

## W Zika: neurological and ocular findings in infant without microcephaly

Published Online

June 7, 2016

[http://dx.doi.org/10.1016/S0140-6736\(16\)30776-0](http://dx.doi.org/10.1016/S0140-6736(16)30776-0)

The emergence of Zika virus (ZIKV) in Brazil coincided with increased reports of newborn babies with microcephaly, congenital malformations, and neurological syndromes.<sup>1</sup> In February, 2016, WHO declared ZIKV and microcephaly a Public Health Emergency of International Concern because of the rapid spread of ZIKV infection.<sup>2</sup>

In January, 2016, we reported ocular findings in infants with microcephaly and presumed congenital Zika virus infection in Pernambuco, Brazil.<sup>3,4</sup> Similar ocular findings have been reported in infants assessed in Bahia, Brazil.<sup>5</sup> These reports followed establishment of microcephaly (head circumference two SDs below the mean for age and sex) as an inclusion criterion for the screening of babies for congenital Zika virus infection.<sup>3-5</sup> Therefore, the presence or absence of microcephaly was used as a cutoff for screening, and only cases that fulfilled this criterion were classified as presumed cases of congenital Zika virus infection and further investigated.

To the best of our knowledge, no reports exist on infants with diagnosis of congenital Zika virus infection, who did not have microcephaly, but did have ocular findings.

Here we report the ophthalmic findings of an infant (age at exam: 57 days; head circumference: 33 cm; weight at birth: 3500 g; gestational age at birth: 38 weeks) who was referred for ophthalmic examination by a neurologist for suspected congenital Zika virus infection. The mother reported that she did not have ZIKV-related symptoms, use illicit drugs, drink alcohol, or smoke during pregnancy.

The infant presented lower limb and upper limb spasms at birth. CT scans detected cerebral calcifications in the

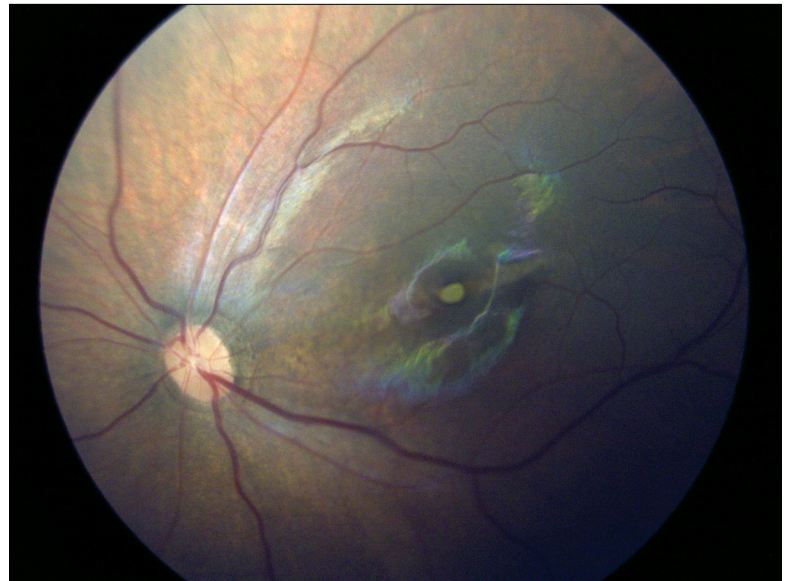


Figure: Chorioretinal scar on the macular region of the left eye with no associated optic disc findings in an infant without microcephaly

basal ganglia, ventriculomegaly, and lissencephaly.

Ocular examination included anterior segment biomicroscopy and fundus evaluation. A chorioretinal scar was detected on the macular region of the left eye (figure), similar to scars previously reported in congenital Zika virus infection.<sup>3-5</sup> Toxoplasmosis, rubella, cytomegalovirus, herpes simplex, HIV, and dengue fever virus were ruled out in both mother and infant. IgM antibody capture (MAC)-ELISA for ZIKV was done in the cerebral spinal fluid of the infant, which was positive, confirming our hypothesis of congenital Zika virus infection.

This case highlights that microcephaly should not be a required criterion for congenital Zika virus infection diagnosis, since infants without microcephaly could still have been infected by ZIKV during gestation. We emphasise the need for public health authorities to provide fundus screening to infants with suspected congenital Zika virus infection, because ocular findings might be underdiagnosed if microcephaly continues to be an inclusion criterion in the screening of this group of infants.

We declare no competing interests.

Camila V Ventura, Mauricio Maia, Natalia Dias, Liana O Ventura, \*Rubens Belfort Jr  
clinbelf@uol.com.br

Altino Ventura Foundation, Recife, Brazil (CVV, ND, LOV); HOPE Eye Hospital, Recife, Brazil (MM, RB); and Department of Ophthalmology and Visual Sciences, Paulista School of Medicine, Federal University of São Paulo and Vision Institute, São Paulo, Brazil (CVV, LOV)

- 1 WHO. Epidemiological alert: neurological syndrome, congenital malformations, and Zika virus infection. Implications for public health in the Americas. Dec 1, 2015. [http://www.paho.org/hq/index.php?option=com\\_docman&task=doc\\_view&Itemid=270&gid=32405&lang=en](http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=32405&lang=en) (accessed May 12, 2016).
- 2 WHO. WHO director-general summarizes the outcome of the emergency committee regarding clusters of microcephaly and Guillain-Barré syndrome. Feb 1, 2016. <http://www.who.int/mediacentre/news/statements/2016/emergency-committee-zika-microcephaly/en/> (accessed May 2, 2016).
- 3 Ventura CV, Maia M, Bravo-Filho V, Gois AL, Belfort RJr. Zika virus in Brazil and macular atrophy in a child with microcephaly. *Lancet* 2016; **387**: 228.
- 4 Ventura CV, Maia M, Ventura BV, et al. Ophthalmologic findings in infants with microcephaly and presumable intra-uterus zika virus infection. *Arq Bras Oftalmol* 2016; **79**: 1-3.
- 5 de Paula Freitas B, de Oliveira Dias JR, Prazeres J, et al. Ocular findings in infants with microcephaly associated with presumed zika virus congenital infection in Salvador, Brazil. *JAMA Ophthalmol* 2016; **134**: 529-35.