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Correlation Between Congenital Zika Syndrome and Hospitalization for Epilepsy: A Retrospective Cohort Analysis

A large-scale study, published in *JAMA Pediatrics*, evaluated the risk of epilepsy-associated hospitalization in the first four years of life by analyzing national data from over 10 million children in Brazil. The research, a collaboration between specialists from Brazil and the United Kingdom, focused on a cohort of children born at a gestational age of at least 22 weeks between January 2015 and November 2018 (mean gestational age of 38.5 weeks). The primary objective was a comparative risk analysis between three distinct groups:

- Children with Congenital Zika Syndrome (CZS) – incidence 0.03%;
- Children exposed *in utero* to the Zika virus (ZIKV) without developing CZS – incidence 0.08%;
- Unexposed children (control group).

Magnitude of Risk and Incidence

The results, adjusted for confounding factors, indicate a major disparity in the risk profile:

- **Increased Risk in CZS:** Children diagnosed with CZS showed a significantly higher risk of hospitalization for epilepsy, with a rate of 2.44 per 100 person-years, compared to only 0.04 per 100 person-years in the group without CZS.
- **Hazard Ratio:** The adjusted Hazard Ratio (aHR) was 34.2 for the CZS group, confirming a strong association between the pathology and severe epileptic manifestations.
- **Absence of Risk in Asymptomatic Exposure:** Children exposed prenatally to ZIKV, but who did not develop the clinical phenotype of CZS, did not present a higher risk compared to the unexposed population (aHR 0.66).

Temporal Dynamics and Independence from Microcephaly

Age-stratified analysis highlighted risk variations, with a peak incidence in the 7–18 month interval:

- 0 – 6 months: aHR 33.7;
- **7 – 18 months:** aHR 44.6 (maximum risk);
- 19 – 48 months: aHR 20.6.

An essential clinical aspect revealed by the study is the independence of severe epilepsy risk from head circumference size. Associations with hospitalization were similar in children with CZS, regardless of whether they presented with microcephaly, normocephaly, or macrocephaly.

The increased risk of hospitalization in patients with CZS is present independently of the existence of microcephaly, suggesting that functional neurological impairment may exist even in the absence of obvious cranial structural anomalies.

Adapted after/ References: Mary Van Beusekom, MS, CIDRAP News - https://www.cidrap.umn.edu/ , 3.12.2025