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COVID- 19 AND PREECLAMPSIA³

Abstract:

Background. The novel coronavirus SAR-CoV-2 responsible for COVID-19 infection appears to be a significant threat globally, especially affecting vulnerable group of pregnant patients. According to the data obtained from National Center for Disease Control and Public Health (NCDC) of Georgia around 14.5% of pregnant women have been infected by COVID-19 from the onset of the illness outbreak. Data on the effects of the SARS-CoV-2 infection in pregnancy are still emerging. It seems interesting that contracting the infection might drastically change the outcome of pregnancy. **Methods.** During the study has searched and measured the amount of pregnant women with and also without the coved- 19 SARS- Cov-V-2 infection and compared with one other, it tells us about the preeclampsia in Georgian patients during pandemic, how it is being increased or otherwise increases or not, and can the results be considered as endemic advantages of the location of Georgia, cause of it ecological condition, or informational correct strategy. **Conclusion.** Preeclampsia is independently associated with COVID-19 during pregnancy; conditions are associated independently of and in an additive fashion with increased risks for preterm birth, the severe perinatal morbidity and mortality index, and composite adverse maternal outcome. Hence, preeclampsia seem to be a strong risk factor for SARS-CoV-2 infection and its related complications. There was no evidence to support that COVID-19 is etiologically associated with preeclampsia. COVID- 19 which is primarily a respiratory infection can have marked multiorgan vascular effects leading to hypotension, renal disease, thrombocytopenia and hepatic disorders, mostly the daily style became non

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dynamic, as well as the statistic can't be changed by the influence of Covid-19, while it doesn't effects on if, so the study is ready to make much more clarify the condition of preeclampsia during covid infection and either without covid-19 as well, and make it clear what could be the reason of correlation between both of them. In our study all the cases had the same outcome resolved patients and no maternal and neonatal death to all of them. It's been thought that this outcome is directly connected with some environmental factors but it not yet even proved.

Keywords:

SARS-CoV-2; coronavirus; preeclampsia, outcome; perinatal;

Introduction

Preeclampsia is one of the 3 leading causes of maternal morbidity and mortality worldwide. During the past 50 years, there has been a significant reduction in the rates of eclampsia, maternal mortality, and maternal morbidity in the developed countries. Preeclampsia is a condition during pregnancy when a mother gather hypertension with the multisystem progressive disorder. It is caused by placental and maternal vascular dysfunction and resolves after birth over a variable period of time. Although approximately 90 percent of cases present in the late preterm (≥ 34 to < 37 weeks), term (≥ 37 to < 42 weeks), or postpartum (≥ 42 weeks) period and have good maternal, fetal, and newborn outcomes, the mother and child are still at increased risk for serious morbidity or mortality. The Coronavirus disease 2019 pandemic has had a significant impact on the lifestyle and maternal healthcare as well, The causes of it is not yet to clarify but has already thought that difficulties faced by healthcare systems in adapting to rapidly changing circumstances during the pandemic globally according to the income status of country. According to the data obtained from National Center for Disease Control and Public Health (NCDC) of Georgia around 14.5% of pregnant women have been infected by COVID-19 from the onset of the illness outbreak. Data on the effects of the SARS-CoV-2 infection in pregnancy are still emerging. COVID-19, which is primarily a respiratory infection, can have marked multi organ, vascular effects leading to hypertension, renal disease, thrombocytopenia, and hepatic injury. SARS-CoV-2 can produce direct endothelial damage, throb inflammation, dysregulation of immune responses, and alterations in angiotensin-converting enzyme 2-related pathways.¹ Preeclampsia, but not gestational hypertension (GH), causes endothelial damage, placental oxidative stress, and an antiangiogenic state leading to hypertension and proteinuria,² and similar multi organ effects as seen in severe cases of COVID-19.³ The met analysis of the research

demonstrates that SARS- CoV-2 infection during pregnancy was associated with a significant increase in the odds of pre-eclampsia. There was an increased risks of pre-eclampsia, eclampsia and HELLP syndrome in women with SARS-CoV-2 infection.

Objective

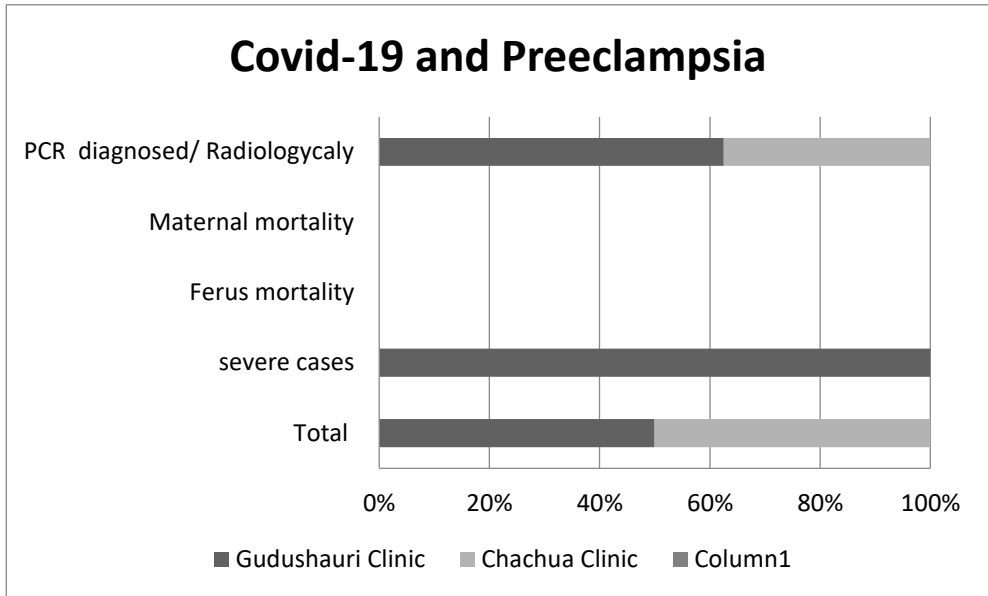
To determine the clinical manifestations, risk factors, and maternal and perinatal outcomes in pregnant and recently pregnant women with suspected or confirmed coronavirus disease 2019 (covid-19)and preeclampsia and to determine the effect of there variables on maternal morbidity or mortality.

