

Epidemiological aspects of COVID-19 in pregnant women in the state of Amazonas, Brazil

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ABSTRACT

Background and purpose: Pregnant women if infected with COVID-19 are vulnerable and considered as a risk group. The objective of this research was to analyze the epidemiological aspects of COVID-19 cases in pregnant women registered from 2020 to 2021, in the State of Amazonas, Brazil.

Methods: This was an analysis of data obtained from the website of the Brazilian Obstetric Observatory COVID-19 (OOBr COVID-19).

Results: During the defined study period a total of 565 pregnant women were diagnosed with severe acute respiratory syndrome caused (SARS) by COVID-19 in the Amazon state. Of these 546 (96.6%) required hospitalization, 9 (1.6%) were not hospitalized and 10 (1.8%) did not report if they need hospitalization or not. The highest number of cases was recorded in the third trimester of pregnancy (n=291, 51.5%), followed by the second trimester (n=130, 23.0%), unreported gestational age (n=76, 13.5%) and by the first gestational trimester (n=68, 12.0%). A 64.2% of affected women were predominantly young adults, aged 20 to 34 (n=363). Regarding antiviral treatment, 50.1% (n=283) used Zanamivir and 24.2% (n=137) used Oseltamivir. A 25.7% (n=145) did not report the used medication. The most reported symptoms were cough, fever, dyspnea, respiratory distress, odynophagia, low oxygen saturation, fatigue, diarrhea, vomiting, anosmia/hyposmia, ageusia and abdominal pain. The most frequently associated conditions were asthma, diabetes, cardiovascular disease, obesity, hematological disease, neuropathies, immunodepression, liver disease, pneumopathies and kidney disease. A 12.4% of the women (n=70) required ICU and 64.4% (n=364) did not. A 19.1% (n=108) required noninvasive ventilatory support (NIV), 8.8% (n=50) invasive ventilation (IV) and 42.5% (n=240) no ventilatory support. A 79.5% (n=449) of the pregnant women with COVID-19 were cured and an 8.0% (n=45) died.

Conclusions: Due to complications, and scarcity of information during pregnancy, systematized care and COVID-19 vaccination in this risk group is needed.

KEYWORDS

Amazonas, COVID-19, epidemiology, pregnancy.

Introduction

Worldwide, knowledge regarding SARS-CoV-2 infection (COVID-19) during pregnancy is still scarce. Infected pregnant women are more vulnerable, and hence considered as a risk group.

In general, most people with COVID-19 present mild symptoms such as fever and dry cough, however, pregnant women in the second half of gestation present other symptoms that may appear with less intensity such as fatigue, dyspnea, diarrhea, nasal congestion and runny nose. Some women may have even more serious complications, such as the severe acute respiratory syndrome (SARS) ^[1].

The clinical manifestations occur with the virus being transmitted from humans to humans through respiratory droplets and contaminated surfaces. On average, the transmissible period occurs between five and six days, and in some cases, it can be longer. Main clinical signs and symptoms include fever, cough, dyspnea, myalgia, fatigue, upper respiratory symptoms, and gastrointestinal symptoms such as diarrhea ^[2].

Article history

Received 26 Jul 2022 - Accepted 23 Nov 2022

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In pregnant women, fever and cough are the most common symptoms. In addition to these, fatigue, dyspnea, headache, myalgia, diarrhea, nausea and vomiting, abdominal pain and chest tightness have also been described, but to a lesser extent ^[3]. Available evidence indicates that pregnant women and children may not develop more severe cases of the disease and due to the lack of scientific evidence regarding the ways of contagion, physiology, and pathogenesis of the virus, including vertical transmission and breastfeeding, these groups should be treated with priority ^[4].

Pregnant women are particularly susceptible to respiratory pathogens and severe pneumonia due to immunological changes and physiological gestation adaptations, such as an elevation of the diaphragm, increased oxygen consumption, and edema of

the respiratory tract mucosa. Therefore, pregnant women are a risk group for morbidity and mortality due to the coronavirus^[5].

Some studies have shown that pregnant women infected with SARS-CoV-2 have a higher incidence of preeclampsia, which can be explained by the endothelial damage caused by placental oxidative stress and an antiangiogenic effect, which causes hypertension and proteinuria, increased liver enzymes, renal failure and even thrombocytopenia^[6]. Other laboratory alterations observed in pregnant women with COVID-19 include leukocytosis, lymphopenia, neutrocytosis, anemia, and increased procalcitonin, D-dimer, C-reactive protein and lactate dehydrogenase (LDH)^[3].

