

If congenital SARS-Cov 2 infection was confirmed, complete droplet and contact precaution should be taken to avoid the transmission of infection among health workers in NICU unit and the avoidance of any aerosol generating procedures as well as to consider the nasopharyngeal test after birth.

Conflicts of Interest

None. ■

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