

PROSPECTIVE EVALUATION OF HEARING FUNCTION AFTER PRESUMABLY CONGENITAL ZIKA VIRUS INFECTION

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Zika virus (ZIKAV) infection has been associated with neurologic disorders including microcephaly and ophthalmic lesions. In addition, hearing loss was recently been identified in 5.8% of infants with diagnosis of congenital ZIKAV infection. The aim of this study is to describe the serial auditory evaluation of 13 infants with presumed congenital ZIKAV infection.

This is a prospective study of hearing function of 13 infants with microcephaly and presumed ZIKAV infection in the first year of life. An otolaryngologist exam, transient evoked otoacoustic emissions (TEOAE) and audiometry brainstem response (ABR) tests were performed in all cases. From three to six months later, a second otolaryngologist exam, TEOAE and ABR, in addition to a behavioral auditory test was performed in seven cases. Since all patients were term newborns, microcephaly was defined as head circumference of 31,5cm or less - female - and 31,9cm or less - male. Presumed ZIKAV infection was based on epidemiologic, clinical, radiologic and/or serologic criteria. A complete prenatal history was obtained including symptoms of arbovirolosis, alcohol and illicit drug use during pregnancy and hereditary hearing loss. Infants were evaluated for other possible congenital infections, such as toxoplasmosis, rubella, cytomegalovirus, herpes simplex virus or HIV.

Auditory evaluation was performed in seven male and six female infants with microcephaly (head circumference of 29.8 ± 3.2) presumed related to ZIKAV infection that were born from July, 2015 to February, 2016, during ZIKAV outbreak in Bahia, Brazil. All except one mother referred cutaneous rash during pregnancy. Prenatal ultrasound scan revealed CNS malformations such as intracranial calcifications and ventriculomegaly in 11 out of 12 fetuses. During the first audiologic exam, performed in infants aged 113 ± 63 days, unilateral sensorineural hearing loss was detected in two cases (15,4%), both with severe microcephaly. At this time, blood samples obtained from eight mothers and babies tested positive for Zika virus-specific immunoglobulin G (IgG) but negative for Zika virus-specific IgM. Nine patients attended the second audiologic evaluation, including the two infants with previous hearing impairment that persisted with unilateral hearing dysfunction. Although the remaining seven children presented normal objective auditory tests (TEOAE and ABR), they failed to present response to broadband sound at 55 dBA.

Neurosensorial hearing loss was detected in 2 out of 13 infants (15,4%) with presumed ZIKAV infection. For the remaining, a normal ABR and OEA exam did not correlate reliably with behavioral auditory thresholds that suggested a delay in hearing development in all cases.