Information on the possibility of vertical transmission of SARS-CoV-2 is still limited, however, currently there is evidence in the literature addressing maternal complications related to infection with the new coronavirus, such as premature rupture of ovular membranes (PROM), preeclampsia, gestational diabetes, hypertension. In addition to these, neonatal complications such as pneumonia, low birth weight, asphyxia, perinatal death, skin rash, disseminated intravascular coagulation have also been reported. Furthermore, there is also the possibility that the pandemic is causing an increase in the number of cesarean sections and premature births due to maternal indication, which is worrying, since this could increase the morbidity and mortality of these babies^[3].

This research is justified by the need for greater knowledge regarding the disease and its consequences in pregnant women in the State of Amazonas, for which there is still not much information. Hence, the main objective of the research was to analyze the epidemiological aspects of COVID-19 cases in pregnant women registered from 2020 to 2021, in the State of Amazonas, Brazil.

Methods

The research was a quantitative, retrospective, and descriptive epidemiological study that analyzed data of pregnant patients with COVID-19 in the state of Amazonas, Brazil. It consisted of a review of the literature on COVID-19 during pregnancy, its consequences, and developments, with an emphasis on cases registered in the State of Amazonas.

For the analysis of the epidemiological aspects, the data were obtained from the website of the Brazilian Obstetrical Observatory COVID-19 (OOBr COVID-19) (available at: https://observatorioobstetrico.shinyapps.io/covid_gesta_puerp_br/) and notified by SIVEP-Gripe, in the period from 2020 to 2021, and consulted in November 2021, highlighting that data is updated daily. The stratified variables were need for hospitalization, gestational age, race, age group, antiviral drug used in the treatment, frequent symptoms presented by pregnant women with the disease, associated complications most frequently encountered, need for intensive care unit (ICU) admission, need and type of ventilatory support used and deaths. The practical part of this work was that the epidemiological data was collected via the OOBr COVID-19 website, without needing forms, interviews, or any other method for obtaining data.

For the bibliographic survey and literature review, articles

published in scientific journals, dissertations and/or theses addressing the topic addressed were searched. The bibliographic research was carried out through the Google Scholar online journal portal, available at <https://scholar.google.com.br/>, which was consulted during the entire preparation of the report, selecting relevant works on the topic from 2017 to 2021, using the descriptor "COVID-19 and gestation".

Results

During the analyzed period, a total of 565 pregnant women were identified in the data base as confirmed SARS (COVID-19) in Amazonas. Of these, 546 (96.6%) required hospitalization, 9 (1.6%) were not hospitalized and 10 (1.8%) did not report if need hospitalization or not.

The highest number of cases was recorded in the third trimester of pregnancy (n=291, 51.5%), followed by the second trimester (n=130, 23.0%), unreported gestational age (n=76, 13.5%) and by the first gestational trimester (n=68, 12.0%).

Regarding race, those most affected by the disease were 473 (83.7%) declared as mestizo, followed by indigenous (n=43;7.6%), white (n=22;3.9%), black (n=9;1.6%), Asian (n=4;0.7%) and 14 (2.5%) that did not declare their race.

Affected pregnant women were predominantly young adults, aged between 20 and 34 years of age (n=363;64.2%), followed by those aged 35 years or older (n=108;19.1%) and by pregnant women under 20 years of age (n=94;16.6%).

Regarding the type of antiviral used in the treatment of COVID-19, 283 (50.1%) of the pregnant women used zanamivir and 137 (24.2%) were treated with oseltamivir, but in 145 of cases (25.7%) used medication was not reported.

In the present study, the most reported symptoms were cough (n=356; 63.0%), fever (n=335; 59.3%), dyspnea (n=301; 53.3%), respiratory distress (n=299; 52.9%), odynophagia (n=184; 32.6%), low oxygen saturation (n=143; 25.3%), fatigue (n=94; 16.6%), diarrhea (n=68; 12%), vomiting (n=67; 11.9%), anosmia/hyposmia (n=56; 9.9%), ageusia (n=49; 8.7%) and abdominal pain (40; 7.1%).

The most frequently associated conditions were asthma (n=19;3.4%), diabetes (n=18;3.2%), cardiovascular diseases (n=17;3.0%), obesity (n=9;1.6%), hematological diseases (n=4;0.7%), neuropathies (n=3;0.5%), immunosuppression (n=2;0.4%), hepatic diseases (n=1;0.2%), lung diseases (n=1;0.2%) and kidney diseases (n=1;0.2%).

