

Pregnancy in the Era of COVID-19; Much is yet to be known

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Citation: Hashem MB, Zaky AF, Taha AE, Saber RA, Ayoub YK (2020) Pregnancy in the Era of COVID-19; Much is yet to be known. *J Infect Dis Pathog* 3: 102

Article history: Received: 01 June 2020, Accepted: 10 June 2020, Published: 16 June 2020

Abstract

Purpose: The ongoing 2019–20 coronavirus pandemic is caused by the novel virus known as COVID-19. It was first discovered in Wuhan, China and since then it spread rapidly to involve several countries all over the world. Being a new virus, little data is available about its characteristics including different modes of spread. Till now, it is debatable whether the virus can spread vertically from a mother to fetus or not and also the impact of infection on pregnancy is still a controversy.

Methods: 2 pregnant women were admitted to El Agouza Hospital in Cairo. Both mothers and infants underwent full biochemical profile as well as chest computed tomography (CT); real-time reverse transcriptase–polymerase chain reaction (RT-PCR) for SARS-CoV-2 nucleic acid of nasopharyngeal swabs.

Results: The first case was for a pregnant lady who delivered by caesarean section who was discovered to be positive for COVID-19, she gave birth to a female infant with completely normal vital signs and normal birth weight but with a positive nasopharyngeal swab for COVID-19 suggesting possible vertical transmission. The second case was for a COVID-19 positive pregnant lady presenting with pre-term labor who delivered by caesarean section; a finding which may point out to the possibility of negative impact of COVID-19 on pregnancy outcome.

Conclusion: The observation drawn from those cases might be an area for further research with in depth assessment for the mechanism and incidence of both maternal outcomes and mother to fetus transmission of infection.

Keywords: COVID-19; Pregnancy

Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. It was first discovered in Wuhan city of China by the end of 2019 and since then a dramatic global spread occurred leading to the ongoing 2019–20 coronavirus pandemic [2]. The majority of infected cases may pass with no symptoms while those who develop clinical manifestations may experience fever, cough, and shortness of breath [3]. The virus spreads through close contacts by droplet infection while still some ongoing reports study the possibility of airborne infection. Others suggest faeco-oral transmission based on evidence of viral shedding in faeces [4]. Thus far, there is limited knowledge regarding the risk of vertical transmission and impact on pregnancy for women with COVID-19.

Methods

2 pregnant women were admitted to El Agouza Hospital in Cairo (One of the official Isolation hospitals in Egypt) where they were subjected to full history taking and thorough clinical examination. Both mothers and infants underwent full biochemical profile as well as chest computed tomography (CT); real-time reverse transcriptase–polymerase chain reaction (RT-PCR) for SARS-CoV-2 nucleic acid of nasopharyngeal swabs.

Results

The 1st case is a 31 year old pregnant lady 38 weeks based on her last menstrual period presenting with respiratory distress and dry cough. She was fully conscious and oxygen saturation on room air was found to be 91%. She had an unremarkable medical

and surgical history. Full biochemical profile revealed no significant abnormality apart from slightly elevated CRP while RT-PCR for COVID-19 turned out to be positive as shown in Table 1. Obstetric examination showed that woman was not in labour and ultrasound examination revealed a single viable cephalic fetus, average liquor and fetal tachycardia (Fetal Heart Rate 185 bpm) was observed so an urgent cesarean section was decided to avoid an expected fetal distress resulting from maternal hypoxia and also an attempt to improve maternal oxygenation as Hongbo Qi, *et al.* [5] mentioned that women with severe COVID-19 with SaO₂ < 93% showed significant improvement in oxygenation after delivery.

