

## Case Report

# Possibility of Intrauterine Vertical Transmission of Coronavirus Disease 2019 (COVID-19): A Case Report from Iran

### Abstract

With the onset of Covid 19 disease, the vertical transmission of the disease from mother to neonate was unknown. In this case, a mother affected by a severe Covid 19 a few days before delivery, was examined whether her baby get the disease without breastfeeding and close contact with his mother or not. Finally, the case study show corona virus did not transmitted through blood from mother to the baby and he was completely healthy.

**Keywords:** COVID-19, intrauterine, neonate, maternal, vertical transmission

### Introduction

The worldwide outbreak of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) since December 2019 has caused considerable global concern.<sup>[1]</sup> Investigations on COVID-19 transmission is underway to help cutting a link in its chain of transmission. Currently, the main routes of transmission include contact, droplets and aerosol inspiration, but scientists contend that the fecal-oral transmissions should not be overlooked.<sup>[2]</sup> Isolation of the cases and effective tracing of their social contacts are also recommended.<sup>[3]</sup> Few studies are conducted on the possibility of intrauterine vertical transmission of COVID-19 during pregnancy.<sup>[4]</sup> Currently, it has been shown that family members may have infected the disease but still remain asymptomatic.<sup>[5]</sup> Therefore, the present case study was done to investigate and follow up an asymptomatic COVID-19 neonate.

### Case Report

The 21-year-old pregnant woman, gravida 1, underwent cesarean section due to eclampsia at week 33 of gestational age. She experienced fever since three days prior to operation, and complained of headache, dry cough, and shortness of breath, which made her a COVID-19 suspected case. Clinical tests confirmed the diagnosis of COVID-19 and she received its treatment in an isolated room.

The pre-term male neonate born by cesarean section on March 14, 2020 was transferred to NICU, and isolated due to maternal suspicion of COVID-19. Contact and respiratory isolation was prescribed for the neonate in negative pressure room and all visits to the patient were prohibited. In day 1, Laboratory examination included RBC = 4.2 million/mm<sup>3</sup>, WBC =  $10.2 \times 10^9/L$ , a platelet count  $146 \times 10^9/L$ , absolute neutrophil count of  $7.752 \times 10^9/L$ , a lymphocyte cell count of  $2.04 \times 10^9/L$ , and a hemoglobin concentration of 14.1 g/dl. The patient's serum C-reactive protein was negative. Blood culture test results were negative; hemoglobin O<sub>2</sub> saturation was 87.8%; chest x-ray was normal [Figure 1]. Repeated real-time RT-PCR tests for SARS-CoV-2 from oropharynx swabs were negative on March 14 and March 17.

The patient was monitored, but not intubated, in NICU, received O<sub>2</sub> via oxyhood, and O<sub>2</sub> saturation was between 93% and 95%. The patient's vital signs were normal, had no fever and was slightly hypothermic (T = 36.8), heartbeat 110 per min, with the respiration rate of 33 per minute. The baby did not breastfeed and only got infant formula.

The patient underwent phototherapy due to physiologic jaundice. O<sub>2</sub> saturation drop (up to 92%) was occasionally observed. He was calm but sleepy, and

**Hassan Salehipour,  
Mitra Eftekhari  
Yazdi<sup>1</sup>, Marzieh  
Torkmannejads  
abzevari<sup>2</sup>,  
Nematullah  
Shomoossi<sup>3</sup>,  
Mostafa Rad<sup>4</sup>**

*Department of Pediatrics,  
School of Medicine, Heshmatie  
Hospital, Sabzevar University  
of Medical Sciences, Sabzevar,  
Iran, <sup>1</sup>Department of Obstetrics  
and Gynecology, School of  
Medicine, Mobini Maternity  
Hospital, Sabzevar University  
of Medical Sciences, Sabzevar,  
Iran, <sup>2</sup>Department of Medical,  
Sabzevar University of Medical  
Sciences, Sabzevar, Iran,  
<sup>3</sup>School of Medicine, Sabzevar  
University of Medical Sciences,  
Sabzevar, Iran, <sup>4</sup>Department of  
Nursing, School of Nursing and  
Midwifery, Iranian Research  
Center on Healthy Aging,  
Sabzevar University of Medical  
Sciences, Sabzevar, Iran*

### Address for correspondence:

*Dr. Mostafa Rad,  
Department of Nursing, School  
of Nursing and Midwifery,  
Iranian Research Center on  
Healthy Aging,  
Sabzevar University of Medical  
Sciences, Sabzevar, Iran.  
E-mail: mostafarad633@gmail.  
com*

### Access this article online

**Website:**  
[www.ijpvmjournal.net/www.ijpvm.net](http://www.ijpvmjournal.net/www.ijpvm.net)

**DOI:**  
10.4103/ijpvm.IJPVM\_159\_20

### Quick Response Code:



**How to cite this article:** Salehipour H, Eftekhari Yazdi M, Torkmannejadsabzevari M, Shomoossi N, Rad M. Possibility of intrauterine vertical transmission of coronavirus disease 2019 (COVID-19): A case report from Iran. *Int J Prev Med* 2021;12:107.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [reprints@medknow.com](mailto:reprints@medknow.com)

