Two Brazilian studies show new discoveries related to Zika virus

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A Brazilian study shows that infection of a pregnant woman by Zika virus may represent a risk to the baby's neurological development even when it occurs only a few days before the mother gives birth.

"Until now, the paradigm has been that infection by Zika was a problem only if it occurred in the first trimester, but we observed brain damage in four infants whose mothers were infected between two weeks and one week before they gave birth," said Maurício Lacerda Nogueira, a professor at the São José do Rio Preto Medical School (FAMERP) in São Paulo State, Brazil, and a member of the state's Zika Virus Research Network (Rede Zika).

In the five-year prospective cohort study, a group of 55 women infected by Zika during pregnancy are being monitored at Hospital de Base, São José do Rio Preto's reference hospital. Zika infection in these women was diagnosed by real-time polymerase chain reaction (RT-PCR) testing. Their babies are also being submitted to detailed tests and examinations as they are born.

In four of the newborns exposed to the pathogen during the last trimester of gestation, diagnostic imaging showed central nervous system lesions that are characteristic of congenital viral infections. Moreover, Zika virus was detected in the babies' urine and blood at delivery, confirming vertical transmission (from mother to fetus). Two of these cases are reported in the published article.

"These infants were born with normal length and weight and without microcephaly or any other symptoms of the disease," Nogueira said. "The lesions would have gone unnoticed by health workers if the mothers hadn't been part of a study group."

According to Nogueira, the lesions observed - including lenticulostriate vasculopathy (ultrasound-visible brain lesions appearing as streaks or spots in certain arteries) - have not been associated with severe complications in previous studies, but the implications for the neurocognitive development of these Zika-infected infants are unknown.

"We mean to keep monitoring the development of these babies for several years in order to detect any problems," he said. "This discovery reveals another spectrum of the disease, making it even more complex. In addition to the dramatic cases of microcephaly, there are less severe manifestations that need to be properly understood."

Zika in transplant recipients

Another article by researchers at FAMERP describes for the first time manifestations of Zika virus in patients previously receiving organ transplants. The study was also led by Nogueira under the aegis of Rede Zika.

As Nogueira explained, these patients take immunosuppressants continuously to prevent rejection of the transplanted tissue, so any infection can become severe with a heightened risk of complications.

"Because Sã José do Rio Preto is one of the leading transplant hubs in the interior of São Paulo State, as well as a major focus of dengue, for some years we've been painstakingly monitoring transplant recipients with symptoms of dengue fever," he said. "When the Zika epidemic emerged, we began investigating whether some of the suspected dengue cases were actually Zika infections."

Two recipients of kidney transplants and two recipients of liver transplants were diagnosed with Zika using RT-PCR assays performed at Hospital de Base. All four had to be hospitalized and presented with complications, notably bacterial infections. The good news is that all four survived.

"These transplant recipients didn't have the typical symptoms of Zika, such as exanthema (skin rash), itching and conjunctivitis," Nogueira said. "Actually, it was hard to distinguish their clinical manifestations from those observed in dengue patients. They had a low platelet count, for example."

None of them had severe manifestations such as Guillain-Barré syndrome, "but as the number of cases rises, it should be easier to detect these phenomena," he said.

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