Materials and Methods

The study has taken place in Tbilisi, it was moderate, longitudinal, prospective research and included pregnant women with suspected COVID-19. Subjects were divided into COVID-19 and non-COVID-19 groups based on the results of real-time polymerase chain reaction (RT-PCR) for severe acute respiratory syndrome coronavirus 2. Clinical characteristics, laboratory results, and pregnancy outcomes were compared between the two groups. This was case-control analysis of the Georgian Network of Covid-19 and Preeclampsia connection in Obstetric studies. The study took place in Covid- Clinic, and Maternity clinic as well, there enrolled 10-10 cases of diagnosed Covid-19 with preeclampsia and patients without it.

Of these 10 cases from CC, 5 (50%) were diagnosed withCOVID-19 during pregnancy on the basis of a laboratory confirmation (real-time polymerase chain reaction [RT-PCR) test and 20% by radiological confirmation. 30% of cases got an acute symptoms such as: high blood pressure (blood pressure higher or equal to 140x90mmHg in two or more measures), protein in their urine, and swelling in their legs, feet, and hands, epigastric pain. For all the patients there are some mandatory laboratory test while the patients have Covid-19 and Preeclampsia in the same time, Common blood count, Liver functions, Kidney functions, and Urine analysis .There was just one case who had chronic hypertension that had been diagnosed before pregnancy.

Fig. 1. Covid 19 and Preeclampsia



Source: own study.

Conclusion: Beside that there was appeared acute cases with suitable symptoms fortunately in Georgia didn't appeared fetus and maternal mortality.

Outcomes

The neonatal outcomes of interest were 2 from 10 cases preterm birth (32 weeks' gestation), frequency of small for gestational age (SGA) neonates (birthweight below the 10th percentile for gestational age). There was no neonatal and maternal death before and after hospital discharge.

Study Design

During the study has searched and measured the amount of pregnant women with and also without the covid- 19 SARS- Cov-V-2 infection and compared with one other, it tells us about the preeclampsia in Georgian patients during pandemic, how it is being increased or otherwise increases or not, and can the results be considered as endemic advantages of the location of Georgia, cause of it ecological condition, or informational correct strategy.

Pathophysiological mechanism of Covid-19 says that the cytokine storm (it's equal to cytokine storm syndrome) releases during the collapses of

alveoli by the RNA depending RNA polymerase action and production of corona virus inside of the alveolar cells, this provokes to damage the alveoli and release IL-1 IL6 and TNF- α , those ones are responsible for the inflammatory response activation, which could be similar as it's in preeclampsia.

To overview Preeclampsia pathogenesis we need to remind that placenta ischemia triggers the inflammatory responses and release cytokines, the most important issue in those case is that there may be occur the overlap of the symptoms and that's why part of the pregnant and the Doctors as well miss the preeclampsia, while the pregnant woman has the Covid-19 virus. In laboratory tasks there are similarity by the thrombocytopenia, increased ferritin level in the blood and pro-inflammatory cytokines as well.

Conclusion

Preeclampsia is independently associated with COVID-19 during pregnancy; conditions are associated independently of and in an additive fashion with increased risks for preterm birth, the severe perinatal morbidity and mortality index, and composite adverse maternal outcome. Hence, preeclampsia seem to be a strong risk factor for SARS-CoV-2 infection and its related complications. There was no evidence to support that COVID-19 is etiologically associated with preeclampsia. COVID- 19 which is primarily a respiratory infection can have marked multiorgan vascular effects leading to hypotension, renal disease, thrombocytopenia and hepatic disorders, mostly the daily style became non dynamic, as well as the statistic can't be changed by the influence of Covid-19, while it doesn't effects on if, so the study is ready to make much more clarify the condition of preeclampsia during covid infection and either without covid- 19 as well, and make it clear what could be the reason of correlation between both of them. In our study all the cases had the same outcome resolved patients and no maternal and neonatal death to all of them. It's been thought that this outcome is directly connected with some environmental factors but it not yet even proved. Beside that there was appeared acute cases with suitable symptoms fortunately in this clinic didn't appeared fetus and maternal mortality. These findings indicate that future research integrating all Covid- clinics and rigorous examinations of environmental factors should lead to a better understanding of the relationship between Covid-19 and Preeclampsia outcomes. To accomplish this goal, further research may also benefit from investigating the impact of mechanisms related to prenatal influences.

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