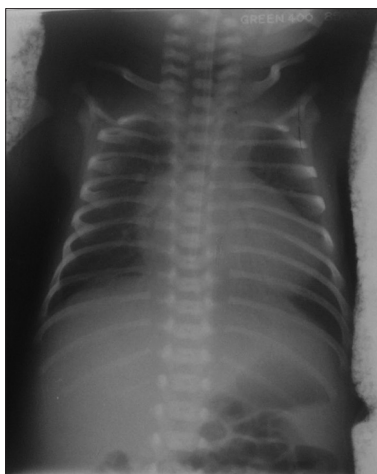


Figure 1: Neonate chest X- ray in the first day of birth

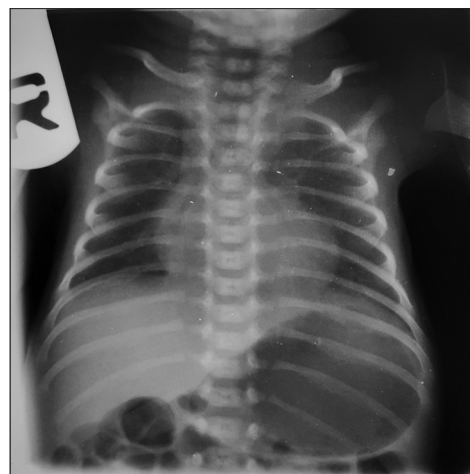


Figure 2: Neonate chest X- ray in the 11 day after birth

responded to stimulations, tolerated infant formula and had no abdominal distension. Phototherapy was discontinued on March 23rd, 2020. Medical order NCPAP was prescribed if required but was not performed due to normal O<sub>2</sub> saturation (90-95%). Fluid and electrolytes, and acid-base balance were investigated. Pulmonary surfactant was not applied. No problem was observed with the baby's O<sub>2</sub> saturation drop and cyanosis; the patient continued with oxyhood. On March 25, 2020, another oropharynx sample was sent to laboratory under sterile conditions to determine the covid-19 test result, which was negative. This test was conducted by real-time reverse transcriptase polymerase chain reaction (RT-PCR) tests for COVID-19. On the same date, chest X-ray showed bilateral perihilar shadowing indicated of bronchopneumonia; and no sign of coronavirus was evident [Figure 2]. Blood tests also showed no sign of lymphopenia; the results are as follows: RBC = 5 million/mm<sup>3</sup>, WBC =  $5.6 \times 10^9/L$ , absolute neutrophil count of  $3.92 \times 10^9/L$ , a lymphocyte cell count of  $1.512 \times 10^9/L$ , a platelet count  $156 \times 10^9/L$ , and a hemoglobin concentration of 16 g/dl. The patient's serum C-reactive protein was negative. Liver function tests were also normal: SGOT = 36 units per liter of serum, SGPT = 18 U/L, LDH = 888 U/L, total bilirubin = 5.5 mg/dL, direct bilirubin = 0.2 mg/dL. The result did not confirm vertical transmission of (COVID-19).

## Discussion

The case we present here was found suitable for the possibility of placental vertical transmission of coronavirus disease 2019 (COVID-19) since the neonate was not born through vaginal labor, neither did the baby experience mucus and eyes contaminations with maternal secretions and fecal matter. Also, the baby got infant formula, was isolated from the infected mother and other suspect family members.

We would like to recommend the investigation of other transmission routes such as breastfeeding or through birth canal. The results of the present case study seems to eliminate our concerns of intrauterine vertical transmission of coronavirus disease 2019 (COVID-19), particularly for neonatologists and NICU staff, in rational use of personal protection equipment (e.g., gloves, medical masks, goggles or a face shield, and gowns, as well as N95), and apparently isolation of the neonate, prescription of pharyngeal test and x-rays will not be necessary in diagnosing neonatal COVID-19.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

Received: 31 Mar 20 Accepted: 21 Sep 20

Published: 21 Sep 21

## References

1. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, *et al.* Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. *N Engl J Med* 2020;382:1199-207.
2. Lu Q, Shi Y. Coronavirus disease (COVID-19) and neonate: What neonatologist need to know. *J Med Virol* 2020;95:564-7.
3. Hellewell J, Abbott S, Gimma A, Bosse NI, Jarvis CI, Russell TW, *et al.* Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts. *Lancet Glob Health*. 2020;8:e488-96.
4. Chen H, Guo J, Wang C, Luo F, Yu X, Zhang W, *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.
5. Bai Y, Yao L, Wei T, Tian F, Jin D-Y, Chen L, *et al.* Presumed asymptomatic carrier transmission of COVID-19. *JAMA* 2020;323:1406-7.