

HEAD GROWTH PATTERNS AMONG STRUCTURALLY NORMAL FETUSES WITH SYMPTOMATIC ZIKA VIRAL INFECTION DURING PREGNANCY IN PUERTO RICO

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Growth patterns of singleton fetuses whose mothers contracted Zika Virus infection (ZVI) during pregnancy and showed no prenatally detectable structural anomalies or maternal conditions that could affect fetal growth were evaluated prospectively. In all cases, the diagnosis of ZVI was based on patient symptomatology confirmed by a positive ZV PCR. Patients were grouped based on the timing of the infection and followed prospectively with level II sonographic evaluations performed by an experienced sonographer. Although multiple studies were done in many of the patients, only one study done over 4 weeks after the onset of maternal ZVI was included for each patient.

Methods: A total of 281 fetuses who met these criteria were identified among 478 mothers with ZVI during pregnancy between February 1 and November 27, 2016. They were divided into four groups depending on the timing in which ZVI occurred. Group I: < 7 weeks of gestation (28 patients), Group II: 7–14 weeks (72), Group III: 14 1/7-26 week (149), and Group IV: after 26 weeks (32). Biometric parameters were compared to of 2016 normal singleton fetuses with the same exclusion criteria evaluated between January 1 2014 and December 31, 2015 prior to the identification of the first case of ZVI in Puerto Rico.

Results: 6 cases of fetuses with brain anomalies and 3 cases of single umbilical artery were identified and excluded from this analysis. All fetuses with brain damage attributable to ZVI were exposed between 7 and 14 weeks of pregnancy. Fetuses in all groups showed similar normal growth patterns for the abdominal circumference and femur length. For the head circumference, fetuses in groups I and II showed no differences from the normal population while group III showed a tendency towards smaller head growth. Group IV showed an alarming distancing from the mean. In none of these groups was microcephaly identified prenatally in the absence of structural anomalies.

Conclusions: These preliminary findings suggest that the major risk of developing severe brain damage occurs in fetuses whose mothers contract ZVI between 7 and 14 weeks. Those exposed after 14 weeks exhibit a tendency towards smaller head growth. The trend towards continued lag in growth seen in those affected after 26 wk could explain the development of postnatal microcephaly in some of these infants. These findings require close attention and follow up since they may be a marker for future developmental anomalies that cannot be prenatally detected.