Of the total number of pregnant women, 70 (12.4%) required admission to ICU, 364 (64.4%) did not required admission to ICU.

About 108 (19.1%) of the pregnant women required non-invasive ventilatory support (NIV), 50 (8.8%) required invasive ventilation (IV), 240 (42.5%) did not require ventilatory support and in 167 cases (29.6%) did not report if they need ventilatory support or not.

Fortunately, 449 (79.5%) of the pregnant women with COVID-19 were cured with 45 case (8.0%) known to have died. In 71 cases (12.6%) no information regarding of cure or death was registered. Considering that the state of Amazonas has 62 smaller municipalities, and that the largest concentra-

tion of inhabitants is in the capital Manaus with a population of approximately 2,260,000 inhabitants (about 52% of the state's population), the number of deaths [45 (8.0%)] related to COVID-19 among pregnant women can be considered small for the period of the research.

Discussion

There are several articles reporting on pregnant women affected by COVID-19, most of them, as in our series, also reported between the end of the second trimester of pregnancy and the third trimester. Pregnant women affected by COVID-19 were in the most varied age groups, with a record of patients from 18 to 43 years of age^[3].

The most frequently reported symptoms in articles addressing COVID-19 in pregnant women include fever, mentioned in 21 (91.3%) articles, and cough, which reported in 19 (82.6%) articles. Dizziness was the least prevalent symptom, as cited in another research (4.3%), the prevalence of this symptom being only 5.88% in the population studied. In one study it was noted that 19.2% (n=268) of pregnant women had asymptomatic COVID-19^[3]. The most prevalent symptoms in pregnant women, in the series analyzed here, were fever, cough, and fatigue, with a prevalence ranging from 30 to 67%. Other articles corroborate the data obtained here^[3,7].

ICU admission was mentioned in 26 (1.86%) of pregnant women, a much smaller number than that obtained here^[3]. The chance of ICU admission is greater in patients with higher D-dimers, the main manifestations being thrombotic or hemorrhagic^[8]. In addition, pregnancy adds a risk factor to coagulopathy due to the hypercoagulable state that occurs during this period, with an increase in clotting factors and D-dimer^[9].

The need for ventilatory support was also reported in 163 (11.68%) pregnant women^[3]. The need for ventilatory support and ICU admission is a reality during the disease in pregnant women^[3]. Most pregnant women with SARS-CoV-2 had fever, dry cough, dyspnea, and patients with severe illness developed acute respiratory distress syndrome and were admitted to the Intensive Care Unit (ICU) for mechanical ventilation^[5].

When analyzing the profile of maternal deaths, were reported 6 (0.43%) cases only. Although scarce and incipient, the literature on COVID-19 in pregnant women does not point to the pregnancy status as a direct aggravating factor in mortality. However, the sum of pregnancy with other social determinants of health (income, educational level, and access to health care) has a significant impact on the mortality of this group^[3].

The new coronavirus, SARS-COV-2, the etiological agent of COVID-19, has spread rapidly around the world, making people vulnerable, especially risk groups, such as pregnant women. Facing the various adverse maternal fetal outcomes, it is necessary to reflect on the importance of health care for pregnant patients. This care does not differ from that of the general population, but vital signs and symptoms of infection are extremely important in pregnant patients. There is no evidence of vertical transmission.

The implementation of measures such as early isolation, screening testing, oxygen therapy when necessary, and thera-

peutic decisions based on a multidisciplinary approach is important in the context of obstetric care to maintain low rates of adverse obstetric outcomes^[10,11].

Pregnant women diagnosed with infection with SARS-Cov2 need special attention and care considering the diversity of the clinic and maternal outcomes. Although most cases evolve in a favorable way in pregnant women, special care by the health team is important, with pregnant women who are more likely to worsen the condition, for example, those who need ventilatory support and/or ICU admission. Thus, with quality care, the mortality rate of pregnant women with COVID-19 can be reduced.

Due to the epidemiological aspects of the disease, complications, and scarcity of information during pregnancy, systematic care and vaccination is needed in pregnant women, a group considered of risk.

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Conflict of interest statement: Acknowledgments: To the Rectory of Nilton Lins University for funding the submission of this research to the 14th Congress of the European Society of Gynecology held from November 10 to 13, 2021 in Venice, Italy, which allowed the dissemination of the results and the publication of this article.

Conflict of Interest: The authors declare having not conflicts of interest.