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Corona Virus Disease 2019 (COVID-19): A Possibility of Pregnancy and Vertical Transmission, our Experience at Zonal Military Hospital Jammu

Dr Binay Mitra[1], Dr Dhananjay Borse[2], Dr Aparna Sharma[3]

[1]HOD, Obstetrics and Gynecology Dept Military Hospital Jammu, India
drbinaymitre[at]rediffmail.com

[2]Classified Specialist, Obstetrics and Gynecology Dept Military Hospital Jammu, India
dhananjayborse42[at]gmail.com

[3]Graded Specialist, Obstetrics and Gynecology Dept Military Hospital Jammu, India
aparna7.2009[at]gmail.com

Abstract: ***Introduction: The coronavirus disease 2019 (COVID-19) has spread rapidly worldwide and is now a global pandemic. One of the major concerns is whether COVID-19 can be vertically transmitted from mothers to their fetuses thus causing congenital infection. In this study, investigation was done to determine the possibility of vertical transmission. Method: Study included 64 COVID-19 infected pregnant women in third trimester who had given birth. For neonates born to mother with COVID-19 infection , nasopharyngeal Swab was collected within 24 hrs of birth and sent for COVID-19 RNA reverse transcription polymerase chain reaction (RT-PCR) test. Result: Study included 64 pregnant COVID 19 positive patients and 64 neonates born to infected mothers were reviewed. The most common symptoms included fever and dry cough in COVID 19 infected mothers. Overall 64 neonates were tested for the possibility of vertical transmission, 61 neonates were negative in RT-PCR, while 3 were positive. 10 mothers reported having fever, 5 mothers reported having fever and dry cough, and 49 mothers were asymptomatic. Oxygen saturation was normal in symptomatic and asymptomatic mothers and main laboratory findings included leukocytosis, lymphopenia and elevated C- reactive protein. Three COVID-19 RT PCR positive babies were asymptomatic. Conclusion: Although the possibility of vertical transmission in COVID-19 infected pregnant women is rare, three neonates test results for COVID-19 infection were positive in this study.***

Keywords: COVID-19, Vertical Transmission, RT-PCR

1. Introduction

COVID-19 is now considered a pandemic since World Health Organization (WHO) announcement on March 11, 2020. International Committee on Taxonomy of Viruses has proposed SARS-CoV-2 as the name of the virus that causes COVID-19 .The most common manifestations of COVID-19 consist of fever, cough, fatigue or myalgia, headache, loss of taste or smell with some cases developing into life threatening pneumonia.

In pregnant patients of COVID-19, one of the major concerns is whether COVID-19 can be vertically transmitted from mothers to their fetuses and thus causing congenital infection. Pregnant women need special attention in this situation as pregnant women's physiological modulation in the immune system during pregnancy puts them and their neonates at increased risk of negative outcomes of COVID-19 infection (1).

According to Centers for Disease Control and Prevention (CDC), much is still unknown about the effects of COVID-19 on the pregnancy and neonatal outcome (2). Therefore, it is important to gain knowledge about pregnancy outcomes during the COVID-19 pandemic, including the possibility of vertical transmission, the severity of symptoms in pregnant women, and the condition of newborns of an infected mother. In this study, an attempt is made to demonstrate the effects of COVID-19 on pregnant women, neonate and the possibility of vertical transmission.

2. Materials and Methods

This is a prospective study conducted at zonal military hospital Jammu, from March 2020 to September 2020. Approval of institutional ethics committee was obtained before starting the study. Informed consent was obtained from each patient prior to participation.

A total of 64 COVID-19 infected pregnant women in third trimester who were diagnosed by COVID-19 RT-PCR, and had given birth were included. Demographic parameters, symptoms like fever and cough, oxygen saturation and laboratory findings like CBC, C reactive protein were recorded in COVID 19 positive mothers. For neonates born to mother with COVID-19 infection, nasopharyngeal swab was collected within 24 hours of birth and sent for COVID-19 RNA reverse transcription polymerase chain reaction (RT-PCR) test and analyzed.

