Zika Virus (ZIKV) is a mosquito-borne virus that has been linked to adverse fetal/neonatal outcomes through vertical transmission. Antenatal ZIKV exposure is known to cause microcephaly and serious brain anomalies, but the full spectrum of abnormalities has not been delineated.

To characterize the structural anomalies, central nervous system malformations, and neurocognitive disabilities associated with Congenital Zika Syndrome (CZS) we analyzed the clinical manifestations in infants from Rio de Janeiro, Brazil who were exposed to ZIKV in utero.

Background

- Pregnant women who presented with febrile illness and concurrent rash during the ZIKV outbreak were enrolled.
- Their offspring were followed prospectively for 3 years at Instituto Fernandes Figueira/FIOCRUZ.
- Vertical exposure to ZIKV was determined by maternal or neonatal PCR or IgM serology.
- Bayley-III Scales of Infant and Toddler Development was used for individuals >6 months to assess neurodevelopment.
- The mean score of Bayley-III is 100 with a standard deviation of ± 15. A score ≤ 85 indicates risk of developmental delay and a score ≤ 70 indicates severe developmental delay.
- Statistical analysis was performed using SPSS.

Methods

Objective

Conclusions

- The study enrolled 296 pregnant women.
- In utero exposure to ZIKV was confirmed in 219 cases.
- 53 had congenital microcephaly.
- Among the non-microcephalic infants, the majority had failure to thrive (FTT), mainly due to weight loss (deceleration of growth across 2 percentiles).
- The majority of infants had a neurologic abnormality (68.1%).
- All abnormal findings are more prevalent in microcephalic infants.
- Among non-microcephalic infants with Bayley III exam scores (N=112), head circumference was a significant indicator of abnormal cognitive (p=0.004) and developmentally delayed language score (p=0.011) (Figure 2).

Infants with CZS without microcephaly suffer from congenital symptoms similar to those with microcephaly but less frequently.

Infant head circumference z-score at birth of non-microcephalic infants is significantly associated with neurocognitive development.

Recognition of the myriad of CZS phenotypes and spectrum of severity, beyond microcephaly, can help ensure early intervention, appropriate cross-disciplinary evaluation and comprehensive therapeutic care.

References