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Duke-NUS team reveals unknown mechanisms of zika infection

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New research uncovers previously unknown mechanism behind why some, but not all, Zika virus infections during pregnancy lead to fetal brain abnormalities.



Researchers at Duke-NUS Medical School and their colleagues have identified a surprising interaction between dengue and Zika viruses that sheds lights on the significant fetal brain abnormalities linked to Zika virus.

The researchers found that fetal mouse brain damage was much worse if the mothers infected with Zika also had dengue antibodies. They further determined that an immune complex that forms when dengue antibodies attach to the Zika virus is recognized by a receptor on placental cells, allowing the virus to travel across the placenta into fetal cells. Their findings are reported in the journal Science Advances.

The team found that Zika virus infection in mothers with antibodies against dengue resulted in fetuses with smaller body mass and head circumferences, and more significant damage to the brain tissue. Further, when a receptor called neonatal Fc receptor (FcRN), was blocked, Zika virus transmission from mother to fetus was reduced, resulting in a larger head circumference and less brain damage.

The team also showed that antibodies to dengue can promote transmission of Zika virus across human placental cells, but further research is needed to determine if previous dengue virus infection has the same effect on human babies born to women infected with Zika during pregnancy.

The team next aims to employ their findings to develop better treatment options for Zika virus infection during pregnancy