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Opinion

Zika Virus Disease Associated Fetal Microcephaly

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In December 2015, Brazil is the most Zika virus affected country with preliminary estimates of 1.3 million cases. Although there is accumulating evidence that support the association between Zika virus infection and fetal microcephaly, most experts carefully do not state that Zika virus infection is causally associated with these adverse fetal outcomes. Nevertheless, the United States Centers for Disease Control and Prevention has concluded that Zika virus infected pregnancy can cause fetal microcephaly and other severe brain defects. More than 50 years ago, no flavivirus has ever been demonstrated definitely to cause human birth defects with no reports adverse pregnancy during previous Zika virus outbreaks, except cytomegalovirus and rubella virus. There is Shepard's criteria and Bradford Hill criteria for proof of teratogenicity in humans and for evidence of causation that can be applied to the association between Zika virus infection and fetal microcephaly and other brain anomalies. For example, of Shepard's criteria, depending on the basis of case reports, case series, and epidemiological studies of fetal microcephaly that are related to laboratory-confirmed or presumed Zika virus infection, the timing of Zika virus infection related to severe microcephaly and intracranial calcifications demonstrated in the late first or early second trimester. For example, of Bradford Hill criteria, Zika virus infects neural progenitor cells and produces cell death and abnormal growth, a finding that is consistent with a causal relationship between Zika virus infection and fetal microcephaly. Improved understanding of Zika virus as a cause of fetal microcephaly and other brain anomalies and adherence to public health recommendations that are achieved by more direct communication. Hence, reviewing the evidence relating to Zika virus infection and adverse pregnancy and birth outcomes is urgently needed.

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