Extremely severe' brain damage found in babies with Zika-linked defect

Research in Brazil revealed babies born with microcephaly, presumed to be caused by Zika virus, had range of abnormalities

 A baby born with microcephaly, in Recife, Brazil. The city is at the centre of the Zika crisis. Photograph: Paulo Whitaker/Reuters

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Scans have revealed “extremely severe” brain damage in babies born with a birth defect presumed to have been caused by the [Zika virus](https://www.theguardian.com/world/zika-virus).

Doctors in [Brazil](https://www.theguardian.com/world/brazil) examined babies born with microcephaly, which causes babies to suffer brain damage and unusually small heads, and found a range of abnormalities.

Since last year, Brazil has reported thousands of babies born with the condition, which has been [linked to an increasing number of Zika virus infections](https://www.theguardian.com/world/2016/mar/15/zika-study-estimates-1-risk-of-microcephaly-in-women-infected-in-early-pregnancy).

The analysis, [published in the British Medical Journal on Wednesday](http://www.bmj.com/cgi/doi/10.1136/bmj.i1901), involved 23 babies born in the Brazilian state of Pernambuco between July and December 2015, all but one of whom were born to mothers who had a rash during pregnancy, consistent with a Zika virus infection.

 Some of the scans showing severe microcephaly in babies’ brains. Photograph: BMJ 2015

A team of doctors from Recife, [the city at the centre of the Zika global health crisis](http://www.theguardian.com/global-development/2016/jan/25/zika-virus-mosquitoes-countries-affected-pregnant-women-children-microcephaly), wrote: “The brain damage caused by Zika virus infection in these children was extremely severe, indicating a poor prognosis for neurological function. This scenario might be the worse one in the disease severity spectrum.”

Of the babies, five underwent a CT scan, seven underwent both CT and MRI scans, and one underwent an MRI scan.

All babies who had a CT scan showed signs of brain calcification, a condition in which calcium builds up in the brain. The hypothesis is that the Zika virus destroys brain cells, and forms lesions on which calcium is deposited.  
Other common findings included malformations of cortical development, decreased brain volume, and ventriculomegaly, a condition where the brain cavities are abnormally enlarged.

Each baby was diagnosed with microcephaly or craniofacial disproportion during pregnancy or at birth. Six tested positive for antibodies related to the Zika virus, and the remaining 17 met the official criteria for microcephaly.

Other infectious causes of microcephaly, such as toxoplasmosis, cytomegalovirus, rubella, syphilis and HIV, were ruled out.

The doctors, led by Prof Maria de Fátima Vasco Aragao, said the study showed the largest and most detailed case series of brain scans in children with microcephaly and presumed Zika virus related infection to date.

 A map showing cities and states with cases of microcephaly in Brazil up to 13 February 2016. Photograph: BMJ 2015

In February, the World Health Organisation (WHO) declared the microcephaly epidemic linked to the Zika virus [an international public health emergency](https://www.theguardian.com/world/2016/feb/01/zika-virus-world-health-organisation-declares-global-health-emergency). Last month, [it said Zika had been “implicated” in microcephaly](https://www.theguardian.com/world/2016/mar/22/who-zika-virus-implicated-in-large-numbers-of-brain-damaged-babies) but the association was not yet scientifically proven.

As the Brazilian analysis was an observational study, no definitive conclusions can be drawn about the effect of the Zika virus on the brain abnormalities identified.

On Tuesday, Brazil’s health ministry said the total number of[confirmed and suspected cases of microcephaly in the country was 4,949](http://www.reuters.com/article/us-health-zika-brazil-idUSKCN0X92W3). The number of those that are confirmed is 1,113. There have been 2,066 cases ruled out as microcephaly.

[Public Health England has advised women to postpone non-essential travel to areas with active Zika transmission](https://www.gov.uk/government/news/zika-virus-updated-travel-advice-for-pregnant-women) until after pregnancy. It has also said they should avoid becoming pregnant while travelling in an area with active Zika virus transmission and for 28 days after returning home.

The WHO has also linked Zika to Guillain-Barré syndrome, a rare sickness of the nervous system in which a person’s own immune system damages the nerve cells, causing muscle weakness, and sometimes paralysis.

A study presented at the annual conference for the American Academy of Neurology earlier this week [suggested the virus may cause a wider range of brain disorders than previously thought](https://www.theguardian.com/world/2016/apr/10/zika-virus-brain-disorders-brazil-study), including a brain swelling called acute disseminated encephalomyelitis.