



Effects of SARS-CoV-2 Infection in Early Pregnancy on Placental Pathology and Pregnancy Outcomes

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ABOUT THE STUDY

The emergence of the SARS-CoV-2 virus in late 2019 has led to a global pandemic with significant morbidity and mortality. Pregnant women have been identified as a high-risk group for severe COVID-19 infection, but the impact of early gestation SARS-CoV-2 infection on pregnancy outcomes and placental pathology has been a subject of ongoing study.

The COVID-19 pandemic has been a major public health challenge across the world. Pregnant women are at an increased risk of severe disease and adverse pregnancy outcomes due to their altered immune system, cardiovascular and respiratory systems. Early gestation SARS-CoV-2 infection is associated with adverse pregnancy outcomes and placental pathology [1-2]. This article, will review the impact of early gestation SARS-CoV-2 infection on pregnancy outcomes and placental pathology.

Early gestation SARS-CoV-2 infection is associated with adverse pregnancy outcomes such as miscarriage, stillbirth, preterm birth, and low birth weight. Miscarriage is the loss of pregnancy before the 20th week of gestation. There is limited data available on the impact of SARS-CoV-2 infection on miscarriage, but a few studies have reported an increased risk of miscarriage among pregnant women with SARS-CoV-2 infection. A systematic review and meta-analysis of 8 studies involving 15,728 pregnant women reported a 1.72 times higher risk of miscarriage among women with SARS-CoV-2 infection compared to those without the infection [3].

Still birth is the loss of pregnancy after the 20th week of gestation. A few studies have reported an increased risk of stillbirth among pregnant women with SARS-CoV-2 infection. A retrospective cohort study of 108,068 pregnant women in the United States reported a still birth rate of 1.5% among women with SARS-CoV-2 infection compared to 0.3% among those without the infection.

Preterm birth is the birth of a baby before 37 completed weeks of gestation. Preterm birth is a major cause of neonatal morbidity

and mortality. Several studies have reported an increased risk of preterm birth among pregnant women with SARS-CoV-2 infection [4]. A systematic review and meta-analysis of 42 studies involving 438,548 pregnant women reported a 1.63 times higher risk of preterm birth among women with SARS-CoV-2 infection compared to those without the infection.

Low birth weight is defined as a birth weight of less than 2,500 grams. Low birth weight is associated with an increased risk of neonatal morbidity and mortality. A few studies have reported an increased risk of low birth weight among pregnant women with SARS-CoV-2 infection. A systematic review and meta-analysis of 9 studies involving 10,698 pregnant women reported a 1.45 times higher risk of low birth weight among women with SARS-CoV-2 infection compared to those without the infection.

Placenta plays a vital role in fetal growth and development. Placental pathology is associated with adverse pregnancy outcomes such as preterm birth, stillbirth, and low birth weight. SARS-CoV-2 infection is known to affect the placenta, and several studies have reported placental pathology among pregnant women with SARS-CoV-2 infection [5].

Placental inflammation is one of the common pathological changes reported in pregnant women with SARS-CoV-2 infection. A study of 15 placentas from pregnant women with SARS-CoV-2 infection reported increased placental inflammation compared to placentas from uninfected women. The inflammatory changes were characterized by the infiltration of maternal immune cells, including macrophages, T cells, and natural killer cells. The management of early gestation SARS-CoV-2 infection in pregnant women is complex and requires a multidisciplinary approach.

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