



# COVID-19 infection during pregnancy may result in foetal brain haemorrhage

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Dear Editor,

Individuals infected with Severe Acute Respiratory Syndrome CoronaVirus 2 (SARS-CoV-2) during pregnancy may display no symptoms or a broad variety of symptoms. Individuals with symptoms of coronavirus disease 2019 (COVID-19) seem to be at a greater risk of having significant sequelae than asymptomatic reproductive-aged females<sup>[1]</sup>. When children are exposed to viral infection and maternal immune activation during pregnancy, there is an increased risk of negative neurodevelopmental outcomes. Several viruses have been linked to abnormal neurodevelopment, most notably the Zika virus infection and the microcephaly crisis<sup>[2]</sup>. The virus has been found in the embryonic brain tissue of pregnant women who pass the illness on to their unborn children. This has spurred doctors to study the disease's possible influence on the growing bodies of unborn children, in addition to their own.

Twenty-six of the 661 samples of human fetal tissue received between July 2020 and April 2022 were confirmed to have hemorrhages following evaluation. COVID-19 was present in all of the tissue samples that exhibited evidence of bleeding. Each and every one of the samples originated from pregnancies that were terminated on purpose<sup>[3]</sup>.

While brain hemorrhages in children are not uncommon, the occurrence of so many in such a short period of time is remarkable. It is thus critical that we do follow-up with children who were exposed to COVID-19 during pregnancy to evaluate if there are any long-term effects on neurodevelopment<sup>[4]</sup>.

Researchers linked tissue damage to markers of decreased blood vessel integrity and increased immune cell infiltration in the

brain<sup>[5,6]</sup>. The mother's immune response or the COVID-19 infection itself might both be to blame.

Only fetal tissues were discovered to be infected with the coronavirus; however, this clearly implies that the infections began in the mothers. However, it is unclear whether the bleeding was caused by the mother's COVID or the fetus's illness, or whether the relationship contains some other undisclosed component. However, the correlation is large enough to arouse concern.

The majority of the samples with indications of bleeding were obtained late in the first trimester or early in the second, demonstrating that injury to the embryonic brain may begin as early as the first trimester of pregnancy. As is generally known, the developing brain builds defences throughout this time, making it critical.

This is the first large study to show that COVID-19 infection during pregnancy may affect fetal brain development<sup>[5]</sup>. This study emphasizes the need of immunizing pregnant women against COVID-19 to avoid complications for both mother and child, whether as a direct effect of the virus or as a secondary outcome of maternal infection.

Tissue samples from the placenta, amnion, and umbilical cord also indicated low levels of SARS-CoV-2, suggesting that COVID-19 might create further problems. The Zika virus is only one of numerous recent high-profile cases highlighting the devastating repercussions that maternal viral infections may have on their offspring's neurological systems<sup>[7]</sup>. Researchers have discovered a link between COVID-19 infection in pregnant women and fetal health issues, however, the available data is restricted<sup>[8]</sup>.

The findings of the research data show that the sensitivity of human embryonic brain tissue to COVID-19 infection is connected to its development throughout the first trimester of pregnancy.

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None.

## Consent

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## Author contributions

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