3. Results

Total of 64 COVID-19 positive mothers in third trimester were analyzed. Demographic parameters like age, parity, mode of delivery was taken into consideration. (Table 1)

Table 1: (n=64) Demographic Parameters

Parameters	Value
Total no of patients	64
Age	26 ± 5

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Type of delivery (vaginal versus cesarean)	Vaginal -52 (81.25%) Cesarean -14 (18.75%)
Parity (primi / multi)	Primigravida-36 (56.25%), multigravida -28(43.75%)

Symptoms like fever and cough were taken into consideration.10 mothers reported having fever , 5 mothers reported having fever and dry cough, with oxygen saturation normal in all symptomatic mothers and 49 mothers were asymptomatic.(Table-2)

Table 2: (n=64) Symptoms

Parameters	Value
Fever	10 (15.62%)
Fever with cough	5 (07.81%)
Asymptomatic	49 (76.56%)
Total	64

In newborn babies, 61 babies were negative in RT-PCR, while 3 were positive. All neonates were asymptomatic. (Table-3)

Table 3: (n=64) RT-PCR Results of Neonates

Parameters	Value
RT - PCR positive	3 (4.9%)
RT - PCR negative	61 (95.0%)
Total	64

4. Discussion

The study results revealed that the most common symptoms among COVID-19 positive pregnant women were fever, and cough, similar to non-pregnant patients. The majority of COVID-19 positive patients delivered by vaginal delivery and they were discharged from hospital with no significant complications. Besides this our analysis revealed that neonates with positive COVID-19 infection were diagnosed by nasopharyngeal swab test. All COVID-19 RTPCR positive neonates were asymptomatic. It seems that the possibility of vertical transmission in pregnant women with COVID-19 infection is lower than expected.

Zhang et al. (3) revealed that droplets, contact, aerosol, and fecal–oral transmissions are the main transmission routes in COVID-19 infection. On the other hand, based on the retrospective study by Chen et al. (4) the amniotic fluid, cord blood, neonatal throat swab, from newborn neonates of COVID-19 positive mothers were negative for COVID- 19 and there are few review studies about the possibility of the vertical transmission in pregnancy (5,6,7).

In the previous study by Lam et al., (8) with experience of infections caused by similar COVID-19 pathogens, the clinical course and results of pregnancy in women with COVID-19 were assessed. It revealed that, complications including sepsis, acute kidney injury, and disseminated intravascular coagulation (DIC) were considerably increased in pregnant women. Besides, they observed that the usage rate of mechanical ventilation and mortality were more common among them than others.

Lu et al. (9) reviewed three neonates and 230 children in their study with COVID-19 positive mothers and reported that most of the children had mild disease conditions and all neonates were healthy; finally, they concluded that COVID -19 could not be transplacentally transmitted from mother to the newborn. Karimi-Zarchi et al. (10) reviewed 31 pregnant women with COVID-19 positive tests and showed that there is no evidence for intrauterine transmission of this infection from infected mothers to their fetuses but, infected pregnant women may be at increased risk of pulmonary complications. However, similar to some recent studies, the vast majority of COVID-19 positive pregnant women recovered, and their neonate's tests for COVID -19 RNA were negative with no evidence of vertical transmission (10, 11).

In our study total of 64 covid-19 positive mothers in third trimester were analysed. Symptoms like fever and cough were taken into consideration.10 mothers reported having fever, 5 mothers reported having fever and dry cough, and 49 mothers were asymptomatic. Oxygen saturation in all patients was normal for entire course of disease. In newborn babies, 61 babies were negative in RT-PCR, while 3 were positive. All neonates were asymptomatic.

5. Conclusion

Currently there is no sufficient evidence for intrauterine vertical transmission of COVID-19 from infected pregnant mothers to their fetuses. In our study, the clinical outcome was mostly satisfactory for both mothers and neonates and there were no maternal or neonatal deaths due to COVID-19. The nasopharyngeal swab test is a rapid diagnostic test in the detection of COVID-19 infection in neonates. Although the possibility of vertical transmission in pregnant women with COVID-19 infection is rare, three neonates test results for COVID-19 infection were positive in this study. Finally, to determine whether if vertical transmission indeed occurs, further lager scale studies are needed to perform.

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