Original Article

Effects Of COVID-19 Pandemic on the First and Second Trimester Pregnancies: Observations at a Secondary Care Setup

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Abstract

Objective: To observe the effect of COVID-19 on 1st and 2nd trimester miscarriage and whether infection of spouse before pregnancy has any link to pregnancy outcome.

Methodology: It was a comparative, retrospective, observational study conducted at Gynecology/Obstetrics Department of Advanced Engineering And Research Organization(AERO) Hospital. All patients attending Gynecology Department of AERO Hospital with diagnosis of spontaneous or missed miscarriage between March-August 2019 and between March-August 2020, aged between 20-38 years were included in study. Patients aged less than 19 years, and more than 38 years, with co-morbidities, history of recurrent pregnancy loss and those with induced miscarriages were excluded from the study. Data of the research was extracted from record of AERO Hospital. All patients who visited AERO Hospital with miscarriage between March to August 2020, had a through history including that related to COVID-19 and tests to confirm diagnosis along with routine baseline tests.

Results: Rate of miscarriage in anti-natal patients attending Gynecology Department of AERO Hospital between 1st and 2nd trimesters from March to August 2019 was found to be 6% and from March to August 2020 it was 9.2%. Out of 47 patients who had miscarriage 24 patients (51%) had positive history and/or tests of COVID-19, 15 (32%) patients had spouse who had positive history and/or tests of COVID-19, 1-2 months before current pregnancy. We observed a higher miscarriage rate from March-August 2020 as compared to March-August 2019. Ten patients (21%) had both, COVID-19 personal or/ and spouse history.

Conclusion: COVID-19 infection of mother during 1st or 2nd trimester increases the rate of pregnancy loss, which may be caused by vertical transmission or maternal viremia. Medicines used for treatment of these patients were generally considered safe during pregnancy. Paternal sperm quality may have an effect on pregnancy outcome.

Keywords: COVID19, SARS-CoV-2, pregnancy, miscarriage, swabs.

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Introduction

COVID-19, caused by SARS-CoV-2, declared a pandemic by World Health Organization (WHO), is a highly contagious disease mainly affecting respiratory system, affects the pregnant women as well. World Health Organization (WHO) declared COVID-19 outbreak as 6th Public Health Emergency of international concern in January 2020. COVID-19 is

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caused by SARS-Co V-2, which is Corona Virus. By April 2020, it spread to five continents of world. [1]

It is considered to be a highly contagious disease transmitted through respiratory droplets of infected people, whether symptomatic or asymptomatic. Clinical manifestations of COVID-19 range from asymptomatic patients to mild upper respiratory tract infection to severe and fatal pneumonia and acute respiratory failure.[2,3] It is not yet clear how the virus affects pregnancy, fetus and neonate.[4] As immune response of pregnant women is different from non-pregnant women so these women apart from usual course of disease are more likely to undergo maternal, fetal and neonatal complications.[5,6,7] Paternal infection might have effect on different parameters of semen which might play a role in miscarriage.[8] Pakistan had more than 300,000 confirmed cases of COVID-19 during study period but exact national data of pregnant infected women is not available. This study was conducted to add local data to already existing international studies.

Methodology

This was a comparative, retrospective, observational study conducted at Gynecology/Obstetrics Department of AERO Hospital. In this study, rate of 1st and 2nd trimester miscarriages, observed between March to August 2019 was compared with rate of miscarriages from March to August 2020.Patients with 1st and 2nd trimester miscarriages who were infected with Covid-19 during index pregnancy or their spouses had COVID-19, 1-2 months before their pregnancy, aged between 20-38 years were included in the study.

Patients aged less than 19 years and more than 38 years and those with history of comorbidities and recurrent pregnancy loss were excluded from study. Patients with induced abortion were also excluded from study.

Data of total number of antenatal booked patients and total miscarriages during March to August 2020 and that from March to August 2019 was taken form hospital record. A complete medical and obstetrical history of all patients was taken with diagnosis of miscarriage from March to August 2020, especially history of upper /lower respiratory tract infection, fever, myalgia, anosmia and family history of contact with confirmed COVID 19 cases during current pregnancy. Every patient with diagnosis of 1st and 2nd trimester miscarriage diagnosed from March to August 2020 underwent COVID-19 PCR, X-ray chest and COVID-19 specific immunoglobulin (IgG/IgM qualitative), along with routine labs, i.e., Blood Complete Picture, Blood Group, HBsAG, HCV, Random Blood Sugar and their data recorded. Data was entered and analyzed in SPSS version 21.0.

