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Research Article

Pregnant Women Affected by COVID-19 in Veracruz, Mexico

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ABSTRACT

Introduction: Currently, maternal-fetal vertical transmission has not been reliably demonstrated; however, it has been shown that when there is a maternal cytokine storm, it can severely affect the fetus, leading to risks of fetal brain development abnormalities and risks of autism spectrum disorders.

Materials and Methods: In a descriptive and retrospective study carried out from June 2021 to June 2022, admitting pregnant patients over 18 years of age with a diagnosis of COVID-19 by positive antigen test or PCR-RT, previous symptoms and comorbidities are analysed, as well as the presence of obstetric complications, associated and the use of vaccines during pregnancy.

Results: 58 pregnant women with an established diagnosis of COVID-19 are entered into the study; the average age is 28 years; regarding comorbidities; only 2 reported suffering from chronic hypertension and 10 are overweight/obese. 40 patients were reported during the 3rd wave of COVID (June to December 2021) dominated by the Delta variant and 18 patients during the 4th wave dominated by Omicron (January to June 2022). According to the gestation trimesters, the majority were in the first trimester with 32 patients (55%), in the second trimester with 18 patients (31%), and only 8 patients in the third trimester (14%). Only 10 patients (17%) presented obstetric events associated with acute COVID-19 infection, highlighting threatened abortion and threatened preterm labour.

Conclusion: This cohort of pregnant patients with COVID-19 infection, remained free of serious disease thanks to vaccination, and being a young and healthy population, the importance of preventive vaccination in the gestation stage is of utmost relevance to avoid both serious maternal illness as well as poor fetal outcomes. Similarly, the virulence and pathogenicity of some strains over others are notorious.

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Introduction

Since the start of the COVID-19 pandemic at the end of 2019, more than 584 million cases have been demonstrated today worldwide, with 6.42 million deaths and adding up day by day. There are no reliable statistics regarding pregnant women worldwide who have suffered from COVID-19; however in the United States of America, from 2020 to 2022, 225,656 cases with 306 maternal deaths have been reported; a higher risk is discussed during the dominance of the Delta strain (June-December 2021), in which the risk of admission to the ICU was 41%, the risk of requiring special therapies such as ECMO was 83%, and the risk of death it was 3.3 times higher than with the predecessor variant [1, 2].

Currently, maternal-fetal vertical transmission has not been reliably demonstrated; however, it has been shown that when there is a maternal cytokine storm, it can severely affect the fetus, leading to risks of fetal brain development abnormalities and risks of autism spectrum disorders [3].

According to a systematic review, an increased risk of miscarriage has been identified in pregnant women with a positive test for SARS CoV-2, since acute infection favours placental inflammation with subsequent fetal involvement and loss. Similarly, it has been shown that the placenta is a carrier of ACE2 receptors, of which SARS CoV-2 has a high affinity, which makes it susceptible to alterations mediated by the Renin-angiotensin and Kallikrein-kinin systems, useful during the placentation

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and hemodynamic adaptations of pregnancy, its dysfunction irretrievably leads to placental dysfunction and fetal loss [4, 5].

Materials and Methods

In a descriptive and retrospective study carried out from June 2021 to June 2022, admitting pregnant patients over 18 years of age with a diagnosis of COVID-19 by positive antigen test or PCR-RT, previous symptoms and comorbidities are analysed, as well as the presence of obstetric complications associated and the use of vaccines during pregnancy.

Results

58 pregnant women with an established diagnosis of COVID-19 are entered into the study, the average age is 28 years, regarding comorbidities; only 2 reported suffering from chronic hypertension and 10 are overweight/obese. The main symptoms reported were fever (100%), cough (98%), chest pain (90%), headache (85%), increased

uterine activity (50%), anosmia (30%), and dysgeusia (12%). 40 patients were reported during the 3rd wave of COVID (June to December 2021) dominated by the Delta variant and 18 patients during the 4th wave dominated by Omicron (January to June 2022). According to the gestation trimesters, the majority were in the first trimester with 32 patients (55%), in the second trimester 18 patients (31%), and only 8 patients in the third trimester (14%). Only 10 patients (17%) presented obstetric events associated with acute COVID-19 infection, highlighting threatened abortion and threatened preterm labour. The treatment provided was only symptomatic and surveillance of warning signs of pregnancy. 95% of pregnant women had at least one vaccine and 85% had a complete schedule (two doses and a booster). 5% of those not vaccinated presented more severe symptoms of COVID-19, with activation of coagulation and inflammation, requiring at least treatment with low molecular weight heparins, and one patient the use of dexamethasone, as well as close surveillance; none required invasive airway management or stay in intensive care. One patient required oxygen therapy due to mild desaturation. No events of maternal or fetal mortality are reported (Table 1).

Table 1: Characteristics of pregnant women affected by COVID.

	n	Obstetric events	Moderate to severe covid	Vaccinated	COVID wave
First trimester	32	8, threatened abortion	2	Complete 60% Partial 31% Unvaccinated 9%	Third (Delta)
Second trimester	18	0	0	Complete 100% Partial 0% Unvaccinated 0%	Fourth (Omicron)
Third trimester	8	2, threatened preterm labour	3	Complete 50% Partial 25% Unvaccinated 25%	Third (Delta)

Discussion

A meta-analysis of more than 438,000 pregnant women concludes that pregnant women have a higher risk of preeclampsia, preterm birth, stillbirth, low birth weight, and gestational diabetes when they have COVID-19 infection [6]. An Italian meta-analysis with 1,100 pregnant women mentions that the COVID-19 infection mentions that the prevalence of pneumonia was 89%, the prevalence of ICU admission was 8%, and the increased risk of cesarean delivery up to 85%. Of the fetal outcomes, 3 neonatal deaths were reported, the risk of admission to the neonatal intensive care unit was 2%, and 19 of 444 neonates were positive for SARS CoV-2 RNA (evidence of vertical transmission) [7].

Another meta-analysis carried out on more than 31,000 pregnant women mentions that 16.4% developed a serious illness, 7% were admitted to the ICU, 8% required mechanical ventilation, and 2% died. Among the newborns, 23.4% were premature, 16.6% had low birth weight, and 1.6% were neonatal deaths. 3.5% of neonates were positive for COVID-19. The risk of severe COVID was 1.5 times higher in women over 35 years of age and this was more frequent in obese women, smokers, diabetics, and preeclampsia. The risk of premature birth was 2.5 times higher in pregnant women with severe COVID [8].

In Mexico, a study of pregnant women was carried out with 29,416 participants, identifying the risk of maternal mortality as 3.24 times

higher; COVID is considered the main cause of maternal death in 2020 and explains more than 50% of deaths in 2021; chronic kidney disease and diabetes were the main comorbidities associated with maternal death from COVID-19 [9].

Our small cohort of cases is a young and healthy population, coupled with being vaccinated in most cases, which probably confers protection against severe forms of COVID-19, the few patients who presented obstetric events such as threatened labour or preterm delivery were in the unvaccinated group, a situation that makes these pregnant patients more vulnerable.

Conclusion

This cohort of pregnant patients with COVID-19 infection, remained free of serious disease thanks to vaccination, and being a young and healthy population, the importance of preventive vaccination in the gestation stage is of utmost relevance to avoid both serious maternal illness as well as poor fetal outcomes. Similarly, the virulence and pathogenicity of some strains over others are notorious.

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