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CASE STUDY

Clinical , Laboratory and Virology data of four pregnant women with COVID-19 in Georgia: A retrospective study

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ABSTRACT

The worldwide incidence of coronavirus disease 2019 (COVID-19) infection is rapidly increasing, but there exists limited information on coronavirus disease 2019 in pregnancy. Here, we present our experience with 4 confirmed cases of coronavirus disease 2019 in pregnancy presenting to TSMU the first University clinic. This study aims to evaluate the clinical , laboratory and virology characteristics and outcomes of pregnant women confirmed with COVID-19 to provide reference for clinical work. All 4 patients presented with symptoms of coronavirus disease 2019, including cough, myalgias, fevers, chest pain, and headache. All of them were admitted to the hospital in the obstetric/gynecology department. None requiring intensive care unit admission. This retrospective analysis reveals that unlike coronavirus infections of pregnant women caused by SARS and MERS, in these 4 pregnant women did not lead to severe respiratory distress and maternal deaths.
Key words: pregnancy, Covid-19, novel coronavirus.

INTRODUCTION

Since the end of 2019, the 2019 new coronavirus disease (COVID-19) that occurred in Wuhan, Hubei Province has posed a serious threat to China and even the world. In January 30, 2020, COVID-19 was declared a public health emergency of international concern (PHEIC) by WHO. The novel coronavirus is officially classified as SARS-CoV-2, known as "severe acute respiratory syndrome coronavirus 2" [1]. There is a special group in this outbreak, pregnant women, which deserve our great attention because of the physiological changes during pregnancy that make them more susceptible to virus. The emergence of a novel coronavirus, termed SARS-CoV-2, and the potentially life-threating respiratory disease that it can produce, COVID-19, has rapidly spread across the globe creating a massive public health problem. Previous epidemics of many emerging viral infections have typically resulted in poor obstetrical outcomes including maternal morbidity and mortality, maternal-fetal transmission of the virus, and perinatal infections and death. This communication reviews the effects of two previous coronavirus infections - severe acute respiratory syndrome (SARS) caused by SARS-CoV and Middle East respiratory syndrome (MERS) caused by MERS-CoV - on pregnancy outcomes. Previous epidemiological evidence strongly suggests that pregnant women have a higher risk of serious illness and death from viral infections [8] during pandemics such as influenza and ebola [9, 10]. Coronavirus disease 2019 (COVID-19) has led to the deadliest pandemic observed in more than 100 years. As of this writing (March 25, 2020), there are more than 367,457 confirmed cases and 16,113 deaths worldwide [2].Despite mounting international experience with COVID-19, little is known regarding the impact of the disease on pregnancy [3, 4].

Pregnant women are especially susceptible to respiratory pathogens and severe pneumonia, because of the physiological changes in the immune and cardiopulmonary systems (eg, diaphragm elevation, increased oxygen consumption, and edema of the respiratory tract mucosa), which can render them intolerant to hypoxia..The 1918 influenza pandemic caused a mortality rate of 2.6% in the overall population, but 37% among pregnant women [5]. In 2009, pregnant women were reported to be at an increased risk for complications from the pandemic H1N1 2009 influenza virus infection, with a higher estimated rate of hospital admission than in the general population [6]. In 2003, it was reported that approximately 50% of pregnant women who received a diagnosis for SARS-CoV were admitted to the intensive care unit (ICU), around 33% of pregnant women with SARS-CoV required mechanical ventilation, and the mortality rate was as high as 25% for these women [7].

The anatomical structure of the respiratory system is changed during pregnancy, and the virus transmitted by droplets and aerosols is more easily inhaled by pregnant women and is difficult to remove. Furthermore, the prognosis is worse after infection when compared with non-pregnancy women. And changes in reproductive hormones and immune systems during pregnancy collectively make them more susceptible to certain infections. More importantly, angiotensin-converting enzyme (ACE)-2, the SARS-CoV-2 receptor, has been proven highly increased during pregnancy, which may contribute to the susceptibility to SARS-CoV-2.

MATERIAL AND METHODS

The clinical features and outcomes of 4 pregnant women confirmed with COVID-19 at TSMU the First university clinic from 11.05 to 12.06.23 2020 were retrospectively analyzed.

RESULTS AND DISCUSSION

All the 4 pregnant women had a history of epidemiological exposure to COVID-19. The age of the pregnant women ranged from 19 to 36years old. The gestational weeks of those patients ranged from 5 to 21 weeks on admission. All patients presented fever which lasted for 7-10 days.Only one patient had a fever. and three confirmed COVID-19 patients. Two patient had an occasional cough. All of them were diagnosed mild COVID-19, and none of them developed severe COVID-19 with severe respiratory distress. Data from laboratory tests showed that none of had lymphopenia on admission. The patients had elevated concentrations of C-reactive protein (>10 mg/L). The concentrations of alanine aminotransferase (ALT) and aspartate aminotransferase (AST), lactate dehydrogenase were normal during hospitalization in our hospital. D-dimer in all patients were elevated. All of the four patients do not showed lung abnormalities by chest CT images on admission .

Table 1: Clinical features of mothers with COVID-19 infection

	Patient1	Patient 2	Patient 3	Patient 4
Date of admission	11.04.2020	12.04.2020	28.04.2020	12.05.2020
Age (years)	19	25	36	27
Gestational age on admission(w)	16 0/7weeks	21 0/7 weeks	8 0/7weeks	5 5/7 weeks
Signs and symptoms Fever(on admission)	38,1 (moderate)	37,5 (low)	38,4 (moderate)	37,1 (low)
Epidemiological history	Bolnisi	Marneuli	Tbilisi	Tbilisi
Fever duration	1week	4days	10days	1week
Cough	yes	no	yes	no
Chest tightness	no	no	no	no
Fatigue	yes	yes	no	yes
CRP (mg/L)	15 mg/L	12mg/L	25 mg/L	12 mg/L
Lymphocyte count	31,2%	24%	26%	34.4%
Lymphopenia	no	no	no	no
White blood cell count	8,5 10 9/L	7,510 9/L	5,210 9/L	5,87 10 9/L
AST (U/L)	12,8 U/L	29,3 U/L	22,5	15,7 U/L
ALT (U/L)	11,4 U/L	63,0 U/L	35 U/L	45 U/L
LDH (U/L)	151,4U/L	147 U/L	170 U/L	127 U/L
D-dimer (ug/L)	275	921	359	262
Mixed infection with other pathogens	no	no	no	no

CONCLUSION

This analysis reveals that unlike coronavirus infections of pregnant women caused by SARS and MERS, in these 4 pregnant women COVID-19 did not lead to severe respiratory distress and maternal deaths.

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