Results

Rate of 1st and 2nd trimester miscarriages between March-August 2020 was higher than the rate during March-August 2019. In our 565 booked patients during March to August 2019, 34 patients (6.0%) had 1st and 2ndtrimester miscarriage while from March to August 2020, out of 508 booked patients 47(9.2%) had miscarriage during 1st and 2nd trimester.

Out of 47 patients who had 1st and 2nd trimester miscarriages, 24 patients (51%) had either positive personal history or tests for COVID-19. Twenty three patients (49%) had neither personal nor contact history. Fifteen patients (32%) had history of contact with spouse, who were confirmed cases of COVID-19, about 1-2 months before conception. Thirty-five patients (74%) had either positive personal or spouse history of COVID-19. Ten patients (21%) had both, positive personal and spouse history.

Table I: Comparison of Pregnancies and Miscarriages

	March 2019 to August 2019	March 2020 to August 2020	p-value*
Total booked Anti-natal patients	565	508	
Total 1st and 2nd trimester miscarriages	34(6.0%)	47(9.2%)	0.045

**p≤0.05 was taken as level of significance*

Discussion

David Baud and Colleagues described a case report of a pregnant woman with COVID-19, who experienced 2nd trimester miscarriage. Placental histological examination and fetal autopsies were performed and swabs were taken from amniotic fluid, fetal mouth, meconium, fetal blood and placenta. Swabs were negative but placental histopathology revealed mixed inflammatory infiltrate.[7] Short and mild course of maternal disease might be reason for negative swabs. They assumed COVID-19 infection of mother to be responsible for fetal demise.

In a recent research in China, researchers studied different biological samples and have detected SARS-Co V-2 in samples of respiratory tract, saliva, stool, gastrointestinal tract, urine, feces and Lacrimal secretions of COVID-19 patients. Vertical transmission from mother to infant has been suspected but not yet confirmed. Information about localization of virus in genital tract or its shedding is under study.[8]

Out of confirmed COVID-19 cases, one patient developed respiratory distress syndrome and required ventilator support. Rest of the patients had mild to moderate symptoms and was treated with Paracetamol, Loratidine, Azithromycin and Aspirin. Some of the patients were also given Enoxaparin. All these medicines are generally considered safe during pregnancy and generally have no feticidal effect.[9]

In another study conducted by Yan-Tin and Jun Lius and Colleagues, pregnancies affected at later stage of gestation were studied. They found out that intrauterine or intra partum transmission is possible and warrants clinical investigation. As they found presence of Immunoglobulin M (lgM) and Immunoglobulin G (lgG) in some neonates and also had radiological findings in some newborns.[10]

Another research is evaluation the possible vertical transmission of SARS-Co V-2 through study of amniotic fluid and chorionic villi of COVID-19 affected pregnant women. In this study pregnant women with positive serology or PCR for SARS-COV-2 with indication of invasive techniques (amniocentesis or chorionic biopsy) are studied and results are awaited.[11]

However, In our study patients who presented with 1st and 2ndtrimester miscarriages with positive personal history and / or COVID-19 positive spouse (one or two months before their current pregnancies) were studied and compared with rate of miscarriage observed during the same period of previous year. Patients with recurrent pregnancy loss, co morbidities, induced abortions and maternal age less than 19 and more than 38 years were excluded from the study.

Conclusion

It was observed that rate of miscarriage (1st and 2nd trimester) was higher between March to August 2020 as compared to same months of 2019. It is concluded that COVID-19 infection of mother during 1st and 2nd trimester has some potential effect on their pregnancies but underlying pathological process, whether it is vertical transmission or maternal viremia which causes feticide is not yet clear. Paternal sperm quality may have an effect on pregnancy outcome.

Limitations: We acknowledge the limitations of study as cohort were not very large. Secondly better option would be to study placentae for confirmation of infection in placental samples, which could not be done due to (i) non availability of placental samples in cases of spontaneous complete miscarriages (ii) Histological services were not readily available during pandemic and only few reports were available and it was not cost effective at that time . We need to study Semen for effect of COVID-19 on spermatogenesis in infected males. Further studies are required to confirm the effect of COVID-19 infection on 1st and 2nd trimester miscarriage.

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