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REVIEW

The importance of testing pregnant women and newborns for COVID-19

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Abstract

The objective of this paper is to highlight the importance of the investigation of COVID-19 in pregnant women and newborns. It was also aimed to analyze, through studies published in 2020, if the new coronavirus can be transmitted vertically and if there are differences in the clinical manifestations of the disease between pregnant and non-pregnant women.

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At the end of 2019, in Wuhan, China, a series of pneumonia cases of unknown etiology emerged. Soon after, healthcare services in China alerted the population to the discovery of a new coronavirus, which causes COVID-19¹. Symptoms such as cough, fever and respiratory distress were reported¹, and then the first signs and symptoms of COVID-19² became known.

The lack of knowledge about the risks of this disease and its pathophysiology in pregnant women raised questions and concerns, since there is the possibility of vertical transmission, as in other viral diseases such as rubella, for example. We also do not know the peri and post-natal conditions, which can influence the risks of infection in newborns, and the clinical manifestation of Covid-19³ in this population.

In this sense, the study by Chen et al (2020)⁴ sought to assess the clinical characteristics of COVID-19 in pregnant women and the potential for intrauterine vertical transmission of the virus; that is, can intrauterine infection occur?

Until the end of the study by Chen et al (2020)⁴, the clinical characteristics and the potential for transmission among pregnant women were unknown in the scientific literature, in which the studies carried out corresponded to the adult population, not including pregnant women. It is important to note that COVID-19 is a recently discovered disease, so there are many questions that still need answers, which can be cleared in the future.

However, due to the vulnerability and greater risk of diseases, relevant studies on the health of pregnant women and newborns are important and should be carried out, so that we can better understand the clinical differences, the mechanisms of transmissibility and infectivity in this population.

The study cited above concluded, then, that there was no clear evidence of vertical transmissions at the end of pregnancy among the nine participating women and the clinical characteristics, such as pneumonia, of the pregnant women were similar to the characteristics of non-pregnant adults. In addition, amniotic fluid, umbilical cord, nasopharyngeal swab and breast milk samples from six of the nine newborns, offspring of mothers diagnosed with COVID-19, were tested and considered negative for SARS-CoV-2. As with other diseases caused by the coronavirus, such as MERS (Middle East Respiratory Syndrome), discovered in 2012, and SARS, discovered in 2003, the virus does not appear to be transmitted via intrauterine pathways⁵⁻⁷. However, a newborn was diagnosed with the virus after 36 hours of birth, and the authors pointed out that there could have been a vertical transmission. However, we still lack confirmation of this hypothesis because of the lack of laboratory tests.

Infection in one of the newborns reinforces the importance of healthcare professionals assisting this population, and it reinforces the importance of fostering research that investigates and clarifies the possibility of vertical

transmission, as well as a possible influence on the mode of delivery, since all study participants underwent cesarean section. Furthermore, we stress the importance of the identification, investigation and early diagnosis of COVID-19 in newborns. For those suspected and confirmed should be isolated and their families should be instructed on hygiene measures, which are already routine in Neonatal Intensive Care Units (NICUs), but which must be reinforced and intensified in these situations. This is important for the control of the disease in NICUs and in relation to the other individuals who accompany them, such as parents, healthcare professionals and other newborns.

As suggested by the authors, the study has limitations, such as the small number of participants, totaling nine pregnant women in the third trimester of pregnancy - which caused the absence of information and effects on women in other periods of pregnancy; and the study site, because all these pregnant women were admitted to a single hospital in the city of Wuhan and diagnosed with COVID-19. Therefore, the external validity of this study is questionable.

The study by Schwartz et al.³ was an additional analysis to the studies by Chen et al. (2020)⁴. Therefore, the objectives were similar and the study was carried out with a larger sample. They concluded that in the 38 pregnant women, there was no death of any participant, just as there was no vertical transmission to any of the newborns. However, in this study, the authors did not list the trimester of pregnancy of the women in which the disease was reported in a subgroup. It is believed that this factor would contribute to the knowledge of the effects of the virus in other periods of pregnancy. The number of participants should be expanded, and cohort studies will provide even more information about this audience.