The operation passed uneventfully and a girl was born with completely normal vital signs and normal birth weight, her APGAR score at 1 and 5 minutes was 6 and 8 respectively but an immediate RT-PCR from a nasopharyngeal swab revealed the infant to be positive for COVID-19, however, she remained healthy with no fever or respiratory distress and a follow up RT-PCR after 48 hours turned to be negative as well as another negative swab 5 days after delivery. The mother received hydroxychloroquine, oseltamivir and paracetamol which is the protocol approved by the ministry of health in Egypt for COVID-19 cases and she improved clinically after delivery with normal chest imaging. However, follow up RT-PCR 6 days after delivery is still positive.

Laboratory test	Value	Reference range
Hemoglobin g/dL	11.7	11.5-15.0
Platelets x10 ³	283	150-450
White cell count x10 ³	5.7	11-Apr
Lymphocytes %	38.1	20-50
Lymphocyte count x10 ³	2.2	1.1-3.2
Prothrombin concentration %	85	70-110
INR	1.11	
ALT U/L	20	14-59
AST U/L	12	Jan-50
Urea mg/dL	10.9	19.3-42.9
Creatinine mg/dL	0.5	0.5-1.2
PCR for nasopharyngeal swab	Positive	Negative
C-reactive protein	12	0-6

Table 1: Laboratory result of the mother

The 2nd case is for a 35 year old primigravida, pregnant 36 weeks based on her last menstrual period presenting with preterm labour and rupture of membranes. She had neither respiratory symptoms nor hyperpyrexia and basic laboratory data showed only slight elevation in liver enzymes while RT-PCR for COVID-19 from a nasopharyngeal swab was positive (Table 2). Ultrasound revealed a single living cephalic fetus with drained liquor and fetal heart bradycardia (Fetal heart rate 70) was observed. Gynecological examination revealed a dilated cervix (3 cm) 50% effaced, posterior, intermediate consistency. Cephalic presentation station -3. Clinical pelvimetry showed cephalopelvic disproportion so cesarean section was decided with delivery of a healthy infant, her APGAR score at 1 and 5 minutes was 8 and 10 respectively. Nasopharyngeal swab from the infant was negative for COVID-19.

The mother remained to be free of respiratory symptoms and she is still under treatment.

Laboratory test	Value	Reference range
Hemoglobin g/dL	12.7	11.5-15.0
Platelets x10 ³	166	150-450
White cell count x10 ³	9.2	11-Apr
Lymphocytes %	16.3	20-50
Lymphocyte count x10 ³	1.5	1.1-3.2
Prothrombin concentration %	86.7	70-110
INR	1.1	
ALT U/L	18	Jan-50
AST U/L	81	14-59
Urea mg/dL	15.1	19.3-42.9
Creatinine mg/dL	0.3	0.5-1.2
PCR for nasopharyngeal swab	Positive	Negative
C-reactive protein	6	0-6

Table 2: Laboratory result of the mother

Discussion

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is considered now a global health crisis and it was announced by the world health organization (WHO) as a pandemic. Since then, multiple studies were done while many others are still in progress for better understanding of the characteristics of this novel virus. Whether COVID-19 increases the risk of miscarriage, stillbirth, preterm delivery, fetal tachycardia and fetal distress is unknown. A previous case series from Wuhan of 9 pregnant women found no mother-child transmission [6]. In another review of 38 pregnant women with COVID-19, no cases of intrauterine transmission were documented [7]. A more recent study was done on 33 infected pregnant women confirmed that three infants who were born by cesarean section tested positive for SARS-CoV-2 two days after birth [8].

We reported two pregnant cases with different presentations where one case showed a possible vertical transmission from mother to fetus supported by the fetal PCR result. On the other hand, while infection post-delivery may still be a possibility, an immediate positive PCR result following infection is unlikely. Another finding from the 2nd case may suggest a direct impact from the viral infection on the pregnancy outcome since this patient presented with a preterm labor. However, other causes of poor pregnancy outcomes have to be ruled out before jumping to this conclusion. The observation drawn from those cases might be an area for further research with in depth assessment for the mechanism and incidence of both maternal outcomes and mother to fetus transmission of infection.

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