Heterogenic neurodevelopment in children of 2-3 year of age with Congenital Zika Syndrome associated microcephaly

Autor(es): Juan Pablo Aguilar Ticona[1], Nivison Nery Jr[1], Claudia Gambrah[2], Valmir Rastely[1], Bruno Freitas[3], Adriana Mattos[3], Jamary Oliveira-Filho[1], Elsio A. Wunder Jr[2], Mitermayer G. Reis[4], Albert I. Ko[2], Federico Costa[1]

Instituição(es): [1]Federal University of Bahia, Salvador, Brazil, [2]Yale School of Public Health, New Haven, United States, [3]Hospital Geral Roberto Santos, Salvador, Brazil, [4]Oswaldo Cruz Foundation, Brazilian Ministry of Health, Bahia

Zika virus (ZIKV) causes a spectrum of congenital anomalies that includes microcephaly (MC), brain disruption sequence, ocular lesions, and congenital contractures, which has been defined as congenital Zika syndrome (CZS). However, the clinical evolution and prognosis of children with CZS appears may vary significantly and has not been well delineated in children of 2–3 years of age. Objective: Characterize the neurodevelopmental outcomes of children with CZS-associated microcephaly at 2–3 years of age. Method: We enrolled children with CZS-associated microcephaly who were born between October 2015 to March 2016 during the microcephaly epidemic at a reference maternity hospital, Hospital Geral Roberto Santos, in Salvador, Brazil. From October 2017 to November 2018, we performed follow up evaluations, which included anthropometric measurements, Hammersmith Infant Neurological Examination (HINE), Bayley Scales of Infant and Toddler Neurodevelopment (Bayley III), indirect ophthalmoscopy, functional ocular examinations, auditory evaluations and computed tomography (CT). HINE scores were defined as low neurological performance (41-74) and very low performance (<41). Bayley-III scores were used to calculate the equivalent developmental age in months at the time of follow-up evaluation. Results: We enrolled 44 children who had criteria for CZS-associated microcephaly and were born during the study period. The median age at time of follow up was 28 months (IQR, 24 – 30). Amongst the 44 children, 26 (59%) were male, 7 (16%) born prematurely, and 38 (86%) had severe microcephaly (<-3 SD). Among the 44 children, HINE scores were overall low in 11(25%) or very low 33 (75%). Among the 40 children for whom Bayley III evaluation were performed, 37 (93%) had severe developmental delay in all domains evaluated, 3 (7%) present moderate delay at least 1 of the Bayley III domains score.