The World Health Organization (WHO) carried out a study on the conditions of pregnancy with more participants, totaling 147. Of these, more than 60 participants were infected with the new coronavirus. Although the number of participants in the WHO study was greater than the studies mentioned above, the study did not investigate whether there was vertical transmission. In addition, according to the results of a survey conducted by the WHO, pregnant women were not at high risk of developing the severe form of the disease. In other words, the study concluded that pregnant women do not have a higher risk of developing severe disease due to COVID when compared to non-pregnant women. This severity was defined by tachypnea, oxygen saturation $\leq 93\%$ at rest, or arterial oxygen pressure (PaO₂) / inspired oxygen fraction (FiO₂) less than 300 mmHg. Considering these criteria, only 8% of pregnant women in the WHO study were in serious condition⁸.

Even with the small number of the study by Chen et al (2020), the importance of the study is emphasized, as it is the first to inquire about vertical transmission and provide important data for the scientific literature, and serve as a basis for future studies.

In view of the above, it is ratified that standard care interventions for any serious respiratory infection should support the treatment of pregnant women diagnosed with COVID-19 and these interventions must be carried out by a multiprofessional team⁹.

Therefore, the need for attention to care for pregnant women diagnosed with COVID-19 and their children is highlighted. In addition to the vulnerability of pregnant women caused by physiological changes¹⁰ such as a reduction in respiratory volume¹¹, the long-term effects of the disease on pregnant women and newborns are not known.

REFERENCES

1. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020 Feb;382:727-33. DOI: <https://doi.org/10.1056/NEJMoa2001017>
2. Wang D, Hu B, Hu C, Zhu FF, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus–infected pneumonia in Wuhan, China. *JAMA*. 2020 Feb;323(11):1061-9. DOI: <https://doi.org/10.1001/jama.2020.1585>
3. Schwartz DA. An analysis of 38 pregnant women with COVID-19, their newborn infants, and maternal fetal transmission of SARS-CoV-2: maternal coronavirus infections and pregnancy outcomes. *Arch Pathol Lab Med*. 2020 Mar 17; [Epub ahead of print]. DOI: <https://doi.org/10.5858/arpa.2020-0901-SA>
4. Chen H, Guo J, Wang C, Luo F, Yu X, Zhang PW, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*. 2020 Mar;395(10226):809-15.
5. Wong SF, Chow KM, Leung TN, Ng WF, Ng TK, Shek CC, et al. Pregnancy and perinatal outcomes of women with severe acute respiratory syndrome. *Am J Obstet Gynecol*. 2004 Jul;191(1):292-7.
6. Jeong SY, Sung SI, Sung JH, Ahn SY, Kang ES, Chang YS, et al. MERS-CoV infection in a pregnant woman in Korea. *J Korean Med Sci*. 2017 Oct;32(10):1717-20.
7. Schwartz DA, Graham AL. Potential maternal and infant outcomes from coronavirus 2019-nCoV (SARS-CoV-2) Infecting pregnant women: lessons from SARS, MERS, and other human coronavirus infections. *Viruses*. 2020 Feb;12(2):194.
8. World Health Organization (WHO). Report of the WHO-China joint mission on coronavirus disease 2019 (COVID-19) [Internet]. Geneva: WHO; 2020 Feb; [acesso em 2020 Jun 04]. Disponível em: <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>
9. Dashraath P, Wong JJJ, Lim MXK, Lim LM, Li S, Biswas A, et al. Coronavirus disease 2019 (COVID-19) pandemic and pregnancy. *Am J Obstet Gynecol*. 2020 Jun;222(6):521-31.
10. Rasmussen SA, Smulian JC, Lednický JA, Wen TS, Jamieson DJ. Coronavirus Disease 2019 (COVID-19) and pregnancy: what obstetricians need to know. *Am J Obstet Gynecol*. 2020 Mai;222(5):415-26.
11. Katamalli K, Priyadarshnni H, Sharma Y, Dhaliwal K, Sagireddy S, Burri B, et al. A comparative study of physiological variations in pulmonary function testes during pregnancy. *Int J Physiol*. 2019;7(3):80-4.