Review Article

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Coronavirus Disease 2019 (COVID-19) and late Pregnancy Loss in Infected Pregnant Women: A Mini Review

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ABSTRACT

Background: One of the main issues for health care systems during the coronavirus disease 2019 (COVID-19) was whether infected pregnant women would have pregnancy complications compared with healthy pregnant women during the pandemic. There was no sufficient data about the risk and rate of late pregnancy loss in pregnant women infected with COVID-19. In this study we reviewed the late pregnancy loss in infected pregnant women with COVID-19.

Methods: A comprehensive bibliographic search was conducted in PubMed, Google Scholar, SciELO, Springer Link, China National Knowledge Infrastructure (CNKI) platforms, and Wan Fang database to identify relevant studies published up to September 10, 2020.

Results: A total of seven cohort studies exclusively on late pregnancy loss and infected women with COVID-19 were included.

Conclusion: No evidence supported higher risk of late pregnancy loss in pregnant women with COVID-19. We suggested that the pandemic rapidly unfolds, it is critical that medical health care staffs keep up to date and caution should be undertaken to further study and monitor possible infection in the late pregnant mothers.

Introduction

In December 2019, a cluster of pneumonia cases with unknown cause began to emerge in Wuhan, China and then within a few weeks, the virus had spread rapidly throughout China, and within a month, worldwide.[1-3] Then, the ongoing outbreak of novel coronavirus pneumonia was first identified in Wuhan called novel coronavirus (2019-nCoV).[4-6] Until the 23st September 2020, over 31 million cases have been diagnosed worldwide, with a total of 967,000 deaths. In the medical literature the most common symptoms of the disease reported as fever, fatigue, and dry cough.[7-9] One of the main issues for health care systems during the COVID-19 was whether infected pregnant mothers would have pregnancy complications compared with healthy pregnant women during the pandemic. However, World Health Organization (WHO) has declared that there is no significant difference in the risk of developing clinical symptoms between non-pregnant and pregnant women.[10] Early studies suggested that pregnant women were not more severely affected to COVID-19 than the general population. But, the numbers of those mothers reported were few and comparison was required with non-pregnant women of similar age rather than with infected general population.[11]

The data during Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS) with smaller outbreaks showed that the maternal infections might cause acute or chronic placental insufficiency and consequently miscarriage or fetal growth restriction in 40% of cases.[2,12] Moreover, it was reported that pregnant women with higher risk of infection with H1N1 influenza had worse clinical outcomes which needed mechanical ventilation resulting organ dysfunction, ICU admission, and death, in comparison with reproductive-aged non-pregnant women.[13-15] However, there was no sufficient data about the risk and rate of late pregnancy loss in pregnant women infected with COVID-19.[16] Thus, further studies required to determine that whether COVID-19 disease can cause similar adverse outcomes during late pregnancy. In this study, we aimed to review the available literature on late pregnancy loss and COVID-19.

Materials and Methods

Identification of Relevant Studies: We conducted this study according to established methodology for systematic reviews. A comprehensive bibliographic search was conducted in PubMed, Google Scholar, EMBASE, Cochrane Library database, SciELO, Springer Link, China Biology Medical literature (CBM), Chinese Biomedical Database (CBD), China National Knowledge Infrastructure (CNKI) platforms, China Science and Technology Journal Database (VIP), and Chinese literature (Wan Fang) database to identify relevant studies published up to September 10, 2020. We used the combination of the following search terms and keywords: (‘’Coronavirus disease 2019’’ OR ‘’COVID-19’’ OR ‘’severe acute respiratory syndrome coronavirus 2’’ OR ‘’SARS-CoV-2’’) AND (“Pregnancy” OR ‘’Late Pregnancy Loss’’ OR ‘’Miscarriage’’ OR “Newborn” OR “Fetus” OR “Neonate” OR “Outcomes”). Moreover, all review articles and references from retrieved articles were screened for additional articles missed during online search. Articles included in the study were done on human without language restriction, published in the primary literature and had no obvious overlap of subjects with other studies. All results were based on previous published studies, thus no ethical approval and patient consent were required.

Inclusion and Exclusion Criteria: The studies included in the present meta-analysis were required to meet the following criteria: 1) studies with case-control or cohort design; 2) should be reported on outcomes of COVID-19 late pregnancy; and 3) case report, abstracts, reviews, posters, editorials, conference papers. In addition, the following exclusion criteria

were also used: 1) in vitro studies; 2) studies involved early pregnancy loss.

Results

Selected Studies: Initially, our computer based search strategy yielded 73 possibly relevant publications, which of them, 66 articles were removed due to duplication or not being about late pregnancy loss in pregnant women infected with COVID-19. Consequently, a total of seven studies on late pregnancy loss in infected pregnant women with confirmed COVID-19 were included to the review. Of note, all of the selected studies were published in Chinese and English.

Discussion

There was no sufficient data about the relation between the results of pregnancy in infected pregnant women with the COVID-19 during the first or second trimester of pregnancy, and data was limited on infections occurred in the late stage of pregnancy.[10,12,17] Moreover, early studies evaluated the late stage of pregnancy outcomes during the pandemic reported that there was no evidence of vertical transmission of COVID-19 through vaginal delivery.[18]

According to the available data, there was no evidence to support vertical transmission of COVID-19 from infected mother to the unborn child vertically.[16] Rasmussen et al., reported that pregnant mothers infected with other respiratory viruses, such as H1N1 influenza and SARS-CoV have experienced more adverse fetal events such as early miscarriage, fetal distress, and intrauterine growth restriction (IUGR).[11] However, recent data showed that the COVID-19 in pregnant mothers might cause an increased risk of pregnancy complications including preterm birth, PPROM, and maternal death. Baud et al., described that COVID-19 infection in pregnant mother might lead to miscarriage because of acute placental insufficiency during the second trimester of pregnancy. Their examinations showed that there was no evidence of vertical transmission of the disease, but they suggested the absence of the virus was not surprising due to the stage of fetal development and short time of maternal infection.[12] Qiancheng et al., in a study reviewed the medical records of pregnant (n = 28) and reproductive-aged non-pregnant women (n = 54) infected with COVID-19. Their results showed that there was no association between pregnancy and severity of disease, virus clearance time, and length of hospital stay. Moreover, the study reported that of those pregnant mothers, 22 delivered live births, either by cesarean section or vaginal delivery and no neonates were infected with the COVID-19. Interestingly, they reported that infected mothers received less treatment compared with non-pregnant women in the cohort, which could be explained by concern about adverse effects in the fetus that could be caused by certain drugs.[18] Liu et al., in a review of 59 patients including pregnant and non-pregnant women described that there was no significant difference between the pregnant and non-pregnant mothers regarding the development of the clinical features of COVID-19.[19]

In summary, to date, a few studies reported the rate and risk of late pregnancy loss in infected pregnant women with confirmed COVID-19 disease. Our review indicated that there was no evidence to support higher risk of late pregnancy loss in pregnant women infected with COVID-19 disease. As the pandemic rapidly unfolds, we suggest the medical health care staffs to keep up to date. Due to the limited data, it is critical that larger and well-designed studies in various ethnicities from different centers are needed to confirm our data.

Conflict of Interests

Authors have no conflict of interests.

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